

DOCUMENT TYPE DEFINITIONS FOR
SERIAL PUBLICATIONS
PART I: ARTICLE DTD 4.1.0

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The figures in appendix H were prepared especially for this documentation by Coen Hofmann, Alfred Smit and Sebastian Rahtz. The present document replaces “Documentation type definitions for serial publications” of 2 December 1996, by N.A.F.M. Poppelier, H. van der Togt and F.K. Veldmeijer. This earlier document is therefore obsolete.

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Chapter 1

Introduction

This document describes the article DTD version 4.1.0. The index DTD version 1.1.0 and the glossary DTD version 1.1.0 are described in separate documents.

The purpose of this document is not to give a detailed explanation of the Standard Generalized Markup Language (SGML) or to explain the basics of writing a Document Type Definition (DTD). The main purpose is to provide a readable description of the Elsevier Science DTDs for journals.

However, on the understanding that there are those who would like to comment, but do not feel the need for an in-depth tutorial on the subject, the following section should put this document into context.

1.1 SGML – what and why?

1.1.1 What

An explanation of what SGML is can be found in [1]. We will summarize briefly here. In order to separate structure and presentation one applies the concept of generic markup: generic codes (or tags) are placed around most – or all – elements in a document. These elements could be a paragraph, a title, an abstract etc. The tags usually indicate the structure of the document. They do not indicate the style or format of the document, such as fonts, column widths etc. For each different style a style sheet is required to translate the logical structure into a presentation on paper, for example. The set of tags and their mutual relations comprise the ‘generic markup language’.

1.1.2 Why

SGML is a natural evolution of generic markup: it formalizes the structure and representation of the document, by combining the notion of generic markup with the observation that the logical structure of a document can be expressed in a tree-like structure. ‘SGML has the flexibility to define an infinite set of generic markup languages. [...] An SGML markup language defines the possible hierarchical structures of documents in [a] class’ [1].

By using SGML to structure documents, they can be exchanged between many parties. Furthermore, the tags can remain constant and device-independent, since they define generic markup and do not drive any specific application. The SGML tags can readily be converted to typesetting codes for paper printing, or to field codes for database creation, or to any other codes for numerous applications.

Chapter 2

The document type definition

The purpose of a DTD is to define the structure of a type or class of documents. It describes and names the tags that will identify the different elements in a document and their relationships. In other words, a DTD is more than a list of tags: it is a grammar of a particular class of documents. In particular, the purpose of the Elsevier Science DTDs for journals is to cover all publication items published in journals produced by Elsevier Science. It is important therefore that these DTDs identify every type of structure within such documents. The reason for this is that pieces of information, e.g. an address, that need to be extracted from a document at a later stage for a certain product or service, must be tagged in the document.

2.1 Objectives

SGML plays an essential role in computer-aided production in the process of scientific publishing. A DTD defines the tagging of documents: it describes which elements an article must contain, which it may optionally contain, whether elements may occur only once or may be repeated, and how elements are tagged. The DTD described here will serve as a standard for tagging of publication items published in journals. The use of a fully functional, standard DTD is essential for the achievement of the objectives of Elsevier Science.

The DTD described in this report defines the structure of the typical article published in research journals or proceedings. Other possible constituents of a journal issue, such as errata, editorials, book reviews and review articles, are now also included in the structure that is defined by the article DTD. Related DTDs exist for subject indexes and glossaries.

To enhance readability of this documentation of the DTDs, an index of all elements and attributes is added at the end. For further reading on SGML, please refer to the bibliography.

2.2 How to read this description

It is assumed that the reader has a basic knowledge of SGML, at least to the level that the reader knows that

- SGML tags are used for marking text structure;
- a document type definition (DTD) is used for defining text structure;
- presentation rules, for example in the form of a style sheet, are used to translate the structure of a document into some form of presentation, for example into instructions for a typesetting system.

For further information please refer to [1, 2].

2.3 Article structure versus text structure

This documentation is split in two major parts: a part on the structure of the article-like document types that occur in journals and a part on text structure. The first is concerned with article specific elements, such as author, title, section and paragraph, bibliography and appendix (chapter 3). These elements may have deeper structure, which is discussed in the chapter on text structure (chapter 4).

2.4 Embedded and sequential structure

In any DTD structure is defined in terms of sequence and embedding. For example an article consists of the elements copyright information, document header, document topic, front matter, body matter and back matter, which must appear in this order. Each of these structural elements may be further subdivided, and these subdivisions subdivided again, and so on. For example: a constituent part of the front matter is the author group, a constituent part of author group is author name, a constituent part of author name is first name, and so on. In other words: first name is embedded in author, author in author group and author group in front matter.

In the chapters on document and text structure, the sequential order and the embedded structure of the DTDs are reflected in the level of the section numbers. Elements in a DTD at the same level, such as front matter, body matter and back matter are assigned section numbers at the same level, e.g. 3.1, 3.2 and 3.3. Embedded elements are assigned section numbers at a deeper level, e.g. 3.4, 3.4.10, 3.4.10.1.

In some cases where article elements are at the same level of embedding, the order of the elements may vary. When this is the case, it is explicitly stated, for example in the author element, where first name and surname can appear in any order (see section 3.4.5.2).

2.5 Optional, mandatory and absent tags

For each element, opening and closing tags are given. It is also specified whether the tags are mandatory or optional. If a tag is mandatory, it must be present in the document for every instance of that particular element. This does not mean that the element has to be present in a document.

In cases where an element at one level follows an element at the same level, the closing tag will often be optional. This is because the new opening tag automatically implies a closing tag for the previous element, e.g. the front matter ends where the body of the article begins. In such cases the opening tags are mandatory, whereas the closing tag is optional.

In cases where it is not obvious where an element finishes, a closing tag would be mandatory.

In some cases, the closing tag does not exist at all, and the element is called an ‘empty’ element. This would occur, for instance, where tags do not enclose content (text), but are merely used for establishing a cross-reference.

2.6 Optional, mandatory and repeatable elements

For each element, a DTD specifies whether the element is an optional or mandatory part of the document and whether it may be repeated in its ‘parent’ element, i.e. the immediately surrounding element.

An element that is optional, may be absent or present in its parent element. An example is the dedication element in the front matter (see section 3.4).

An element that is mandatory, must be present in its parent element: if it is not, then its parent element is not valid according to the proposed DTD. An example is front matter (see 3.4): this is considered to be an essential element of the typical scientific article.

Note that in cases where a mandatory element has a parent element that is optional, the element itself is only mandatory if its parent element is present. An example is the element country in the parent element affiliation: country is mandatory in affiliation (see 3.4.5.5), but affiliation is an optional constituent of an author group (see 3.4.5). Therefore, if affiliation is present, country must be present, but affiliation need not be present in an article.

A DTD also specifies if an element can appear more than once within its parent element, irrespective of whether it is optional or mandatory.

Examples of elements that can be repeated are:

- affiliation in author group (section 3.4.5);
- author in author group (section 3.4.5);
- paragraph in body matter (section 3.6).

Examples of elements that cannot be repeated are:

- front matter in article (chapter 3);
- dedication in front matter (section 3.4).

In most cases this is obvious: there can be more than one author, but there cannot be more than one front matter.

It should be noted that when a DTD specifies that an element cannot be repeated within its parent element, this does not necessarily mean that the element cannot occur elsewhere in the document. This could occur if the parent element is repeatable. For instance, whereas the sub-title element within the parent element 'article title' cannot be repeated, article title itself can. Consequently, sub-titles can occur more than once in an article, but each one of them must correspond to an article title, and per article title not more than one sub-title is allowed.

2.7 Attributes and cross-reference

Attributes in SGML are used for specifying properties of the document elements, in addition to the content of those elements. For each element, attributes are listed if applicable. For each attribute, the full name is listed, the proposed code is given and it is specified whether the attribute is optional or mandatory for this particular element. Where considered relevant, the meaning of the attribute is explained briefly.

Attributes are also used to create links for cross-referencing. By using the attribute `id` together with a unique name for its value, an element can be identified for future referencing in the text. By using a special cross-referencing element, `cross-ref`, with the same unique identifier `refid`, the connection can be made.

An example may help to clarify this. Assuming there is a bibliographic reference (the target) the author wishes to refer to in the text, the reference would be 'tagged' as follows (in this example indentation, line breaks and spacing are used for clarity only – in actual documents these will be absent).

```
<bib id="ref2">
  <no>[2]
  <bb>
    <contribution>
      <authors>
        <author>
          <fnm>E.<snm>van Herwijnen
        <title>Practical SGML
      <host>
        <book>
          <edition>2nd (revised) edition
          <date>1994
          <publisher>
            <name>Kluwer Academic Publishers
            <location>Dordrecht
```

where `ref2` is a unique identifier for that particular reference (for more information please read section 4.5). Now, in the body of the article, the author can use the cross-referencing element (`<cross-ref>`) and add the unique identifier for that particular reference, i.e.

```
<cross-ref refid="ref2">[2]</cross-ref>.
```

The link is then established. For example:

```
... as Van Herwijnen describes in [2]...
```

Chapter 3

Article structure

In this chapter we will describe the main structure of the document type definition for full-length articles. Since it is impossible to give a complete, in-depth description of the structure of a full-length article in normal English, i.e. without making use of SGML, the document type definition – see appendix D – remains the final reference. A semi-graphical representation of the overall structure of a full-length article, the type of document described by this DTD, is given in figure 3.1.

The article as a whole is identified by the following opening and closing tags:

Opening tag: `<art>`, mandatory.

Closing tag: `</art>`, optional.

At the highest level, an article can be split into the following parts: copyright information, document head, document topic, front matter, body matter and back matter. Only the copyright element is mandatory.

For an example of a complete front matter, please see page 10.

The `art` element has the following attributes: `version`, `jid`, `aid`, `pii`, `docsubty`, `refers-to` and `language`.

The attribute `version` denotes the version of the DTD that has to be used with the article in question. This is a fixed attribute, and its value should be 4.1.0.

The attributes `jid` and `aid` are the journal identifier and article identifier respectively. Both are required attributes.

The `pii` attribute is a NMTOKEN attribute, and contains the PII. The PII is the Publisher Item Identifier, which uniquely identifies a publication item.

The attribute `docsubty` replaces the ‘publication item type’ of earlier versions, and can have the following values: `abs` (abstract), `add` (addendum), `adv` (advertisement), `ann` (announcement), `brv` (book review), `cal` (calendar), `cnf` (conference), `cor` (correspondence), `dis` (discussion), `edi` (editorial), `err` (erratum), `fla` (full-length article), `lit` (literature alert), `mis` (miscellaneous), `nws` (news), `pnt` (patent), `prp` (personal report), `prv` (product review), `pub` (publisher’s note), `rev` (review article), `sco` (short communication), `ssu` (short survey).

The `refers-to` attribute is another free-text attribute, and contains the PII of the parent document, i.e. the document the present one refers to. This is mostly used for errata and correspondence items.

The last attribute, `language`, specifies the main language of the document, by means of a two-letter language code taken from International Standard ISO 639:1988; the recognized codes are `en` (English, default), `fr` (French), `de` (German), `es` (Spanish), `pt` (Portuguese) and `ru` (Russian).

3.1 Copyright information

Opening tag: `<copyright>`, mandatory.

Closing tag: `</copyright>`, optional.

The content of `copyright` is the copyright holder, if any. Its mandatory attribute `yr` is the copyright year. This is the year of first publication or the year when the copyright status of the article was consciously decided upon.

The mandatory attribute `type` indicates in which way copyright has been transferred. This is shown in the following table, where `XX` is one of ‘B.V.’, ‘Inc.’, ‘Ltd.’, ‘S.A.’, etc., and the status refers to the copyright status from the official table of Copyright Notices [12, 13].

| | | | |
|-----------|-----------------|----------------|------------------------------|
| art | | | article |
| copyright | | | copyright information |
| dochead | | | document header |
| doctopic | | | document topic |
| fm | | | front matter |
| | atlfn | | article footnote |
| | atl | | article title |
| | | sbt | sub-title |
| | prs | | presented by |
| | ded | | dedicated to |
| | aug | | author group |
| | | collab | collaboration |
| | | au | author |
| | | cross-ref | organization reference |
| | | cor | correspondence address |
| | | ead | electronic-mail address |
| | | aff | affiliation |
| | re | | received |
| | rv | | revised |
| | acc | | accepted |
| | misc | | miscellaneous information |
| | abs | | abstract(s) |
| | | p | paragraph(s) of text |
| | kwdg | | keyword group(s) |
| | | kwd | keyword |
| | nomenclature | | nomenclature |
| bdy | | | article body |
| | salutation | | salutation |
| | p | | paragraph(s) of text |
| | sec | | sectional unit |
| | | no | section number |
| | | st | section title |
| | | p | paragraph(s) of text |
| | | sec | sectional unit |
| bm | | | back matter |
| | ack | | acknowledgements |
| | | p | paragraph(s) of text |
| | appm | | appendix matter |
| | | app | appendix(ces) |
| | bibl | | bibliographic reference list |
| | | st | section title |
| | | bib | bibliographic reference |
| | further-reading | | further reading list |
| | | st | section title |
| | | bib | bibliographic reference |
| | glossary | | bibliographic reference list |
| | | st | section title |
| | | glossary-entry | bibliographic reference |
| | vt | | biographic information |
| | | p | paragraph(s) of text |

Figure 3.1: Semi-graphical representation of main structure of article. Only the first four levels are shown.

| status | type | copyright holder |
|--------|------------------|--|
| 1 | unknown | empty |
| 2, 8 | full-transfer | Elsevier Science <i>XX</i> |
| 3 | us-gov | empty |
| 4 | crown | empty |
| 5 | limited-transfer | Elsevier Science <i>XX</i> |
| 6 | other | name of author or employer |
| 7 | no-transfer | empty |
| 9 | society | name of society |
| 10 | joint | Elsevier Science <i>XX</i> and name of society |

Sample output for each status is given below. The text marked with an underline is taken from the `copyright` element, while the remaining text has to be generated.

| status | typical output |
|---------|--|
| 1 | © <u>1997</u> Published by Elsevier Science <i>XX</i> All rights reserved. |
| 2, 5, 8 | © <u>1997 Elsevier Science <i>XX</i></u> All rights reserved. |
| 3 | Published by Elsevier Science <i>XX</i> . |
| 4 | Crown copyright © <u>1997</u> Published by Elsevier Science <i>XX</i> . All rights reserved. |
| 6 | © <u>1997 S. Yamamoto</u> . Published by Elsevier Science <i>XX</i> . All rights reserved. |
| 7 | not applicable |
| 9 | © <u>1997 IFIP</u> . Published by Elsevier Science <i>XX</i> . All rights reserved. |
| 10 | © <u>1997 Elsevier Science <i>XX</i> and IFIP</u> . All rights reserved. |

If an article is free of copyright, this is denoted by `type="other"` and an empty content.

3.2 Document header

Opening tag: `<dochead>`, mandatory.

Closing tag: `</dochead>`, optional.

The `dochead` element contains the (optional) header, in earlier versions called the ‘article type’, that is usually printed above the title of the document, e.g. “Rapid communication”. The contents of this element is unstructured text.

3.3 Document topic

Opening tag: `<doctopic>`, mandatory.

Closing tag: `</doctopic>`, optional.

If the document appears in a sectionalized journal, the value of the element `doctopic` is the name of the section of the journal in which this document goes, e.g. “Particles and fields”. In these journals the presentation style may choose not to print the document topic, but it can be reused for example to produce the table of contents. The contents of this element is unstructured text.

3.4 Front matter

Opening tag: `<fm>`, mandatory.

Closing tag: `</fm>`, optional.

Front matter consists of the following elements (in this order):

- article footnote (optional, repeatable)
- article title (optional, repeatable)
- presented by (optional)
- dedication (optional)
- author group (optional, repeatable)
- received date (optional)
- revised date (optional, repeatable)
- accepted date (optional)
- miscellaneous information (optional)
- abstract (optional, repeatable)
- keyword group (optional, repeatable)
- nomenclature (optional)

An example of the start of an article marked up in SGML is given in figure 3.2. This example could be presented as shown in figure 3.3.

3.4.1 Article footnote

Opening tag: `<at1fn>`, mandatory.

Closing tag: `</at1fn>`, optional.

The article footnote is a special footnote attached to the *whole* article. It should be distinguished from footnotes contained *in* the title. The article footnote consists of paragraphs. Unlike ordinary footnotes, the article footnotes generate a footnote mark, which in presentation is usually added to the first article title. Article footnotes are used for acknowledging grants, for disclaimers, and other notes belonging to the entire article.

3.4.1.1 Paragraph

Opening tag: `<p>`, mandatory.

Closing tag: `</p>`, optional.

Contents: text¹.

3.4.2 Article title

Opening tag: `<at1>`, mandatory.

Closing tag: `</at1>`, optional.

The element article title consists of text and an optional sub-element sub-title. The order of appearance of these elements is fixed. The start tag `<at1>` has one optional attribute, `language`, which defines the language of the title, if this is different from the main language of the document; its values are the two-letter language codes explained above.

3.4.2.1 Subtitle

Opening tag: `<sbt>`, mandatory.

Closing tag: `</sbt>`, optional.

Contents: text.

3.4.3 Presented by

Opening tag: `<prs>`, mandatory.

Closing tag: `</prs>`, optional.

Contents: text (a statement identifying the presenter of the article).

3.4.4 Dedication

Opening tag: `<ded>`, mandatory.

Closing tag: `</ded>`, optional.

Contents: text (the dedicatory text of this article).

1. In descriptions of the contents of elements the term 'text' stands for contents of the kind described in chapter 4 (%data;) — for a further explanation see chapter 4.

```

<!doctype art public "-//ES//DTD full length article DTD version 4.1.0//EN"[
<!entity sb1 system "sb1" subdoc>
<!entity gr1 system "gr1" ndata image>
<!entity gr2 system "gr2" ndata image>
<!entity aul system "aul" ndata audio]>
<art version="4.1.0" jid="COMAID" aid="550" docsubty="FLA" pii="S0167839697000186">
<copyright type="full-transfer" yr="1997">Elsevier Science B.V.
<dochead>Research report
<fm>
<atl>Decomposition of organic hydroperoxides on cation exchangers
<prs>Presented by P. Fejes
<aug>
<au><fnm>P.<snm>Fejes<fn id="fn1"><p>Partially supported by ...
    </fn><cross-ref refid="fn1"><sup>1</sup></cross-ref></au>
<cross-ref refid="vt1"></cross-ref>
<cross-ref refid="aff1 aff2"><sup>a, b</sup></cross-ref>
<cor>Corresponding author.</cor>
<au><fnm>R.J.<snm>Cripps</au>
<cross-ref refid="aff2"><sup>b</sup></cross-ref>
<aff id="aff1"><no>a</no>Babes-Bolyai University, Faculty of Economic Sciences,
Laboratory of Chemical Technology, R-3400 <cty>Cluj-Napoca (Kolozsvar)</cty>,
<cny cny-code="ro">Romania</cny>
<aff id="aff2"><no>b</no>University of Birmingham, Geometric Modelling
Group, <cty>Birmingham</cty> B15 2TT, <cny cny-code="gb">United Kingdom</cny>
<re day="4" mo="7" yr="1994">
<rv day="20" mo="5" yr="1997">
<abs><p>The acid catalyzed decomposition of p-tert-butylcumene hydroperoxide results
in acetone and p-tert-butylphenol as the main products. This paper deals with the
experimental results obtained on strongly acidic activated cation exchanger resins. ...
<kwdg>
<kwd>Acidity</kwd>
<kwd>Cation exchangers</kwd>
<kwd>Organic peroxides decomposition</kwd>

```

Figure 3.2: Example of the beginning of an article marked up in SGML.

Research report

Decomposition of organic hydroperoxides on cation exchangers

P. Fejes^{a,b,*} and R.J. Cripps^b

^a *Babes-Bolyai University, Faculty of Economic Sciences, Laboratory of Chemical Technology, R-3400 Cluj-Napoca (Kolozsvar), Romania*

^b *University of Birmingham, Geometric Modelling Group, Birmingham B15 2TT, United Kingdom*

Received 4 July 1994; revised 20 May 1997

Presented by P. Fejes

Abstract The acid catalyzed decomposition of p-tert-butylcumene hydroperoxide results in acetone and p-tert-butylphenol as the main products. This paper deals with the experimental results obtained on strongly acidic activated cation exchanger resins. ...

Keywords Acidity; Cation exchangers; Organic peroxides decomposition.

...

* Corresponding author.

¹ Partially supported by ...

Figure 3.3: Example of the formatted form of the start of an article that is marked up in SGML.

3.4.5 Author group

Opening tag: <aug>, mandatory.

Closing tag: </aug>, optional.

An author group consists of one or more ‘author blocks’, followed by zero or more affiliation addresses. An ‘author block’ consists of a collaboration or an author, followed by zero or more cross-references (typically to biographies and affiliation elements), an optional correspondence address, and zero or more electronic-mail addresses. The element `cor` specifies the correspondence address (see 3.4.5.3).

An author group must contain at least one collaboration or one author. These elements may be repeated, and the order in which they appear is free. The structures

- `collaboration1 author1,`
- `author1 author2 collaboration1`
- `collaboration1 author1 collaboration2 collaboration3`

are all valid first parts of author groups. The application that processes the SGML document, and produces printed output for instance, needs to take care of punctuation, e.g. ‘and’ and commas, that need to be inserted when presenting the document instance in a particular form.

The list of collaboration(s) and/or author(s) (which contains at least one of these elements) may be followed by one or more affiliations. The relation between an author and an affiliation (‘where the author worked at the time the article was submitted’) can be made explicit by means of the `id` attribute of the affiliation, and a cross-reference with `cross-ref`.

3.4.5.1 Collaboration

Opening tag: <collab>, mandatory.

Closing tag: </collab>, mandatory.

Contents: text.

A collaboration is a named group or cooperation. As is the case with an author, a collaboration can be explicitly related to an affiliation, by means of the elements organization reference and organization identifier, and also implicitly, by having an affiliation immediately following the collaboration.

A collaboration consists of an optional `index` element, text, and an optional collaboration affiliation (`caff`).

The `index` element gives the form used for entering in the author index. The textual content of the `collab` element, minus the `index` and `caff` elements, is used for printing.

3.4.5.1.1 Collaboration affiliation

Opening tag: <caff>, mandatory.

Closing tag: </caff>, optional.

Contents: unstructured text (cf. the affiliation element `aff`).

3.4.5.2 Author

Opening tag: <au>, mandatory.

Closing tag: </au>, mandatory.

An author element consists of a list of degrees (optional), a first name (optional), a surname (mandatory), a suffix (optional), a list of degrees (optional), and a list of rôles (optional). The first name and surname can also appear in reversed order. The suffix element `jr` is intended to mark codes such as Sr, Jr, or the ‘III’ in Henry Ford III. It is not to be used for titles such as Professor, Doctor, Lord, etc. These (academic or nobility) titles should be separated from the author names, and tagged as `degs` elements.

3.4.5.2.1 First name

Opening tag: <fnm>, mandatory.

Closing tag: </fnm>, optional.

Contents: text.

The element `fnm` starts with an optional sub-element, `inits`. This specifies the initials as they should be used whenever the first name is abbreviated to initials. If this attribute is missing, the initials are derived from the first name automatically. If the `fnm` element consists of initials only, no `inits` needs to be present. For example: if an author with first name ‘Christian’ would like to see this abbreviated to ‘Chr.’² this would be marked up as follows.

```
<fnm>
  <inits>Chr.</inits>
  Christian
</fnm>
```

3.4.5.2.2 Surname

Opening tag: `<snm>`, mandatory.

Closing tag: `</snm>`, optional.

Contents: text.

The element `snm` starts with an optional sub-element, `index`, which specifies the key that should be used in, e.g., sorting an author index. For example, suppose an article has an author with surname Börsig, and this surname needs to be sorted in an author index as Borsig. In that case, one would have to specify the surname as

```
<snm>
  <index>Borsig</index>
  B<a><ac>o<ac>&uml;</a>rsig
</snm>
```

Note that this does not affect the *actual* surname printed.

3.4.5.2.3 Suffix

Opening tag: `<jr>`, mandatory.

Closing tag: `</jr>`, optional.

Contents: text (the suffix part of the author’s name as explained in 3.4.5.2).

3.4.5.2.4 Degrees

Opening tag: `<degs>`, mandatory.

Closing tag: `</degs>`, optional.

Contents: text.

This element specifies a sequence of degrees before or after an author’s name. For example

```
<au>
  <fnm>Stig
  <snm>Steen
  <degs>MD, PhD
</au>
```

3.4.5.2.5 Roles

Opening tag: `<roles>`, mandatory.

Closing tag: `</roles>`, optional.

Contents: text.

This element specifies a sequence of rôles or job-titles after an author’s name. For example

```
<au>
  <fnm>Francis
  <snm>Urquhart
  <roles>Past Chair ACGIH
</au>
```

2. The way first names are abbreviated is determined by country and culture.

3.4.5.3 Correspondence address

Opening tag: <cor>, mandatory.
 Closing tag: </cor>, optional.
 Contents: text.

This element specifies the correspondence address for this article, or otherwise identifies the corresponding author. It consists of text and does not contain structural sub-elements. The correspondence address belongs to the collaboration or author that immediately precedes it. Usually there is only one cor element in the entire front matter.

3.4.5.4 Electronic-mail address

Opening tag: <ead>, mandatory.
 Closing tag: </ead>, optional.
 Contents: text.

This element specifies the electronic-mail address for the immediately preceding collaboration or author. It consists of text and does not contain structural sub-elements.

3.4.5.5 Affiliation

Opening tag: <aff>, mandatory.
 Closing tag: </aff>, optional.

The affiliation element, aff, consists of an optional number (no, which contains the label of the affiliation, as described in section 4.6), text, an optional city element (cty), a mandatory country element (cny), and text. The order of these components, text, city, country and text, is fixed. The aff element has an identifier attribute, id, which can be used for cross-referencing by means of cross-ref.

3.4.5.5.1 City

Opening tag: <cty>, mandatory.
 Closing tag: </cty>, mandatory.
 Contents: text.

3.4.5.5.2 Country

Opening tag: <cny>, mandatory.
 Closing tag: </cny>, mandatory.
 Contents: text.

The cny (country) element has an optional attribute cny-code, which specifies the country code for that country. Its value is a two-letter code for the country, as defined in International Standard ISO 3166, see appendix F.

3.4.6 Received date

Opening tag: <re>, mandatory.
 Closing tag: none.
 Contents: none.

The re element is an empty element, i.e. an element that has no content and therefore no end-tag. The start tag has three required attributes day, mo and yr of numeric type, which define the components day, month and year of the received date, respectively. The received date should be presented in the language of the entire document, i.e. according to the value of the language attribute of art. For example, in an article written in French <re day=2 mo=2 yr=1995> should be presented as, e.g., “Reçu le 2 février 1995”.

3.4.7 Revised date

Opening tag: <rv>, mandatory.
 Closing tag: none.
 Contents: none. See definition of <re> (received date).

3.4.8 Accepted date

Opening tag: `<acc>`, mandatory.

Closing tag: none.

Contents: none. See definition of `<re>` (received date).

3.4.9 Miscellaneous history information

Opening tag: `<misc>`, mandatory.

Closing tag: `</misc>`, optional.

Contents: text.

This element marks a line (text) in the history that specifies some extra information, for example the communicating editor. Examples: “Communicated by D.D. Holm”, or “Recommended by S.S. Gupta”. Whether or not the `misc` element generates extra fixed text depends on the style sheet.

3.4.10 Abstract

Opening tag: `<abs>`, mandatory.

Closing tag: `</abs>`, optional.

An abstract consists of a sequence of one or more paragraphs or sections. The start tag `<abs>` has two optional attributes: `class` and `language`. The `class` attribute specifies the type of abstract, ‘author’s abstract’, ‘editor’s abstract’, ‘INSPEC abstract’ or ‘teaser abstract’ (a condensed or highlight abstract). The `language` attribute specifies the language of the abstract, if different from the main language of the document.

3.4.11 Keyword group

Opening tag: `<kwdg>`, mandatory.

Closing tag: `</kwdg>`, optional.

A keyword group consists of one or more keywords, i.e. `kw` elements. The start tag `<kwdg>` has two optional attributes: `class`, which identifies the type of keyword, and `language`, which specifies the language of the keyword group, if different from the main language of the document.

The following keyword classes are recognized: `kw` (uncontrolled keyword, default), `abr` (abbreviations), `jel` (JEL classification codes), `msc` (mathematical subject codes), `pacs` (PACS classification codes), `neurosci` (neuroscience classification codes), `psycinfo` (psychological classification codes), `inspec-cc` (INSPEC classification code), `inspec-ct` (INSPEC classification term), `inspec-chi` (INSPEC chemical index), `mat` (materials), `src` (sources), and `idt` (other subject-index terms).

An example:

```
<kwdg class="neurosci">
  <kw>Cellular and Molecular Biology
    <kw>Blood&ndash;brain barrier
  </kw>
</kwdg>
```

In this example nested keywords are used. The value of the `class` attribute indicates that the first-order keyword should be interpreted as a “Theme” and the second-order one as a “Topic”.

3.4.11.1 Keyword

Opening tag: `<kw>`, mandatory.

Closing tag: `</kw>`, mandatory.

Contents: text.

This element contains one keyword, i.e. arbitrary text, with possibly nested (sub-)keywords.

3.4.12 Nomenclature

Opening tag: `<nomenclature>`, mandatory.

Closing tag: `</nomenclature>`, optional.

A `nomenclature` consists of one or more definition lists, i.e. `dl` elements.

3.5 Body

Opening tag: `<body>`, mandatory.

Closing tag: `</body>`, optional.

The article body consists of an optional salutation, followed by a sequence of paragraphs and/or sections in arbitrary order. There must be at least one paragraph or one section, but there may be any number of paragraphs and sections, and in any order. The following structures are all valid body structures:

- `paragraph1 section1`
- `section1 section2`
- `section1 paragraph1 section2 paragraph2`

Note that paragraphs are not necessarily parts of sections.

3.5.1 Salutation

Opening tag: `<salutation>`, mandatory.

Closing tag: `</salutation>`, optional.

Contents: text.

The `salutation` element specifies the opening phrase of the article body, such as e.g. “Dear Sir”. This is mostly used in editorial or correspondence items.

3.5.2 Section

Opening tag: `<sec>`, mandatory.

Closing tag: `</sec>`, mandatory.

A section consists of an optional number (`no`, see 4.6) and an optional section title (`st`), followed by an arbitrary sequence of paragraphs and/or sections. A section must contain at least one paragraph or one section, but there may be any number of paragraphs and sections, and in any order. Section can be the target for cross-reference by means of `cross-ref`.

A section may have a section title. If it has one, the title must be the first or second element of the section (depending on whether there is a `no` element). The basic building blocks of sections are paragraphs and sections (which then become subsections). The simplest section consists of one paragraph, optionally preceded by a section title:

```
<sec>
paragraph
</sec>
```

Paragraphs may be repeated, resulting in, for example:

```
<sec>
paragraph-1
paragraph-2
paragraph-3
</sec>
```

The simplest structure of a section containing a subsection is the following:

```
<sec>
  <sec> paragraph-1      : paragraph belongs to subsection
  </sec>
</sec>
```

and so further for deeper levels of embedding:

```

<sec>
  <st> title-1           : section title
  <sec> paragraph-1      : paragraph belongs to subsection
</sec>
  <sec> paragraph-2      : paragraph belongs to subsection
</sec>
  <sec> paragraph-3      : paragraph belongs to subsection
    <sec> paragraph-4    : paragraph belongs to subsubsection
  </sec>
</sec>
</sec>

```

Note that structures such as `<sec></sec>`, `<sec><sec></sec></sec>` etc., are not valid, since the tags `<sec>` and `</sec>` must enclose at least one paragraph or subsection.

No special subsection article elements with explicit mention of nesting depth, e.g. `sec1`, `sec2`, `sec3`, . . . , have been defined. This would have been an alternative to embedding sections within sections. Advantages of the option implemented in the current version of the DTD are that editors need not bother about the depth of the section (subsection, subsubsection, subsubsubsection, . . .), and that there is no *a priori* limit to the depth of embedding sections. A disadvantage is that the level of embedding of a section cannot be derived from the name of the section element.

3.5.2.1 Section title

Opening tag: `<st>`, mandatory.

Closing tag: `</st>`, optional.

Contents: text.

3.6 Back matter

Opening tag: `<bm>`, mandatory.

Closing tag: `</bm>`, optional.

Back matter consists of six optional parts: acknowledgement, appendix matter, a sequence of bibliographic lists, a sequence of further-reading lists, zero or more glossaries, and zero or more vitae. The order of these elements is fixed.

“Addendum”, “Note added in proof” and “Questions and answers” should – where needed – be treated as sections of the body of the document, or as an appendix.

3.6.1 Acknowledgement

Opening tag: `<ack>`, mandatory.

Closing tag: `</ack>`, optional.

An acknowledgement consists of one or more paragraphs.

3.6.2 Appendix matter

Opening tag: `<appm>`, optional.

Closing tag: `</appm>`, optional.

The main reason for inserting the element appendix matter is to make this DTD compatible with the AAP DTD (see also appendix A). Note that both the start tag and the end tag are optional.

Appendix matter consists of one or more appendices.

3.6.2.1 Appendix

Opening tag: `<app>`, mandatory.

Closing tag: `</app>`, optional.

An appendix has the same structure as a section, i.e. it consists of an optional number and an optional section title, followed by an arbitrary sequence of paragraphs and/or sections. There must be at least one paragraph or one section,

but there may be any number of paragraphs and sections, and in any order. See 3.5.2 for further explanation. Note that the constituting elements of section and appendix are identical.

Appendix can be the target for cross-reference by means of `cross-ref`.

3.6.3 Bibliographic list

Opening tag: `<bibl>`, mandatory.

Closing tag: `</bibl>`, optional.

A bibliographic list consists of an optional heading and one or more bibliographic references. The optional heading (`st`) is used for sub-headings within the bibliography, which is useful if there is more than one bibliographic list in the backmatter.

3.6.3.1 Bibliographic reference

Opening tag: `<bib>`, mandatory.

Closing tag: `</bib>`, optional.

A bibliographic reference identifies a document or some other source of information that is referred to (cited) in the text. In the current version of the DTD bibliographic references to journal articles, books, articles in books, proceedings, articles in proceedings, articles in special issues, and preprints are supported; references to other types of publications consist of text.

Syntactically, a bibliographic reference consists of an optional number, and one reference to an article or similar publication, or one reference to another type of publication. It can be the target for cross-reference by means of `cross-ref`.

The number (`no`) contains the label used in the bibliography, e.g. something like '[3]', '[Go90]', or 'Goldfarb, 1990' (see also section 4.6).

In designing the DTD fragment for references, we assumed that there is an unambiguous relation between citations in the text and bibliographic references in the back matter of the document. Therefore, the present DTD does not support multiple references under one item in the reference list, i.e. one bibliographic reference is one document. However, it does support the practice that for a certain document multiple publications are identified. Examples of this practice are references 11 and 13 in section 3.6.3.2. To account for this type of reference, we introduced the elements `contribution` and `host`; see sections 3.6.3.1.2 and 3.6.3.1.9.

3.6.3.1.1 Reference to article or similar publication

Opening tag: `<bb>`, mandatory.

Closing tag: `</bb>`, optional.

The element `bb` is reserved for references to textual documents, or, to be more precise: documents that are similar to articles, i.e. the type of document described by the present DTD. Publications such as, e.g., patents and maps are not included in this category.

A bibliographic reference to an article-like publication consists of an optional `contribution`, and one or more `hosts`.

3.6.3.1.2 Contribution

Opening tag: `<contribution>`, mandatory.

Closing tag: `</contribution>`, optional.

A `contribution` is an abstract entity that denotes the independent text or other object (e.g. map, audiotape, television program) and a `host` the physical entity that 'contains' the `contribution`. Where the `contribution` is a text, the `host` may be any such entity as book or issue. We use these terms in a somewhat different sense than ISO 690-2 [9]; the way we use it, the term `contribution` refers not only to text, as happens in the ISO document, but also to other objects that are referred to in reference lists, and in the present DTD fragment a `host` may contain, contrary to what ISO suggests, only one `contribution`.

In our analysis a monograph, or 'simple' book, consists of a `contribution` and a `host`, where the `host` contains only one `contribution`. This `contribution` could, in principle, be published in other `hosts` as well: as a chapter in a multiple

contributions book, or as an e-publication on the Internet. A contribution contains certain inalienable characteristics: in our proposed model, text-type contributions are defined by their author(s) and title(s). A map-type contribution (which we did not yet consider in depth, but which will probably be added in a future version) could be characterised by cartographer, geographical identification and scale. A host contains bibliographic data of the physical publication, such as an editor, an edition, a title, a publisher and a publication date for books. In the current model, every reference item refers to at most one contribution, with at least one, but possibly more, hosts.

Syntactically, a contribution consists of an optional author group, an optional title group, and an optional comment.

The contribution element has an optional attribute `language` which takes values in the list of two-letter language codes ISO 639, see appendix G. It is used to identify the language of the contribution.

The title group is either (1) a title optionally followed by a translated title, or (2) a translated title. Often, we find references with a made-up title in English, and the comment ‘in Japanese’ or ‘in Chinese’, while the original Japanese or Chinese title is missing. This should be coded by tagging the English title as a translated title, while the original language (`ja`, `zh`) can be coded in the host’s language attribute. The comments ‘in Japanese’ or ‘in Chinese’ are tagged as `comment`.

3.6.3.1.3 Authors

Opening tag: `<authors>`, mandatory.

Closing tag: `</authors>`, optional.

An author group in a bibliographic reference consists of one or more blocks. Each block is either a collaboration element `collab`, or one or more author elements `author`, followed by an optional *et al.* indicator.

In case an author group contains both collaborations and authors, these can occur in any desired order. However, there is no mechanism for inserting ‘embedded text’ that indicates the relations between the authors and the collaboration(s), for example certain connective words, commas (or absence thereof), or parentheses. For example, the following

- Abe on behalf of the ZEUS Collaboration, ...
- Abe (ZEUS Collaboration), ...
- Presented by Abe for the ZEUS Collaboration, ...

will either have to be rewritten as

```
<authors>
  <author>
    <snm>Abe
    <collab>ZEUS Collaboration
</authors>
```

or the entire reference of which this is a part must be treated as an unstructured reference (`other-ref`). In the latter case the entire text of the reference can be preserved. It is treated as flat text, in other words without any logical structuring, and is therefore less suitable for linking in an electronic environment.

3.6.3.1.4 Author

Opening tag: `<author>`, mandatory.

Closing tag: `</author>`, optional.

An author in a bibliographic reference consists of a surname `snm`, followed by an optional first name `fnm`, and an optional “junior” suffix `jr`.

3.6.3.1.5 Et al

Opening tag: `<et-al>`, mandatory.

Closing tag: none.

The `et-al` is an empty element. Its presence indicates the omission of other authors or editors, in other words the need for the insertion of the text “*et al.*” in the bibliographic reference.

3.6.3.1.6 Title in bibliographic reference

Opening tag: <title>, mandatory.

Closing tag: </title>, optional.

A title in a bibliographic reference consists of text, optionally followed by a sub-title *sbt*.

3.6.3.1.7 Translated title

Opening tag: <translated-title>, mandatory.

Closing tag: </translated-title>, optional.

A translated title in a bibliographic reference consists of text, optionally followed by a sub-title *sbt*. Translators are not yet covered in the present DTD fragment; however, if these are present, they can be captured in the comment element.

3.6.3.1.8 Comment

Opening tag: <comment>, mandatory.

Closing tag: </comment>, optional.

References as found in the manuscript supplied by the author(s) may contain ‘free text’ interspersed between capturable pieces of text. In order to provide a way to accommodate such text, the *comment* element is available as the last element of both contribution and host.

3.6.3.1.9 Host

Opening tag: <host>, mandatory.

Closing tag: </host>, optional.

In a bibliographic reference, the host is the physical entity that ‘contains’ the contribution. It consists of exactly one of the elements *issue*, *book*, *edited-book* or *electronic host (e-host)*, optionally followed by *comment*.

3.6.3.1.10 Issue

Opening tag: <issue>, mandatory.

Closing tag: </issue>, optional.

An issue consists of an optional editor group, an optional title group (see section 3.6.3.1.2), an optional conference, a series, an optional issue number, a date, and an optional page range. An issue with a title is considered to be a special issue; see the second example in section 3.6.3.2. Since a special issue may have guest editors, its model contains the element *editors*. Proceedings are either published in a special issue, or an edited-book. Therefore, the model for issue contains optional conference data.

3.6.3.1.11 Conference

Opening tag: <conference>, mandatory.

Closing tag: </conference>, optional.

Contents: text (information about conference).

3.6.3.1.12 Editors

Opening tag: <editors>, mandatory.

Closing tag: </editors>, optional.

An editor group in a bibliographic reference consists of one or more *editor* elements, optionally followed by an *et al.* indicator.

3.6.3.1.13 Editor

Opening tag: <editor>, mandatory.

Closing tag: </editor>, optional.

An editor in a bibliographic reference consists of a surname *snm*, followed by an optional first name *fnm*, and an optional “junior” suffix *jr*.

3.6.3.1.14 Series

Opening tag: `<series>`, mandatory.

Closing tag: `</series>`, optional.

Issues have mandatory series information, `series`, containing a title group (title and optional translated title, or just translated title) and an optional volume number (or range of volume numbers). Books and edited books have optional series information, `book series`, that adds editors to the series information.

3.6.3.1.15 Volume number

Opening tag: `<volume-nr>`, mandatory.

Closing tag: `</volume-nr>`, optional.

Contents: text (volume number or range of volume numbers).

3.6.3.1.16 Issue number

Opening tag: `<issue-nr>`, mandatory.

Closing tag: `</issue-nr>`, optional.

Contents: text (issue number or range of issue numbers).

3.6.3.1.17 Date

Opening tag: `<date>`, mandatory.

Closing tag: `</date>`, optional.

Contents: text.

This element contains the date of publication of the host.

It seems logical to assign a date to the element contribution, denoting its ‘inception’. Inception dates are, however, not used. The inception date is identical to the publication date of the ‘first’ host.

3.6.3.1.18 Pages

Opening tag: `<pages>`, mandatory.

Closing tag: `</pages>`, optional.

The page range element `pages` consists of a first page, optionally followed by a last page.

3.6.3.1.19 First page

Opening tag: `<first-page>`, mandatory.

Closing tag: `</first-page>`, optional.

Contents: text.

3.6.3.1.20 Last page

Opening tag: `<last-page>`, mandatory.

Closing tag: `</last-page>`, optional.

Contents: text.

3.6.3.1.21 Book

Opening tag: `<book>`, mandatory.

Closing tag: `</book>`, optional.

A book in a bibliographic reference consists of an optional title group (see above), an optional edition, an optional book series, one or more dates, and an optional publisher.

3.6.3.1.22 *Edition*

Opening tag: <edition>, mandatory.
Closing tag: </edition>, optional.
Contents: text.

3.6.3.1.23 *Publisher*

Opening tag: <publisher>, mandatory.
Closing tag: </publisher>, optional.

A publisher consists of a name, optionally followed by a location.

3.6.3.1.24 *Publisher name*

Opening tag: <name>, mandatory.
Closing tag: </name>, optional.
Contents: text (publisher name).

3.6.3.1.25 *Publisher location*

Opening tag: <location>, mandatory.
Closing tag: </location>, optional.
Contents: text (publisher location).

3.6.3.1.26 *Edited book*

Opening tag: <edited-book>, mandatory.
Closing tag: </edited-book>, optional.

An edited book consists of an optional editor group (see above), an optional title group (see above), an optional conference, an optional edition, an optional book series, one or more dates, an optional page range, and an optional publisher. Proceedings are either published in a special issue, or an edited-book. Therefore, the model for edited-book contains optional conference data.

3.6.3.1.27 *Book series*

Opening tag: <book-series>, mandatory.
Closing tag: </book-series>, optional.

A book series consists of an optional editor group and a series.

3.6.3.1.28 *Electronic host*

Opening tag: <e-host>, mandatory.
Closing tag: </e-host>, optional.
Contents: text and one optional sub-element.

This element is be used for tagging independent electronic hosts for bibliographic references. A possible application of this element is shown in example 13 in section 3.6.3.2.

The e-host element consists of an optional inter-document reference and an optional date element. The date element is mandatory with all other hosts, but in electronic hosts it is often lacking; this made it necessary to add it as an optional constituent.

In future, a reference type e-publication will probably be added, at the same level as patents and maps, to account for more complex references to electronic publications. Presumably, the element e-host will be part of the definition of the future e-publication.

3.6.3.1.29 Other reference

Opening tag: <other-ref>, mandatory.

Closing tag: </other-ref>, optional.

Contents: text.

This element is used for references to publications that are not similar to articles, so for example patents and maps. It contains no sub-elements.

3.6.3.2 Examples of bibliographic references

This section contains fourteen examples of references tagged according to the present DTD fragment for bibliographic references. Indentation, line breaks and spacing are used in these examples for clarity only: in actual documents these will be absent.

1. Journal article, 2 authors et al., paginated by issue.

[1] Paivio, A. & Becker, L.J. *et al.* (1975) Comparisons through the mind's eye. *Cognition*, 37 (2), 635–647.

```
<bib id="ref1">
  <no>[1]</no>
  <bb>
    <contribution>
      <authors>
        <author>
          <snm>Paivio
          <fnm>A.
        <author>
          <snm>Becker
          <fnm>L.J.
        <et-al>
      <title>Comparisons through the mind's eye
    <host>
      <issue>
        <series>
          <title>Cognition
          <volume-nr>37
        <issue-nr>2
        <date>1975
        <pages>
          <first-page>635
          <last-page>647
```

2. Entire issue of journal. Because the issue has a title, it is presented as a special issue.

[2] Glaser, R. & Bond, L. (Eds.) (1981) Testing: concepts and research [Special issue]. *American Psychologist*, 36 (10)

```
<bib id="ref2">
  <no>[2]</no>
  <bb>
    <host>
      <issue>
        <editors>
          <editor>
            <snm>Glaser
            <fnm>R.
          <editor>
            <snm>Bond
            <fnm>L.
        <title>Testing: concepts and research
      <series>
        <title>American Psychologist
        <volume-nr>36
      <issue-nr>10
      <date>1981
```


3. Journal supplement, only first page given.

[3] Koczkas, S., Holmberg, G. & Wedin, L. (1981) A pilot study of the effect of ... Acta Psychiatrica Scandinavica, 63 (Suppl. 290), 328

```
<bib id="ref3">
  <no>[3]</no>
  <bb>
    <contribution>
      <authors>
        <author>
          <snm>Koczkas
          <fnm>S.
        <author>
          <snm>Holmberg
          <fnm>G.
        <author>
          <snm>Wedin
          <fnm>L.
      <title>A pilot study of the effect of \ldots
    <host>
      <issue>
        <series>
          <title>Acta Psychiatrica Scandinavica
          <volume-nr>63
          <issue-nr>Suppl. 290
          <date>1981
          <pages>
            <first-page>328
```

4. Non-English journal article, title translated into English.

[4] Assink, E.M.H. & Verloop, N. (1977) Het aanleren van deel-geheel relaties [Teaching part-whole relations]. Pedagogische Studien, 54, 130–142

```
<bib id="ref4">
  <no>[4]</no>
  <bb>
    <contribution language="nl">
      <authors>
        <author>
          <snm>Assink
          <fnm>E.M.H.
        <author>
          <snm>Verloop
          <fnm>N.
      <title>Het aanleren van deel-geheel relaties
      <translated-title>Teaching part-whole relations
    <host>
      <issue>
        <series>
          <title>Pedagogische Studien
          <volume-nr>54
          <date>1977
          <pages>
            <first-page>130
            <last-page>142
```

5. Book, third edition.

[5] Strunk, W., Jr. & White, E.B. (1979) The elements of style (3rd Ed.). New York: MacMillan

```
<bib id="ref5">
  <no>[5]</no>
  <bb>
    <contribution>
      <authors>
```

```

    <author>
      <snm>Strunk
      <fnm>W.
      <jr>Jr.
    <author>
      <snm>White
      <fnm>E.B.
    <title>The elements of style
  <host>
    <book>
      <edition>3rd Ed.
      <date>1979
      <publisher>
        <name>MacMillan
        <location>New York

```

6. Edited book.

[6] Letheridge, S. & Cannon, C.R. (Eds.) (1980) Bilingual education: Teaching English as a second language. New York: Praeger

```

<bib id="ref6">
  <no>[6]</no>
  <bb>
    <host>
      <edited-book>
        <editors>
          <editor>
            <snm>Letheridge
            <fnm>S.
          <editor>
            <snm>Cannon
            <fnm>C.R.
          <title>Bilingual education: Teaching English as a second language
          <date>1980
          <publisher>
            <name>Praeger
            <location>New York

```

7. Book without authors and editors.

[7] College bound seniors (1979) Princeton, NJ: College Board Publications

```

<bib id="ref7">
  <no>[7]</no>
  <bb>
    <host>
      <book>
        <title>College bound seniors
        <date>1979
        <publisher>
          <name>College Board Publications
          <location>Princeton, NJ

```

8. Several volumes in a multi-volume edited work, publication over more than one year.

[8] Wilson, J.G. & Fraser, F.C. (Eds.) (1977–1978) Handbook of teratology (Vols. 1–4). New York: Plenum Press

```

<bib id="ref8">
  <no>[8]</no>
  <bb>
    <host>
      <edited-book>
        <book-series>
          <editors>
            <editor>
              <snm>Wilson
              <fnm>J.G.

```

```

    <editor>
      <snm>Fraser
      <fnm>F.C.
    <series>
      <title>Handbook of teratology
      <volume-nr>Vols. 1&ndash;4
    <date>1977
    <date>1978
    <publisher>
      <name>Plenum Press
      <location>New York

```

9. English translation of a book.³

[9] Luria, A.R. (1969) The mind of a mnemonist (L. Solotarof, Trans.) New York: Avon books (Original work published 1965)

```

<bib id="ref9">
  <no>[9]</no>
  <bb>
    <contribution>
      <authors>
        <author>
          <snm>Luria
          <fnm>A.R.
        <title>The mind of a mnemonist
        <comment>(L. Solotarof, Trans.)</comment>
      <host>
        <book>
          <date>1969
          <publisher>
            <name>Avon books
            <location>New York
          <comment>(Original work published 1965)</comment>

```

10. Article or chapter in edited book.

[10] Gurman, A.S. & Kniskern, D.P. (1981) Family therapy outcome research: knowns and unknowns. In: A.S. Gurman & D.P. Kniskern (Eds.) Handbook of family therapy (pp. 742–775) New York: Brunner/Mazel

```

<bib id="ref10">
  <no>[10]</no>
  <bb>
    <contribution>
      <authors>
        <author>
          <snm>Gurman
          <fnm>A.S.
        <author>
          <snm>Kniskern
          <fnm>D.P.
        <title>Family therapy outcome research: knowns and unknowns
      <host>
        <edited-book>
          <editors>
            <editor>
              <snm>Gurman
              <fnm>A.S.
            <editor>
              <snm>Kniskern
              <fnm>D.P.
          <title>Handbook of family therapy
          <date>1981
          <pages>

```

3. There is no separate element for translator yet.

```

    <first-page>742
    <last-page>775
  <publisher>
    <name>Brunner/Mazel
    <location>New York

```

11. Article in edited book, reprinted from another source.

[11] Sluzki, C.E. & Beavin, J. (1977) Symmetry and complementarity. In: P. Watzlawick & J.H. Weakland (Eds.) The interactional view (pp. 71–87) New York: Norton. Reprint from: Acta Psiquiatrica y Psicologica de America Latina, 1965, 11, 321–330

```

<bib id="ref11">
  <no>[11]</no>
  <bb>
    <contribution>
      <authors>
        <author>
          <snm>Sluzki
          <fnm>C.E.
        <author>
          <snm>Beavin
          <fnm>J.
        <title>Symmetry and complementarity
      <host>
        <edited-book>
          <editors>
            <editor>
              <snm>Watzlawick
              <fnm>P.
            <editor>
              <snm>Weakland
              <fnm>J.H.
            <title>The interactional view
          <date>1977
          <pages>
            <first-page>71
            <last-page>87
          <publisher>
            <name>Norton
            <location>New York
          <comment>Reprint from:</comment>
        <host>
          <issue>
            <series>
              <title>Acta Psiquiatrica y Psicologica de America Latina
              <volume-nr>11
            <date>1965
          <pages>
            <first-page>321
            <last-page>330

```

12. Proceedings published as a book.

[12] Chaddock, T.E. (1974) Gastric emptying of a nutritionally balanced liquid diet. In: E.E. Daniel (Ed.) Proceedings of the Fourth International Symposium on Gastrointestinal Motility (pp. 83–92). Vancouver, British Columbia, Canada: Mitchell Press

```

<bib id="ref12">
  <no>[12]</no>
  <bb>
    <contribution>
      <authors>
        <author>
          <snm>Chaddock
          <fnm>T.E.

```

```

<title>Gastric emptying of a nutritionally balanced liquid diet
<host>
<edited-book>
  <editors>
    <editor>
      <snm>Daniel
      <fnm>E.E.
    <title>Proceedings of the Fourth International Symposium
    on Gastrointestinal Motility
    <date>1974
  <pages>
    <first-page>83
    <last-page>92
  <publisher>
    <name>Mitchell Press
    <location>Vancouver, British Columbia, Canada

```

13. Preprint.

[13] Yu, F. & Wu, X.-S. (1992) Phys. Rev. Lett., 68, 2996 (hep-th/9112009)

```

<bib id="ref13">
  <no>[13]</no>
  <bb>
    <contribution>
      <authors>
        <author>
          <snm>Yu
          <fnm>F.
        <author>
          <snm>Wu
          <fnm>X.-S.
      <host>
        <issue>
          <series>
            <title>Phys. Rev. Lett.
            <volume-nr>68
            <date>1992
          <pages>
            <first-page>2996
        <host>
          <e-host><inter-ref object-type="preprint">hep-th/9112009</e-host>

```

14. Article in proceedings, containing several references to external electronic objects.

[14] F. Dougliis and Th. Ball, Tracking and viewing changes on the web (<http://www.research.att.com/orgs/ssr/people/dougliis/papers/aide.ps.gz>). In: Proc. 1996 USENIX Technical Conference (<http://usenix.org/sd96.html>), January 1996.

```

<bib id="ref14">
  <no>[14]</no>
  <bb>
    <contribution>
      <authors>
        <author>
          <snm>Dougliis
          <fnm>F.
        <author>
          <snm>Ball
          <fnm>Th.
      <title>
        <inter-ref locator="http://www.research.att.com/orgs/ssr/people/dougliis/
          papers/aide.ps.gz"
          locator-type="url">Tracking and viewing changes on the web
        </inter-ref>
      <host>

```

```

<edited-book>
  <title>
    <inter-ref locator="http://usenix.org/sd96.html"
              locator-type="url">
      Proc. 1996 USENIX Technical Conference
    </inter-ref>
  <date>January 1996

```

3.6.4 Further reading

Opening tag: `<further-reading>`, mandatory.

Closing tag: `</further-reading>`, optional.

A further-reading list has the same structure as a list of bibliographic references; see section 3.6.3. However, entries in a further-reading list can never be cross-referenced from the text (cited).

3.6.5 Glossary

Opening tag: `<glossary>`, mandatory.

Closing tag: `</glossary>`, optional.

A glossary consists of an optional title, followed by one or more glossary entries. The relation between a phrase in the text and an entry in the glossary can be made by means of the `id` attribute of the glossary entry, and a cross-reference with `cross-ref`.

3.6.5.1 Glossary entry

Opening tag: `<glossary-entry>`, mandatory.

Closing tag: `</glossary-entry>`, mandatory.

A glossary entry consists of a heading, followed by zero or more glossary definitions, zero or more cross-references, and zero or more sub-entries.

3.6.5.1.1 Glossary heading

Opening tag: `<glossary-heading>`, mandatory.

Closing tag: `</glossary-heading>`, mandatory.

A glossary heading consists of text, optionally followed by a sequence of sub-headings.

3.6.5.1.2 Glossary definition

Opening tag: `<glossary-def>`, mandatory.

Closing tag: `</glossary-def>`, mandatory.

A glossary definition consists of text.

3.6.6 Biographic information

Opening tag: `<vt>`, mandatory.

Closing tag: `</vt>`, optional.

The element `vt` can occur zero or more times. Each occurrence of the element `vt` contains the biographic information of *one* of the authors of the document, and consists of one or more paragraphs. A picture of the author, if present, should be included in a separate entity (artwork file), which is then specified with the `picture` attribute of `<vt>`. The relation between an `au` element and a `vt` element is established by an empty `cross-ref` element after the `au` element.

Chapter 4

Text structure

As stated previously, SGML defines the structure of a document, not its presentation on any medium whatsoever. The presentation used in a printed journal, for example, is defined in the typesetting instructions for that particular journal. Defining the text “structure” is not related to its appearance therefore, except where its format must remain fixed, irrespective of the output medium, as is often the case with e.g. mathematical formulas. Another example: a phrase or word may need to be in italic and this needs to be identified.

Individual characters, such as greek characters, will also be defined by means of a code, e.g. `α`, an *entity reference* in SGML terms. These entity references are based on the ISO public entity sets; a complete list can be found in appendix H.

An article (or index, or glossary) as a whole, as defined in the previous chapters, has a coarse-grained structure. The running text, for example of paragraphs, also has a, more fine-grained, structure. This structure consists of elements that are also defined in the DTD. These elements are:

- footnote
- anchor
- quotation
- enunciation
- cross-reference
- number
- link
- intra-document reference
- inter-document reference
- list
- definition list
- table
- in-line figure; floating or displayed figure
- text-box
- unprinted item
- inline and displayed formula
- bibliographic reference
- elements for built-up text, including font changes
- plain text (parsed character data: #PCDATA)

In this chapter these elements are described.

4.1 Footnote

Opening tag: `<fn>`, mandatory.

Closing tag: `</fn>`, mandatory.

A footnote is a note that documents the text, and corresponds to a reference, e.g. a number, in the text. Footnotes consist of an optional number, and one or more paragraphs. Footnotes are printed at the foot of the page. A footnote can be the target for cross-reference by means of `cross-ref`. The contents of the element are put into a ‘floating element’, which is put on the current page when possible, and otherwise on the next page. The tag `<fn>` does not generate a reference in the text. This must be generated with the tag `<cross-ref>` at the place(s) in the text where a footnote

reference needs to appear. The `id` attribute is required for this element. The `no` sub-element contains the footnote mark, see 4.6.

See the relevant typesetting instructions for the journal concerned for details about the presentation of this element.

4.2 Anchor

Opening tag: `<anchor>`, mandatory.

Closing tag: `</anchor>`, mandatory.

An anchor is a piece of text than can be the target of e.g. a cross-reference. The `id` attribute is required for this element.

4.3 Displayed quotation

Opening tag: `<qd>`, mandatory.

Closing tag: `</qd>`, mandatory.

A quotation is an exact reproduction or paraphrase of a part of a document. A block or displayed quotation is a quotation that is set off from the rest of the text, without quotation markers, and usually in a different font (size) or indented or both. A displayed quotation consists of one or more paragraphs. See the relevant typesetting instructions for the journal concerned for details about the presentation of this element.

4.4 Enunciations

Opening tag: `<enun>`, mandatory.

Closing tag: `</enun>`, mandatory.

Enunciations are the catch-all phrase we have given to a special category of structuring elements that occurs quite often in, for instance, mathematical papers. Examples of such elements are “Theorem”, “Proof” and “Definition”. Syntactically, an enunciation consists of an optional `no` element (the identifying name of the enunciation), an optional title (`st`), and one or more paragraphs. The `enun` element has an optional `id` attribute that is used for cross-referencing.

For example,

Theorem 1 (*Main theorem*). The dynamic programming ...

would be marked up as

```
<enun id="enun1"><no>Theorem 1</no><st>Main theorem
<p>The dynamic programming ...
```

Since it is impossible to define a fixed list of theorem types, e.g. “Theorem”, “Proof”, “Definition” etcetera, the type must be given explicitly in the `no` element.

4.5 Cross-reference

Opening tag: `<cross-ref>`, mandatory.

Closing tag: `</cross-ref>`, mandatory.

Contents: text.

A cross-reference is a reference to an element in the same document instance. For presentation purposes the contents of the element can be used. The (mandatory) `refid` attribute specifies a list of one or more identifiers. Each identifier corresponds to an object in the document instance.

This element is used instead of `figr`, `tblr`, etc. of the releases up to article DTD 3.0.0. The most prominent change is that the fixed text that was previously generated, e.g. “Fig.”, is now *included* in the SGML document, *within* the `cross-ref` element, and is not implied by a style-sheet. This implies that the presentation of the cross-reference is more or less *fixed*: it can only be manipulated as a whole, or by the use of search-and-replace patterns.

The `cross-ref` element allows one-to-many mappings, i.e. from a single `cross-ref` element to two or more objects.¹

Some elementary examples:

```
See Table 4 for ...
See Figs. 4 and 5 for ...
See Plate IV for ...
See [1,5] for ...
Smith et al. (1996) showed ...
In (Smith et al., 1996, Lemma 5) it ...
According to Theorem A.5 we ...
Defluorinations of 197 were ...

See <cross-ref refid="tbl4">Table 4</cross-ref> for ...
See <cross-ref refid="fig4 fig5">Figs. 4 and 5</cross-ref> for ...
See <cross-ref refid="pla4">Plate IV</cross-ref> for ...
See <cross-ref refid="bib1 bib5">[1,5]</cross-ref> for ...
<cross-ref refid="bib24">Smith et al. (1996)</cross-ref> showed ...
In <cross-ref refid="bib24">(Smith et al., 1996, Lemma 5)</cross-ref> it ...
According to <cross-ref refid="thea5">Theorem A.5</cross-ref> we ...
Defluorinations of <cross-ref refid="fx26"><b>197</b></cross-ref> were ...
```

Some examples of “merged references”:

```
In Tables 2, 4–6 and 13 it ...
(Jansen, 1908a, b; Smith, 1987, 1988; Jones, 1990)

In <cross-ref refid="tbl2 tbl4 tbl5 tbl6 tbl13">Tables 2,
4&ndash;6 and 13</cross-ref> it ...
<cross-ref refid="bib21 bib22 bib91 bib93 bib28">(Jansen,
1908a, b; Smith, 1987, 1988; Jones, 1990)</cross-ref> ...
```

4.6 Number

Opening tag: `<no>`, mandatory.

Closing tag: `</no>`, mandatory.

Contents: text.

Many of the objects that can be the target of a cross-reference (`cross-ref`) can have a number element. This is used for capturing the label – the number (and often a prefix that indicates the object type) – as assigned to the object by the author of the document.

```
<fig id="fig4"><no>Fig. 4</no>...</fig>
<fig id="fig5"><no>Fig. 5a&ndash;c</no>...</fig>
<fig id="dia17"><no>Diagram Q</no>...</fig>
<fig id="plal1"><no>Plate XI</no>...</fig>
<enun><no>Lemma 4.3</no>...</enun>
<fn id="fn2"><no>2</no>...</fn>
<tblfn id="tblfn2"><no>**</no>...</tblfn>
<fd id="fd3"><no>(2&prime;)</no>...</fd>
<sec id="sec37"><no>4.1.1</no>...</sec>
<app id="app1"><no>Appendix A</no>...</app>
<bib id="bib7"><no>[7]</no>...</bib>
<bib id="bib18"><no>Goldfarb, 1990</no>...</bib>
```

The type text, e.g. “Fig”, is tagged together with the identifier, e.g. “5a–c”. The presentation style of the `no` element depends on the stylesheet. For instance, the `no` element of an enunciation will typically be printed in boldface, while footnotes will be printed superior. This facilitates the re-use of the content of the `no` element in other products. (This should be contrasted with the `cross-ref` element.)

The `no` element may not be empty. If the `no` element is present then it specifies the label of the parent element in the way explained above. If the `no` element is absent then this means that the parent element has no label, e.g. an unnumbered section.²

1. This use of `cross-ref`, with a list of two or more identifiers is allowed, but should be used with care. Presentation of, and navigation through, cross-references that do not point to a single target can be quite cumbersome, especially in electronic media.

2. No automatic numbering of elements takes place.

Special mention must be made of name/date references. Since these references not normally have a label, it would be natural to leave out the `no` elements. Consider, however, the example “Jansen, 1908a,b” in section 4.6: if there is no `no` element, it will be impossible to generate the “a” and “b” in 1998a and 1908b in the `bib` element itself. The `date` element does not contain this suffix. For this reason we suggest that name/date references are given a `no` element with a content of the form “Jansen, 1908a” and “Jansen, 1908b”, respectively. The style sheets of journals that contain name/date references would have to include that the `no` element is treated in a special way: only the part after the comma appears in print (after the author’s names).

4.7 Link

Opening tag: `<link>`, mandatory.

Closing tag: none.

Contents: none.

A `link` element specifies that a local external object, i.e. an object that is under control of the publisher, should be “inserted” at this point in the document. An example is an external file with a piece of artwork.

The `link` is an element that is declared empty, i.e. it has only a start tag `<link>` and no end tag. It has one attribute element, `locator`, which is a reference to an external object that is under control of the publisher. This object contains the actual table or figure, for example, in some appropriate format.

As an example example, take an article with a figure that contains `<link locator="gr1">`. Then the entity is declared in the document subtype as in figure 3.2 and the catalog file could be as in appendix B.

4.8 Intra-document reference

Opening tag: `<intra-ref>`, mandatory.

Closing tag: `</intra-ref>`, mandatory.

The `intra-ref` element is an intra-document reference, in other words a reference to an external object that is under control of the publisher. The `intra-ref` element has three attributes: `refid`, `locator`, and `object-type`.

The `locator` attribute specifies the target document, i.e. an external object. It is an ENTITY so it can point to the external object through the catalog file (see appendix B). The `object-type` attribute specifies the type of target document; this can have the values `preprint`, `embase`, `geobase` or `inspec`. The optional `refid` attribute specifies the identifier of an object within the target document.

As an example, take an article with a text box which is a subdocument (see 4.15). A reference to Section I within the text box could be marked up as follows:

```
... see <intra-ref locator="sbl" refid="secl">Section I
    in Box A</intra-ref> ...
```

while the entity declaration and the catalog file could look like the ones in figure 3.2 and appendix B.

4.9 Inter-document reference

Opening tag: `<inter-ref>`, mandatory.

Closing tag: `</inter-ref>`, mandatory.

The `inter-ref` element is an inter-document reference, in other words a reference to an external object that is *not* under control of the publisher. The `inter-ref` element has four attributes: `refid`, `locator`, `locator-type` and `object-type`.

The `locator` attribute specifies the target document, i.e. an external object. It can be, for example, a URL, a URN, or a preprint number. The `locator-type` attribute specifies the type of locator used; this can have the values `url`, `urn`, `xxx-archive`, `cern` or `fiz`. The `object-type` attribute specifies the type of target document referred to; this can have the values `preprint`, `embase`, `geobase` or `inspec`. The optional `refid` attribute specifies the identifier of an object within the target document.

A simple example is given below.

```
<p>A demo of the tour structure mechanism is available on the
<inter-ref locator="http://www4.informatik.uni-erlangen.de/Perplex/"
locator-type="url">Perplex homepage</inter-ref>...</p>
```

In presentation one can decide to print the value of the `locator` attribute, or to suppress it. For example, on conversion to HTML, the attribute would not be displayed, but would be used as the `href` attribute of the (HTML) `<a>` tag. The optional `refid` can be used for the part of the `href` attribute that appears after the `#`.

A more elaborate example, showing the use of `inter-ref` in bibliographic references, is given in section 3.6.3.2. Since the `inter-ref` cannot span multiple structural elements, it is impossible in this example to let `inter-ref` span complete `author` elements. In presentation one could therefore decide to assign a special interpretation to empty `inter-ref` elements that occur in `author` elements, e.g. use the entire `author` element as the begin point of a hypertext link.

4.10 List

Opening tag: `<l>`, mandatory.

Closing tag: `</l>`, mandatory.

A list consists of an optional number (`no`), an optional heading (`st`), and one or more list items. The start tag `<l>` has one required attribute, `type`, that specifies the type of the list: `ord` for ordered (numbered), `unord` for unordered (un-numbered, bulleted) or `tab` for no item label, but only indentation (tabbing). An example is given below:

```
<l type=unord>
<li><p>Two-center models.
<li><p>The Folded Yukawa Potential.
<li><p>Generalized Woods&ndash;Saxon potentials.
</l>
```

This could be displayed as, for example

- Two-center models.
- The Folded Yukawa Potential.
- Generalized Woods–Saxon potentials.

In analogy with the sectional units, a recursive list structure has been implemented; see section 3.5.2. The presentation of lists is determined only by the `type` attribute and the nesting level. See the relevant typesetting instructions for the journal concerned for details about the presentation of this element.

4.10.1 List item

Opening tag: ``, mandatory.

Closing tag: ``, optional.

A list item contains one or more paragraphs.

4.11 Definition list

Opening tag: `<dl>`, mandatory.

Closing tag: `</dl>`, mandatory.

The definition list is a variation of the regular list. A definition list consists of an optional number (`no`) containing the definition list's identifier (if any), an optional heading (`st`), and one or more list items. Each list item consists of a definition term, `dt`, and an optional definition description, `dd`. The `dt` element consists of text, and has one optional attribute `id`, which is used for cross-references. The `dd` element consists of one or more paragraphs.

An example is given below:

```
<dl>
<dt>United States<dd><p>Dollar
<dt>France<dd><p>Franc
<dt>Japan<dd><p>Yen
</dl>
```

This could be displayed as, for example

United States Dollar
France Franc
Japan Yen

4.12 Table

Opening tag: `<tbl>`, mandatory.

Closing tag: `</tbl>`, mandatory.

A table consists of an optional number element (containing the name of the table), an optional caption, and one or more table bodies or links to external entities. Table footnotes can occur anywhere within the table. A table can be the target for cross-reference by means of `cross-ref`.

The tag `<tbl>` does not generate a reference in the text. This must be generated with the tag `<cross-ref>`. If the value of the optional attribute `loc` is `float`, also the default value, the table is assumed to be a ‘floating’ table; a floating table is placed on the current page when possible, and otherwise on one of the next pages, depending on the algorithms of the processing application. If the value of this attribute is `display` it is a displayed table, which should be inserted at precisely the point in the document instance where it occurs, but on a line by itself.

The table has an identifier, which is given by the attribute `id`, and which can be referenced with `<cross-ref>`. The caption of a table consists of one or more paragraphs of text.

The body of a table can be regarded as a rectangular object, consisting of cells arranged in rows and columns. In the DTD it is described as consisting of rows, where each row consists of cells.

A table body (`tblbody`) consists of one or more rows (`r`), and has four attributes that determine the column and row stubs.³ The attributes are

- `top-stubs` is the number of rows, counted from the top of the table, that constitute the top column stubs;
- `left-stubs` is the number of columns, counted from the left-hand side of the table, that constitute the left row stubs;
- `bottom-stubs` is the number of rows, counted from the bottom of the table, that constitute the bottom column stubs;
- `right-stubs` is the number of columns, counted from the right-hand side of the table, that constitute the right row stubs.

Column (row) stubs are repeated when the table is split across a page along a horizontal (vertical) line.

A table row (`r`) consists of one or more columns or *cells* (`c`). All rows must be of equal length. In principle, every cell can have the same content as a paragraph of text. Individual cells can be empty, but also entire rows or columns.

In an abstract sense a cell consists of three parts:

1. the actual contents of the cell, i.e. the “inside” of the cell,
2. a border of white space around the contents, which we will call the “gutter” of the cell here,
3. the perimeter of the cell, which consists of four edges, namely the top, left, bottom and right edges.

Syntactically, a table cell consist of four border specifications, `top-border`, `left-border`, `bottom-border`, `right-border`, and the actual cell content. It has the following attributes:

- `cspan`, the number of spanned columns.
- `rspan`, the number of spanned rows.
- `ca`, the column alignment. Legal values of this attribute are `l` (left), `c` (center), `r` (right), `d` (decimal), `j` (justified), and `vmk` (vertical markers present; see explanation below). The default value is `l`.
- `ra`, the row alignment. Legal values of this attribute are `t` (top), `m` (middle), `b` (bottom) and `vj` (justified). Default value is `t`.

The four empty elements `top-border`, `left-border`, `bottom-border`, `right-border`, define the borders of the cell. Each element has an attribute `type` and an attribute `style`, which together specify the type of rule. The legal values of the `style` attribute of these four elements is given in table 4.3.

The legal values of the `type` attribute of `top-border` and `bottom-border` are given in table 4.1. The legal values of the `type` attribute of `left-border` and `right-border` are given in table 4.2.

An example of table markup, and one possibility of representing it, is given in figure 4.1.

3. The term “stub” is explained in the Chicago Manual of Style [4], although only column stubs are described there.

Table 4.1: Legal values of attributes that specify a horizontal line or other horizontal ornament. Horizontal ornaments may occur in `bottom-border`, `top-border`, `ov`, `ovl`, `un`, and `unl`.

| Attribute value | Symbol | Attribute value | Symbol |
|-----------------|--------|-----------------|--------|
| bar | — | circ | ⤿ |
| tcub | ⤿ | tilde | ⤿ |
| bcub | ⤿ | rarr | → |
| tsqb | ⊐ | larr | ← |
| bsqb | ⊑ | harr | ↔ |
| tpar | ⤿ | lharu | ↙ |
| bpar | ⤿ | rharu | ↘ |

Table 4.2: Legal values of attributes that specify a vertical line or other vertical ornament. Vertical ornaments may occur in `left-border`, `right-border` and `cp`.

| Attribute value | Symbol | Attribute value | Symbol |
|-----------------|--------|-----------------|--------|
| lpar | (| bsol | \ |
| rpar |) | lceil | ⌈ |
| lsqb | [| rceil | ⌋ |
| rsqb |] | lfloor | ⌊ |
| lcub | { | rfloor | ⌋ |
| rcub | } | dharr | ⤵ |
| vb | | uharr | ⤴ |
| lang | < | darr | ↓ |
| rang | > | uarr | ↑ |
| sol | / | varr | ↕ |

Table 4.3: Values of the `style` attribute. The `style` attribute may occur in `top-border`, `bottom-border`, `left-border`, `right-border`, `box`, `cp`, `fr`, `ov`, `ovl`, `un` and `unl`.

| Value | Meaning | Example |
|-------|---------|------------------|
| s | single | |
| d | double | |
| t | triple | |
| da | dashed | ⋯ |
| dot | dotted | ⋮ |
| b | bold | ⦿ |
| bl | blank | space between |
| n | none | no space between |

Table 4.4: Meaningful combinations of `type` and `style` attributes. All other horizontal and vertical `types` may only occur in combination with `s`, `b` or `bl`.

| type | | style | | | | | | | |
|-------------------|-------------------|-------|---|---|----|-----|---|----|---|
| | | s | d | t | da | dot | b | bl | n |
| <code>lpar</code> | <code>(</code> | × | × | | | | × | × | |
| <code>rpar</code> | <code>)</code> | × | × | | | | × | × | |
| <code>lsqb</code> | <code>[</code> | × | × | | | | × | × | |
| <code>rsqb</code> | <code>]</code> | × | × | | | | × | × | |
| <code>vb</code> | <code> </code> | × | × | × | × | × | × | × | × |
| <code>lang</code> | <code><</code> | × | × | | | | × | × | |
| <code>rang</code> | <code>></code> | × | × | | | | × | × | |
| <code>bar</code> | <code>—</code> | × | × | × | × | × | × | × | × |

4.12.1 Vertical mark

Opening tag: `<vmk>`, mandatory.

Closing tag: none.

Within a column of a table, one can have alignment points indicated by a tag `<vmk>`. Within a cell one can have as many alignment points as one needs, but only if its horizontal alignment is specified as `vmk`.

4.12.2 Caption

Opening tag: `<caption>`, mandatory.

Closing tag: `</caption>`, optional.

A caption describes the contents of the parent element as a whole, and consists of one or more paragraphs.

4.12.3 Table body

Opening tag: `<tblbdy>`, mandatory.

Closing tag: `</tblbdy>`, optional.

For a more detailed discussion of the internal structure of the table body and of the attributes associated with it, see above.

4.12.4 Table footnote

Opening tag: `<tblfn>`, mandatory.

Closing tag: `</tblfn>`, mandatory.

A table footnote consists of an optional number and one or more paragraphs. Table footnote can be the target for cross-reference by means of `cross-ref`. The `id` attribute is required for this element. It is assumed that all cross-references to a table footnote occur in the same table as the table footnote.

4.13 Inline figure

Opening tag: `<inline-fig>`, mandatory.

Closing tag: `</inline-fig>`, mandatory.

This element consists of exactly one `link` element. An in-line figure, should be inserted at precisely the point in the document instance where it occurs.

```

<tblbdy top-stubs="1">
  <r>
    <c><top-border><bottom-border>Platinum precursor</c>
    <c><top-border><bottom-border>Metal loading(%)</c>
    <c><top-border><bottom-border>H<inf>2</inf>/&mu;mol g cat</c>
    <c><top-border><bottom-border>Pt surface area/m<sup>2</sup> gcat</c>
    <c><top-border><bottom-border>Pt dispersion(%)</c>
  </r>
  <r>
    <c>DNDA-Pt</c>
    <c ca="d">0.1</c>
    <c ca="d">1.02</c>
    <c ca="d">0.10</c>
    <c ca="d">39</c>
  </r>
  <r>
    <c>DNDA-Pt</c>
    <c ca="d">0.5</c>
    <c ca="d">5.40</c>
    <c ca="d">0.52</c>
    <c ca="d">42</c>
  </r>
  <r>
    <c><bottom-border>DNDA-Pt</c>
    <c ca="d"><bottom-border>1</c>
    <c ca="d"><bottom-border>10.6</c>
    <c ca="d"><bottom-border>1.02</c>
    <c ca="d"><bottom-border>41</c>
  </r>
</tblbdy>

```

| Platinum precursor | Metal loading(%) | H ₂ /μmol g cat | Pt surface area/m ² gcat | Pt dispersion(%) |
|--------------------|------------------|----------------------------|-------------------------------------|------------------|
| DNDA-Pt | 0.1 | 1.02 | 0.10 | 39 |
| DNDA-Pt | 0.5 | 5.40 | 0.52 | 42 |
| DNDA-Pt | 1 | 10.6 | 1.02 | 41 |

Figure 4.1: Example of table markup and presentation.

4.14 Figure

Opening tag: <fig>, mandatory.

Closing tag: </fig>, mandatory.

A figure consists of an optional number (containing the name of the figure, e.g. ‘Fig. 1’, ‘Plate IV’, ‘Diagram A’), an optional caption, and one or more links to external entities (figure bodies) or nested figures (i.e. sub-figures). The elements `link` and `figure` may occur in any order, they may all be repeated and they may be mixed. For example:

- `figure-link1 figure-link2 figure-link3`
- `figure1 figure-link1 figure2 figure-link2`

are all well-structured figures.

The tag <fig> does not generate a reference in the text. This must be generated with <cross-ref>. If the value of the optional attribute `loc` is `float`, also the default value, the figure is assumed to be a ‘floating’ figure; a floating figure is placed on the current page when possible, and otherwise on one of the next pages, depending on the algorithms of the processing application. If the value of this attribute is `display` it is a displayed figure, which should be inserted at precisely the point in the document instance where it occurs, but on a line by itself.

The figure has an identifier, which is given by the attribute `id`, and which can be referenced with `cross-ref`.

4.15 Text-box

Opening tag: `<textbox>`, mandatory.

Closing tag: `</textbox>`, mandatory.

A text-box starts with an optional number and an optional caption. The rest of the text-box is either a link, or a sequence of paragraphs or sections (similar to the body of the article). For example, a text-box that includes a complete (short) article uses a `link` element that refers to a complete SGML document.

The `textbox` element has attributes `id` and `loc`, similar to `fig`.

4.16 Unprinted item

Opening tag: `<upi>`, mandatory.

Closing tag: `</upi>`, mandatory.

A `upi` element consists of an optional number, an optional caption, and one or more links or nested unprinted items. It is used to refer to entities that are under control of the publisher, but that are not displayed in the printed version of the article (except perhaps in the form of a list of available unprinted items). The unprinted items can be shown in electronic products that incorporate the article.

The `upi` element has attributes `id` and `loc`, similar to `figure`.

4.17 Formula

4.17.1 Inline formula

Opening tag: `<f>`, mandatory.

Closing tag: `</f>`, mandatory.

In theory, an inline formula consists of text, just like a paragraph. However, in most cases an inline formula will contain a high proportion of mathematical constructions, such as e.g. fractions, roots and summations. It is not allowed to have displayed formulas appear inside inline formulas.

Most of the details of presentation of formula contents depend on the chosen medium and layout. See the relevant typesetting instructions for the journal concerned for details about in-line formulas. Some details, however, can be described independent of these factors.

- Inside displayed and in-line formulas, Latin and Greek letters are slanted by default.
- Multiple spaces in the document instance always count as one, i.e. also within formulas.
- Line-breaking, for example in the form of discretionary multiplication signs (\times), is not indicated in the document. One exception is formed by the occurrence of the entity ` `, which indicates a non-breaking space.

4.17.2 Displayed formula

Opening tag: `<fd>`, mandatory.

Closing tag: `</fd>`, mandatory.

A displayed formula has the same content, apart from the optional number element, as an in-line formula, but it differs in presentation. See the relevant typesetting instructions for the journal concerned for details about the presentation of displayed formulas.

A displayed formula that consists of one single line is not special in any way. The only thing that can be said about it is that it can carry an identification, usually a number, which is given by the `id` attribute. This number can also be used for referring to the formula with `<cross-ref>`. A displayed formula carries a number if and only if it has an `id` attribute.

A displayed formula can also consist of multiple formula lines. This is tagged as an `fd` element with nested `fd` elements, one for each line in the formula. In that case both the formula as a whole, the ‘formula group’, and the individual formula lines can carry a number. The formula lines are tagged by nested start tags `<fd>` and end tags `</fd>`. Nested `fd` elements, i.e. formula lines, are not treated differently in presentation, i.e. they are not indented horizontally or set off from the main body of the text by vertical space.

4.18 Elements for built-up text

Elements for built-up text are structures used in (mathematical) formulas. An example is the element `rad`, which is used to mark up roots. The use of these structures is rather complex and is covered below.

4.18.1 Superiors and inferiors

Superiors and inferiors are indicated with the tags `sup` and `inf`, respectively. Examples:

| Element | Meaning | Sample input | Sample output |
|------------------|----------|---|---------------|
| <code>sup</code> | superior | <code><f>x<sup>2</sup></f></code> | x^2 |
| <code>inf</code> | inferior | <code><f>y<inf>k</inf></f></code> | y_k |

Multiple consecutive `sup` and `inf` elements are allowed. There could be a slight difference in presentation between `a¹²` and `a¹²`.

The elements `sup` and `inf` have attributes `loc` and `arrange`.

The first attribute can have values ‘pre’ (base element follows this element) and ‘post’ (base element precedes this element, default). So for example τ_{ij}^n should be marked up as follows

```
<sup loc=pre>&ast i</sup>&tau i<sup>n</sup><inf>ij</sup>
```

The second attribute is `arrange`. If this is absent, the superior or inferior should be placed as usual, i.e. as close as possible to the base element. If the attribute is present, it can (for the time being) only have the value `staggered`. An example will perhaps illustrate the concept of ‘staggering’: $T^1_2^3$ would be marked up as follows

```
T<sup>1</sup><inf arrange="staggered">2</inf>
<sup arrange="staggered">3</sup>
```

4.18.2 Accent constructions

The accent construction, start tag `<a>` and end tag ``, is as in the AAP DTD’s [6]. The element `a` consists of two sub-elements `ac`. The first sub-element is the accented character (*one* character only), and the second sub-element is the accent (*one* accent or mark only), which most often is an entity reference for a floating accent, e.g. `ˆ` for the circumflex accent.

The start tag `<a>` has an attribute `valign`, which can have the values `u` (up, accent above character, default), `m` (middle, accent strikes through character), and `d` (down, accent below character). Both the start tag and the end tag of `a` are mandatory. The start tag and end tag of its sub-elements, `ac`, are optional, but sufficient tags must be present to make the division in accented character and actual accent unambiguously clear.

Some examples are given in the table below:

| Construct | Sample input | Sample output |
|---------------|--|-------------------|
| ‘Up’ accent | <code><a><ac>e<ac>&uml i</code> | \ddot{e} |
| ‘Down’ accent | <code><f><ac>x<ac>&macr i</f></code> | \underline{x} |
| Two accents | <code><f><a><ac><a><ac>x<ac>&tilde i<ac>&macr i</f></code> | $\tilde{\bar{x}}$ |

4.18.3 Boxes, overlines and underlines

Constructs that are embellished with boxes, overlines and underlines are tagged as shown in the following example:

| Tag name | Meaning | Sample input | Sample output |
|------------------|-----------|---|-------------------|
| <code>box</code> | box | <code><f><box>a+b</box></f></code> | $\boxed{a+b}$ |
| <code>ovl</code> | overline | <code><f><ovl type=bar>a+b</ovl></f></code> | $\overline{a+b}$ |
| <code>unl</code> | underline | <code><f><unl type=bar>a+b</unl></f></code> | $\underline{a+b}$ |

These elements have one common optional attribute `style`. The elements `ovl` and `unl` also have a required mandatory attribute `type`. This attribute can have the values given in table 4.1.

The `style` attribute can have the values given in table 4.3, and specifies the style of line drawn around, above, respectively below the enclosed material. The default value of this attribute is `s` (single). This attribute is shared with the `fr` element (fraction), where it determines the style of the line (bar) drawn between numerator and denominator, and in the separator attributes of tables and table cells.

The mechanism for creating overlined and underlined elements only works when these constructs are properly nested. If non-nested constructs occur, these should be indicated with the tags given in the table below:

| Construct | Start tag | End tag |
|-----------|---|--------------------------------------|
| Overline | <code><ov type=bar id="ABC"></code> | <code><ovr refid="ABC"></code> |
| Underline | <code><un type=bar id="XYZ"></code> | <code><unr refid="XYZ"></code> |

For example: `<ov id="A">a+b<ovr id="A">` will create the same output as `<ovl>a+b</ovl>`. Another example: `<ovl>WX<un id="B">Y</ovl>Z<unr id="B">` should result in $\overline{WXY}Z$.

4.18.4 Limit constructions

A limits construct is composed of a main symbol, the operator (element `op`), a lower limit (element `ll`), and an upper limit (element `ul`). The lower and upper limits are optional, but the operator is mandatory. The operand is not identified as such by means of tags. For example,

$$\bigcup_{k=1}^n x_n \cup y_n$$

would be marked up as follows

```
<fd>
<lim>&cup;<ll>k=1<ul>n</lim>x<inf>n</inf>&cup;y<inf>n</inf>
</fd>
```

The size of the operator and the positioning of the lower and upper limits depend on the context in which the `lim` construction appears. For example: in the denominator of a built-up fraction within a displayed formula, the operator symbol is small. Summations, products and integrals are special forms of limit constructions, which differ only in the choice of the operator.

4.18.5 Fences

Characters such as parentheses `()`, square brackets `[]`, or curly braces `{}`, that are used to set off parts of a formula, are collectively called fences. They are added as a construct here in order to enable automatic adjustment of their height to match the dimensions of the material between the fences. The delimiting symbol is specified by the `cp` element (fence post), which can appear at the begin or end of the fence construction, or any number of times inside the fence construction.

There should be at least one `cp` element in each fence construction.

The details are as follows: the tags `<fen>` and `</fen>` do not generate any output themselves, but only delimit a *scope*. All delimiter symbols that occur within this scope should be tagged as `<cp>`. The height of a delimiter is the height of the fence of the same scope as the delimiter. The height of the fence is determined by the maximum height and depth of the contents of that fence construction.

The `cp` element is declared empty, i.e. it has no content and therefore no end-tag. It has two attributes, `type` and `style`. The `type` attribute is required and can have the values given in table 4.2. The `style` attribute is optional and can have the values given in table 4.3; the default value of this attribute is `s`. It should be noted that not all combinations of these two attributes make sense; table 4.4 shows all meaningful combinations.

An example:

$$\langle \psi | H | \psi' \rangle$$

would be marked up as follows

```
<f><fen>
<cp type=lang>&psi;<cp type=vb>H<cp type=vb>&psi;&prime;<cp type=rang>
</fen></f>
```

4.18.6 Fractions

A fraction consists of two parts, a numerator and a denominator. Since both elements are required, and the numerator always comes first, it is permitted to omit the start tag and the end tag of the numerator, and add only the start tag for the denominator. The simplest form of a fraction construct therefore is (unless the numerator is empty of course) `<fr>numerator<de>denominator</fr>`.

An example:

$$\frac{2x + 3y}{12x - 12y}$$

would be marked up as

```
<f><fr>2x+3y<de>12x&minus;12y</fr></f>
```

The fraction bar itself is not tagged: it is implicit. The alignment of numerator and denominator with respect to the fraction bar, the type of fraction, and the type of fraction bar can be indicated by attributes on the start tag of the fraction construct. The first such attribute is `shape`, which can have values 'case', 'built' (built-up, the default value) and 'sol' (solidus). The size of the fraction depends on the context (small inside in-line formulas, large inside displayed formulas.) See the table below for examples:

| Shape | Sample input | Sample output |
|-------|---|-----------------|
| case | <code><f><fr shape=case>1<de>2</fr></f></code> | $\frac{1}{2}$ |
| built | <code><f><fr shape=built>2x<de>3y</fr></f></code> | $\frac{2x}{3y}$ |
| sol | <code><f><fr shape=sol>2x<de>3y</fr></f></code> | $2x/3y$ |

The second attribute of the fraction construct is the `align` attribute, which can have values 'l' (left), 'c' (center, default) or 'r' (right). This indicates the type of alignment of numerator and denominator with respect to the fraction bar. The third and last attribute of the fraction construct is the `style` attribute, which has values and attached meanings as given in table 4.3 on page 35, and which specifies the 'style' of the fraction bar.

4.18.7 Radical

Radicals, or roots, are composed of a radicand and an optional index. Since the radicand element, start tag `<rcd>`, is required and always comes first, it is allowed to omit its start tag and end tag. If the index is needed, only the start tag `<rdx>` is required. The following table gives some simple examples of radical (root) constructions:

| Sample input | Sample output |
|--|-----------------|
| <code><f><rad>2</rad></f></code> | $\sqrt{2}$ |
| <code><f><rad><rcd>a+b</rad></f></code> | $\sqrt{a+b}$ |
| <code><f><rad>a+b<rdx>3</rad></f></code> | $\sqrt[3]{a+b}$ |

4.18.8 Arrays

An array (element `ar`) is a rectangular scheme, consisting of one or more rows. Each row consists of one or more cells. In principle, each cell can have the same content as a paragraph of text, but in practice the content will usually be a formula (small or large), or empty. See the table constructions for an in-depth discussion of this construct and its attributes. There is no *a priori* difference between tables and arrays, and there are no precise rules as to when to use one or the other. In combination with fences the array construct can be used to create matrices, for example:

```
<fd>
<fen><cp type=lpar><ar>
<r><c>x<c>&minus;y
<r><c>y<c>x
</ar><cp type=rpar></fen>
</fd>
```

results in the following output:

$$\begin{pmatrix} x & -y \\ y & x \end{pmatrix}$$

4.18.9 Miscellaneous

4.18.9.1 Horizontal and vertical space

Should the need arise to indicate explicitly the insertion of wide or thin spaces, which can be the case, for example, in displayed mathematical formulas, there is a mechanism in the DTD to indicate horizontal or vertical spacing. For this one uses the elements `hsp` or `vsp`, which do not have content and therefore no corresponding end tag. The start-tags `<hsp>` and `<vsp>` have one attribute, `sp`, which has a numerical value.

For the `hsp` element, the value of the `sp` attribute is the number of “em’s” that needs to be inserted (default: 1.0), where one “em” is the width of the capital letter ‘M’ in the current font. For the `vsp` element, the spacing is in terms of the baseline-to-baseline distance.

Some remarks about details of vertical space:

- If `<vsp sp=1.5>` occurs in running text, e.g. in the middle of a sentence, this should be displayed as follows: move down by 1.5 “baseline skip”, and do not start on a new line.
- Extra vertical spacing between rows in a table is obtained by placing `vsp` elements in one cell of the table.

4.18.9.2 Arrow

The arrow element is not used at present.

4.19 Font changes

All tags for font change enclose text. The opening tag changes the base font, and the mandatory closing tag returns the font to the original base font.

Therefore all opening and closing tags for font changes are mandatory. In order to obtain “To change **text to bold**, and revert to roman”, one would use the `` and `` tags as in the following example:

To change `text to bold`, and revert to roman...

In principle, font changes can be embedded, e.g.

`...<it>tags enclose text</it>`. The ...

which would be printed as

*...tags enclose **text**. The ...*

However, not all combinations of font changes that are theoretically possible produce meaningful or useful results. For a detailed discussion of this issue see [11].

The font changes that are defined by the DTD are given in table 4.5. They can be used anywhere in the document, with one exception, namely `<rm>`, which can only be used in formulas. In normal text, all letters, latin and greek, have the default shape ‘upright’ (‘roman’). In most journals, all letters inside formulae, latin and greek, have the default shape ‘slanted’ (‘italic’). Therefore, the font change `<rm>` is used in formulas only, to generate letters or words in roman font. It is useless in normal running text, since running text is printed in a roman font by default.

Table 4.5: Font changes.

| Tag name | Meaning | Sample input | Sample output |
|----------|------------|-----------------------------------|--------------------|
| b | boldface | P (x) | P (x) |
| it | italic | <it>any</it> | <i>any</i> |
| of | openface | <of>Z</of> | \mathbb{Z} |
| sc | script | <sc>L</sc> | \mathcal{L} |
| ge | german | <ge>g</ge> | g |
| ssf | sans-serif | <ssf>A</ssf> | A |
| ty | typewriter | <ty>var</ty> | var |
| scp | small caps | <scp>Goldfarb</scp> | GOLDFARB |
| rm | roman | <f>N<inf><rm>white</rm></inf></f> | N_{white} |

Appendix A

Future enhancements

The following topics, dealing with possible additions or modifications to the present version of the DTD, are currently under investigation:

1. Chemical formulas. Definitions for chemical formulas are not included in the DTD. In the present version of the DTD, chemical formulas should be included in an article as illustrations.
2. Commutative diagrams.
3. Alignment in displayed mathematical formulas.
4. Unicode compatibility.

During design of the DTD we strived for maximum compatibility with other standards. Efforts have been made to achieve compatibility in naming conventions with the AAP¹ DTD ([6], now made obsolete by the new ISO standard 12083, [7]) or with the MAJOUR DTD, developed by the European Working Group on SGML. Whenever the DTD is modified, we will attempt to maintain or achieve this compatibility.

1. AAP stands for 'Association of American Publishers'.

Appendix B

Entity management

From the December 1996 releases onwards, we propose that users of the DTDs defined in these release will use catalog files for entity management. This has been defined in [10].

An example catalog is given below. Please compare with figure 3.2 where example entity declarations are shown for the entities used in the article (occurring possibly in the `locator` attributes of `link` and `intra-ref`, and the `picture` attribute of `vt`). Compare also section 4.8.

```
SGMLDECL "art410.dcl"  
PUBLIC "-//ES//DTD full length article DTD version 4.1.0//EN" "art410.dtd"  
PUBLIC "-//ES//ENTITIES special characters version 4.0.1//EN" "chars401.ent"  
ENTITY "sb1" "sb1/tx1.gml"  
ENTITY "gr1" "gr1.tif"  
ENTITY "gr2" "gr2.jpg"  
ENTITY "aul" "signall.au"
```

Appendix C

SGML declaration

The document type definitions described in this report do not conform to the Reference Concrete Syntax [3]. The first difference is that the 'base set' of the concrete syntax is ASCII, not ISO 646:1983. In practice, this means that the dollar sign is used instead of the currency sign.

Furthermore, in order to be able to parse the present version of the DTDs, several quantities under the heading SYNTAX in the Reference Concrete Syntax must be changed. For example, the quantity GRPGTCNT must be increased from 96 to 238 for the article DTD, and the quantity NAMELEN must be increased to 17 to accommodate the names of some of the more recent elements and attribute values.

Since there is no clear algorithm for computing capacity points, and since capacity points depend on the document instance, we have decided to use the reference declaration of these parameters. If necessary for a particular document and application, a custom declaration can be derived from the ones we include with the present release, and use this customized declaration instead.

The SGML declarations to be used with the present version of the DTDs are distributed together with the DTDs, in separate files. Each DTD has its own declaration. The SGML declaration for the article DTD is printed below.

Although this declaration permits the use of various forms of minimization, current practice within Elsevier Science is to use no minimization, except possible omission of start tags, end tags and optional attributes, where these can be inferred by an SGML parser. Semi-colons must be used to delimit entity references. Processing instructions are not allowed. SGML comments are allowed.

```
<!SGML "ISO 8879:1986"

CHARSET
  BASESET      "ISO 646:1983//CHARSET International Reference Version (IRV)//ESC 2/5 4/0"
  DESCSET      0 9 UNUSED
               9 2 9
               11 2 UNUSED
               13 1 13
               14 18 UNUSED
               32 95 32
               127 1 UNUSED

CAPACITY
  PUBLIC       "ISO 8879:1986//CAPACITY Reference//EN"

SCOPE
  DOCUMENT

SYNTAX
  SHUNCHAR     CONTROLS 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
                18 19 20 21 22 23 24 25 26 27 28 29 30 31 127
  BASESET      "ISO 646:1983//CHARSET International Reference Version (IRV)//ESC 2/5 4/0"
  DESCSET      0 128 0
  FUNCTION     RE 13
               RS 10
               SPACE 32
               TAB SEPCHAR 9
  NAMING       LCNMSTRT " "
               UCNMSTRT " "
               LCNMCHAR "-."
               UCNMCHAR "-."
  NAMECASE     GENERAL YES
               ENTITY NO
```


| | |
|----------|------------------|
| DELIM | GENERAL SGMLREF |
| | SHORTREF SGMLREF |
| NAMES | SGMLREF |
| QUANTITY | SGMLREF |
| | NAMELEN 17 |
| | LITLEN 718 |
| | GRPCNT 238 |
| | GRPGTCNT 154 |
| | ATTCNT 240 |
| | TAGLVL 100 |
| FEATURES | |
| MINIMIZE | DATATAG NO |
| | OMITTAG YES |
| | RANK NO |
| | SHORTTAG YES |
| LINK | SIMPLE NO |
| | IMPLICIT NO |
| | EXPLICIT NO |
| OTHER | CONCUR NO |
| | SUBDOC YES 100 |
| | FORMAL YES |
| APPINFO | |
| NONE> | |

Appendix D

Document type definition for articles

```
<!-- Elsevier Science Full Length Article DTD version 4.1.0

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Typical invocation:
<!DOCTYPE art PUBLIC "-//ES//DTD full length article DTD version 4.1.0//EN" []>
-->

<!-- notations -->

<!NOTATION TEXT PUBLIC "-//ES//NOTATION text format//EN">
<!NOTATION IMAGE PUBLIC "-//ES//NOTATION image format//EN">
<!NOTATION AUDIO PUBLIC "-//ES//NOTATION audio format//EN">
<!NOTATION VIDEO PUBLIC "-//ES//NOTATION video format//EN">
<!NOTATION APPLICATION PUBLIC "-//ES//NOTATION application format//EN">

<!-- data entities -->

<!ENTITY % font-change "(b|it|rm|of|sc|ge|ssf|ty|scp)" >
<!ENTITY % inline "(f|sup|inf|a|ovl|ov|ovr|unl|un|unr|lim|fen|box|fr|rad|ar|
    arrow|hsp|vsp|inline-fig)" >
<!ENTITY % display "(fd|tbl|fig|textbox|upi|l|dl|qd|enun)" >
<!ENTITY % data "(#PCDATA|%font-change;|%inline;|%display;|fn|anchor|
    cross-ref|intra-ref|inter-ref)*" >

<!-- content model entities -->

<!ENTITY % name "( snm, fnm?, jr? )" >
<!ENTITY % text "( p | sec )+" >
<!ENTITY % titles "( ( title, translated-title? ) | translated-title )" >

<!-- attribute type entities -->

<!ENTITY % abs-class "(author|editor|inspec|teaser)" >
<!ENTITY % accent-pos "(u|m|d)" >
<!ENTITY % arrange "(staggered)" >
<!ENTITY % cpyrt-type "(full-transfer|limited-transfer|no-transfer|unknown|us-gov|
    crown|society|other|joint)" >
<!ENTITY % docsubty "(abs|add|adv|ann|brv|cal|cnf|cor|dis|edi|err|fla|lit|mis|nws|
    pnt|prp|prv|pub|rev|sco|ssu)" >
<!ENTITY % fr-align "(l|c|r)" >
<!ENTITY % halign "(l|c|r|j|d|vmk)" >
<!ENTITY % hline "(bar|tcub|bcub|tsqb|bsqb|circ|tilde|larr|rarr|harr|
    lharu|rharu|tpar|bpar)" >
<!ENTITY % iso639 "(aa|ab|af|am|ar|as|ay|az|ba|be|bg|bh|bi|bn|bo|br|ca|co|cs|...)" >
<!ENTITY % iso3166 "(ad|ae|af|ag|ai|al|am|an|ao|aq|ar|as|at|au|aw|az|ba|bb|...)" >
<!ENTITY % kwd-class "(kwd|abr|jel|msc|pacs|mat|src|idt|psycinfo|neurosci|
    inspec-cc|inspec-ct|inspec-chi)" >
<!ENTITY % language "(de|en|es|fr|pt|ru)" >
<!ENTITY % list-type "(ord|unord|tab)" >
<!ENTITY % loc "(pre|post)" >
<!ENTITY % location "(display|float)" >
<!ENTITY % locator-type "(url|urn|xxx-archive|cern|fiz)" >
```

```

<!ENTITY % object-type "(preprint|embase|geobase|inspec)" >
<!ENTITY % shape "(built|case|sol)" >
<!ENTITY % style "(s|d|t|da|dot|b|bl|n)" >
<!ENTITY % valign "(t|m|b|vj)" >
<!ENTITY % vline "(lpar|rpar|lsqb|rsqb|lcub|rcub|lang|rang|vb|sol|bsol|lceil|rceil|
lfloor|rfloor|dharr|uharr|darr|uarr|varr)" >

<!-- article -->

<!ELEMENT      art          - o          ( copyright, dochead?, doctopic?, fm?, bdy?, bm? )>
<!ATTLIST     art
version       NUTOKEN          #FIXED "4.1.0"
jid           NMTOKEN          #REQUIRED
aid           NMTOKEN          #REQUIRED
pii           NMTOKEN          #IMPLIED
docsubty     %docsubty;       fla
language      %language;      en
refers-to    NMTOKEN          #IMPLIED>

<!-- copyright -->

<!ELEMENT      copyright   - o          ( %data; )>
<!ATTLIST     copyright
type          %cpyrt-type;    #REQUIRED
yr           NUMBER           #REQUIRED>

<!-- document header, e.g. "Short Communication" -->

<!ELEMENT      dochead     - o          ( %data; )>

<!-- document topic, e.g. "Particle Physics" -->

<!ELEMENT      doctopic    - o          ( %data; )>

<!-- article front matter -->

<!ELEMENT      fm          - o          ( atlfn*, atl*, prs?, ded?, aug*, re?, rv*, acc?,
misc?, abs*, kwdg*, nomenclature? )>
<!ELEMENT      atlfn       - o          ( p+ )>
<!ELEMENT      atl         - o          ( %data;, sbt? )>
<!ATTLIST     atl
language      %language;      #IMPLIED>
<!ELEMENT      sbt         - o          ( %data; )>
<!ELEMENT      prs         - o          ( %data; )>
<!ELEMENT      ded         - o          ( %data; )>
<!ELEMENT      aug         - o          ( ( ( collab | au ), cross-ref*, cor?, ead* )+,
aff* )>
<!ELEMENT      collab     - -          ( index?, %data;, caff? )>
<!ELEMENT      caff       - o          ( %data; )>
<!ELEMENT      au         - -          ( degs?, ( fnm? & snm ), jr?, degs?, roles? )>
<!ELEMENT      degs       - o          ( %data; )>
<!ELEMENT      fnm        - o          ( inits?, %data; )>
<!ELEMENT      inits      - -          ( %data; )>
<!ELEMENT      snm        - o          ( index?, %data; )>
<!ELEMENT      index      - -          ( %data; )>
<!ELEMENT      jr         - o          ( %data; )>
<!ELEMENT      roles      - o          ( %data; )>
<!ELEMENT      cor        - o          ( %data; )>
<!ELEMENT      ead        - o          ( %data; )>
<!ELEMENT      aff        - o          ( no?, %data;, ( cty, %data; )?, cny, %data; )>
<!ATTLIST     aff
id            ID              #IMPLIED>
no            - -             ( %data; )>
cty           - -             ( %data; )>
cny           - -             ( %data; )>
<!ATTLIST     cny
cny-code     %iso3166;       #IMPLIED>
re            - o            EMPTY>
<!ATTLIST     re
day          NUMBER          #REQUIRED
mo           NUMBER          #REQUIRED
yr           NUMBER          #REQUIRED>

```

```

<!ELEMENT      rv          - o          EMPTY>
<!ATTLIST     rv          day          NUMBER      #REQUIRED
              mo          NUMBER      #REQUIRED
              yr          NUMBER      #REQUIRED>
<!ELEMENT     acc          - o          EMPTY>
<!ATTLIST     acc          day          NUMBER      #REQUIRED
              mo          NUMBER      #REQUIRED
              yr          NUMBER      #REQUIRED>
<!ELEMENT     misc         - o          ( %data; )>
<!ELEMENT     abs          - o          ( %text; )>
<!ATTLIST     abs          class        %abs-class;  #IMPLIED
              language      %language;   #IMPLIED>
<!ELEMENT     p            - o          ( %data; )>
<!ELEMENT     kwdg         - o          ( kwd+ )>
<!ATTLIST     kwdg         class        %kwd-class;  kwd
              language      %language;   #IMPLIED>
<!ELEMENT     kwd          - -          ( %data;, kwd* )>
<!ELEMENT     nomenclature - o          ( dl+ )>

<!-- article body -->

<!ELEMENT     bdy          - o          ( salutation?, %text; )>
<!ELEMENT     salutation  - o          ( %data; )>
<!ELEMENT     sec          - -          ( no?, st?, %text; )>
<!ATTLIST     sec          id           ID          #IMPLIED>
<!ELEMENT     st           - o          ( %data; )>

<!-- article back matter -->

<!ELEMENT     bm           - o          ( ack?, appm?, bibl*, further-reading*,
              glossary*, vt* )>

<!-- acknowledgement -->

<!ELEMENT     ack          - o          ( p+ )>

<!-- bibliography -->

<!ELEMENT     bibl         - o          ( st?, bib+ )>
<!ELEMENT     bib          - o          ( no?, ( bb | other-ref ) )>
<!ATTLIST     bib          id           ID          #IMPLIED>
<!ELEMENT     bb           - o          ( contribution?, host+ )>
<!ELEMENT     contribution - o          ( authors?, (%titles;)?, comment? )>
<!ATTLIST     contribution language      %iso639;   #IMPLIED>
<!ELEMENT     authors      - o          ( collab | ( author, et-al? ) )>
<!ELEMENT     author       - o          ( %name; )>
<!ELEMENT     et-al        - o          EMPTY >
<!ELEMENT     title        - o          ( %data;, sbt? )>
<!ELEMENT     translated-title - o      ( %data;, sbt? )>
<!ELEMENT     comment      - o          ( %data; )>
<!ELEMENT     host         - o          ( ( issue | book | edited-book | e-host ),
              comment? )>
<!ELEMENT     issue        - o          ( editors?, (%titles;)?, conference?,
              series, issue-nr?, date, pages? )>
<!ELEMENT     conference   - o          ( %data; )>
<!ELEMENT     editors      - o          ( editor+, et-al? )>
<!ELEMENT     editor       - o          ( %name; )>
<!ELEMENT     series       - o          ( (%titles;), volume-nr? )>
<!ELEMENT     volume-nr    - o          ( %data; )>
<!ELEMENT     issue-nr     - o          ( %data; )>
<!ELEMENT     date         - o          ( %data; )>
<!ELEMENT     pages        - o          ( first-page, last-page? )>
<!ELEMENT     first-page   - o          ( %data; )>
<!ELEMENT     last-page    - o          ( %data; )>
<!ELEMENT     book         - o          ( (%titles;)?, edition?, book-series?, date+,

```

```

        publisher? )>
<!ELEMENT      edition          - o      ( %data; )>
<!ELEMENT      publisher        - o      ( name, location? )>
<!ELEMENT      name             - o      ( %data; )>
<!ELEMENT      location         - o      ( %data; )>
<!ELEMENT      edited-book      - o      ( editors?, (%titles;)?, conference?, edition?,
        book-series?, date+, pages?, publisher? )>
<!ELEMENT      book-series      - o      ( editors?, series )>
<!ELEMENT      e-host           - o      ( inter-ref?, date? )>
<!ELEMENT      other-ref        - o      ( %data; )>

<!-- further reading -->

<!ELEMENT      further-reading - o      ( st?, bib+ )>

<!-- appendix -->

<!ELEMENT      appm             o o      ( app+ )>
<!ELEMENT      app              - o      ( no?, st?, %text; )>
<!ATTLIST      app
        id              ID              #IMPLIED>

<!-- glossary -->

<!ELEMENT      glossary         - o      ( st?, glossary-entry+ )>
<!ELEMENT      glossary-entry  - -      ( glossary-heading, glossary-def*, cross-ref*,
        glossary-entry* )>
<!ATTLIST      glossary-entry
        id              ID              #IMPLIED>
<!ELEMENT      glossary-heading - -      ( %data;, glossary-heading* )>
<!ELEMENT      glossary-def     - -      ( %data; )>

<!-- vita -->

<!ELEMENT      vt               - o      ( p+ )>
<!ATTLIST      vt
        id              ID              #IMPLIED
        picture         ENTITY         #IMPLIED>

<!-- footnote -->

<!ELEMENT      fn               - -      ( no?, p+ )>
<!ATTLIST      fn
        id              ID              #REQUIRED>

<!-- anchor in text, the target of e.g. a cross-ref -->

<!ELEMENT      anchor           - -      ( %data; )>
<!ATTLIST      anchor
        id              ID              #REQUIRED>

<!-- displayed quotation -->

<!ELEMENT      qd               - -      ( p+ )>

<!-- enunciation -->

<!ELEMENT      enun             - -      ( no?, st?, p+ )>
<!ATTLIST      enun
        id              ID              #IMPLIED>

<!-- reference to objects in this document -->

<!ELEMENT      cross-ref        - -      ( %data; )>
<!ATTLIST      cross-ref
        refid           IDREFS         #REQUIRED>

<!-- embedded reference to local external entity, e.g. in FIG -->

<!ELEMENT      link             - o      EMPTY>
<!ATTLIST      link
        locator         ENTITY         #REQUIRED>

```

```

<!-- reference to local external entity -->

<!ELEMENT      intra-ref      - -          ( %data; )>
<!ATTLIST     intra-ref
              refid           NAME          #IMPLIED
              locator         ENTITY       #REQUIRED
              object-type     %object-type; #IMPLIED>

<!-- reference to global external entity -->

<!ELEMENT      inter-ref      - -          ( %data; )>
<!ATTLIST     inter-ref
              refid           NAME          #IMPLIED
              locator         CDATA        #IMPLIED
              locator-type    %locator-type; #IMPLIED
              object-type     %object-type; #IMPLIED>

<!-- list -->

<!ELEMENT      l              - -          ( no?, st?, li+ )>
<!ATTLIST     l
              id              ID           #IMPLIED
              type            %list-type;  #REQUIRED>
<!ELEMENT      li             - o          ( p+ )>

<!-- definition list -->

<!ELEMENT      dl             - -          ( no?, st?, ( dt, dd? )+ )>
<!ATTLIST     dl
              id              ID           #IMPLIED>
<!ELEMENT      dt             - o          ( %data; )>
<!ATTLIST     dt
              id              ID           #IMPLIED>
<!ELEMENT      dd             - o          ( p+ )>

<!-- table -->

<!ELEMENT      tbl             - -          ( no?, caption?, ( link | tblbdy )+ )+( tblfn )>
<!ATTLIST     tbl
              id              ID           #IMPLIED
              loc              %location;   float>
<!ELEMENT      caption        - o          ( p+ )>
<!ELEMENT      tblbdy         - o          ( r+ )>
<!ATTLIST     tblbdy
              top-stubs       NUMBER     0
              left-stubs      NUMBER     0
              bottom-stubs    NUMBER     0
              right-stubs     NUMBER     0>
<!ELEMENT      r              - o          ( c+ )>
<!ELEMENT      c              - o          ( top-border?, left-border?, bottom-border?,
              right-border?, %data; )+( vmk )>
<!ATTLIST     c
              cspan           NUMBER     1
              rspan           NUMBER     1
              ca               %halign;   1
              ra               %valign;   t>

<!ELEMENT      top-border     - o          EMPTY>
<!ATTLIST     top-border
              type            %hline;   bar
              style           %style;     s>

<!ELEMENT      left-border    - o          EMPTY>
<!ATTLIST     left-border
              type            %vline;   vb
              style           %style;     s>

<!ELEMENT      bottom-border  - o          EMPTY>
<!ATTLIST     bottom-border
              type            %hline;   bar
              style           %style;     s>

```

```

<!ELEMENT      right-border      - o          EMPTY>
<!ATTLIST     right-border
              type                %vline;      vb
              style               %style;      s>

<!-- vertical mark, only allowed in cell data and only if ca="vmk" -->

<!ELEMENT      vmk                - o          EMPTY>

<!-- table footnote -->

<!ELEMENT      tblfn              - -          ( no?, p+ )>
<!ATTLIST     tblfn
              id                   ID          #REQUIRED>

<!-- inline figure -->

<!ELEMENT      inline-fig         - -          ( link )>

<!-- figure -->

<!ELEMENT      fig                - -          ( no?, caption?, ( link | fig )+ )>
<!ATTLIST     fig
              id                   ID          #IMPLIED
              loc                  %location;  float>

<!-- text box or SGML sub-document -->

<!ELEMENT      textbox            - -          ( no?, caption?, ( link | %text; ) )>
<!ATTLIST     textbox
              id                   ID          #IMPLIED
              loc                  %location;  float>

<!-- unprinted item -->

<!ELEMENT      upi                - -          ( no?, caption?, ( link | upi )+ )>
<!ATTLIST     upi
              id                   ID          #IMPLIED
              loc                  %location;  float>

<!-- displayed formula -->

<!ELEMENT      fd                - -          ( no?, %data; )>
<!ATTLIST     fd
              id                   ID          #IMPLIED>

<!-- inline formula -->

<!ELEMENT      f                  - -          ( %data; ) -( fd )>

<!-- built-up text, uses <r> from <tbl> -->

<!ELEMENT      sup                - -          ( %data; )>
<!ATTLIST     sup
              loc                  %loc;      #IMPLIED
              arrange              %arrange;  #IMPLIED>
<!ELEMENT      inf                - -          ( %data; )>
<!ATTLIST     inf
              loc                  %loc;      #IMPLIED
              arrange              %arrange;  #IMPLIED>
<!ELEMENT      a                  - -          ( ac, ac )>
<!ATTLIST     a
              valign              %accent-pos;  u>
<!ELEMENT      ac                o o          ( %data; )>
<!ELEMENT      ovl                - -          ( %data; )>
<!ATTLIST     ovl
              type                %hline;    #REQUIRED
              style               %style;    s>
<!ELEMENT      ov                  - o          EMPTY>
<!ATTLIST     ov
              id                   ID          #REQUIRED

```

```

type %hline; #REQUIRED
style %style; s>
<!ELEMENT ovr - o EMPTY>
<!ATTLIST ovr
refid IDREF #REQUIRED>
<!ELEMENT unl - - ( %data; )>
<!ATTLIST unl
type %hline; #REQUIRED
style %style; s>
<!ELEMENT un - o EMPTY>
<!ATTLIST un
id ID #REQUIRED
type %hline; #REQUIRED
style %style; s>
<!ELEMENT unr - o EMPTY>
<!ATTLIST unr
refid IDREF #REQUIRED>
<!ELEMENT lim - - ( op, ll?, ul? )>
<!ELEMENT op o o ( %data; )>
<!ELEMENT ll - o ( %data; )>
<!ELEMENT ul - o ( %data; )>
<!ELEMENT fen - - ( %data;, ( cp, %data; )+ )>
<!ELEMENT cp - o EMPTY>
<!ATTLIST cp
type %vline; #REQUIRED
style %style; s>
<!ELEMENT box - - ( %data; )>
<!ATTLIST box
style %style; s>
<!ELEMENT fr - - ( nu, de )>
<!ATTLIST fr
shape %shape; built
align %fr-align; c
style %style; s>
<!ELEMENT nu o o ( %data; )>
<!ELEMENT de - o ( %data; )>
<!ELEMENT rad - - ( rcd, rdx? )>
<!ELEMENT rcd o o ( %data; )>
<!ELEMENT rdx - o ( %data; )>
<!ELEMENT ar - - ( r+ )>
<!ELEMENT arrow - - ( %data; )>
<!ELEMENT hsp - o EMPTY>
<!ATTLIST hsp
sp NUTOKEN "1.0">
<!ELEMENT vsp - o EMPTY>
<!ATTLIST vsp
sp NUTOKEN "1.0">

<!-- font change -->

<!ELEMENT b - - ( %data; )>
<!ELEMENT it - - ( %data; )>
<!ELEMENT of - - ( %data; )>
<!ELEMENT sc - - ( %data; )>
<!ELEMENT ge - - ( %data; )>
<!ELEMENT ssf - - ( %data; )>
<!ELEMENT ty - - ( %data; )>
<!ELEMENT scp - - ( %data; )>
<!ELEMENT rm - - ( %data; )>

<!-- character set -->

<!ENTITY % es-chars PUBLIC "-//ES//ENTITIES special characters version 4.0.1//EN">
%es-chars;

```


Appendix E

Changes with respect to the previous version

The following changes were made to the document type definitions.

1. Updated the opening comment in order to reflect the new version
2. Updated the value of the `version` attribute of `art` to 4.1.0
3. Updated the public identifier of `%es-chars`;
4. Changed the model of `authors` (was ambiguous)
5. Made `fm` in `art` optional (could be empty)
6. Made the end-tags of `inits`, `index`, `no au`, `collab` and `glossary-def` required (clarification)
7. Renamed the parameter entity `%country`; to `iso3166`; (clarification)
8. Changed the attribute value `psychinfo` to `psycinfo` in `%kwd-class`; (CR 129)
9. Changed `FORMAL NO` to `FORMAL YES` in the SGML declaration (CR 130)
10. Changed all public identifiers to formal public identifiers (CR 130)
11. Changed the attribute value `za` to `cd` in `%country`; (CR 131)
12. Changed the model of `atlfm` to `p+` (CR 132)
13. Added three keyword classes to `%kwd-class`; (CR 133)
14. Changed the use and documentation of the `no` element (CR 134)
15. Removed elements `scheme` and `plate` (see CR 134)
16. Added the attribute value `joint` to `%cpyrt-type`; (CR 137)
17. Changed `*` to `+` in the models of `fig`, `tbl` and `upi` (CR 141)
18. Changed the model of `upi` in order to allow nesting (see CR 141)
19. Added the attribute values `tpar` and `bpar` to `%hline`; (CR 142)
20. Added the attribute values `dharr`, `uharr`, `darr`, `uarr` and `varr` to `%vline`; (CR 142)
21. Added parameter entity `%iso639`; for the ISO 639 language codes (CR 144)
22. Changed the language attribute of `title` to `%iso639`; (CR 144)
23. Moved language attribute from `title` to `contribution` (see CR 144)
24. Added new value `fiz` to `%locator-type`; (CR 145)
25. Added new value `inspec` to `%object-type`; (CR 145)
26. Made the end tags of `glossary-entry` and `glossary-heading` mandatory (CR 146)
27. Added the attribute value `brv` to `%docsubty`; (CR 147)

The entity declarations of all special characters can be found in the file `chars401.ent`. Please note that no significant changes were made to the entity list: only the opening comment has been updated and the following changes have been applied (CR 138 has not been implemented).

1. Added entities `lozf` and `z.ltril`
2. Changed entity `z.creps` to `z.crepsv`
3. Changed entity `z.reveps` to `z.repsiv`
4. Changed entity `z.invr` to `z.pinvr`
5. Removed entities `z.pcaph`, `z.psmca`, `z.psmcb`, `z.psmce`, `z.psmcg`, `z.psmci`, `z.psmcn`, `z.psmcr`, `z.psmcu` and `z.psmcy`

Appendix F

ISO 3166 country list

This appendix gives a description of the two-letter country codes based on International Standard ISO 3166. The attribute `cny-code` of the element `cny` takes values in this list; it is used to uniquely identify the country.

| cny-code | Full name | cny-code | Full name |
|----------|----------------------------|----------|--|
| ad | Andorra | cu | Cuba |
| ae | United Arab Emirates | cv | Cape Verde |
| af | Afghanistan | cx | Christmas Island |
| ag | Antigua and Barbuda | cy | Cyprus |
| ai | Anguilla | cz | Czech Republic |
| al | Albania | de | Germany |
| am | Armenia | dj | Djibouti |
| an | Netherlands Antilles | dk | Denmark |
| ao | Angola | dm | Dominica |
| aq | Antarctica | do | Dominican Republic |
| ar | Argentina | dz | Algeria |
| as | American Samoa | ec | Ecuador |
| at | Austria | ee | Estonia |
| au | Australia | eg | Egypt |
| aw | Aruba | eh | Western Sahara |
| az | Azerbaijan | er | Eritrea |
| ba | Bosnia & Hercegovina | es | Spain |
| bb | Barbados | et | Ethiopia |
| bd | Bangladesh | fi | Finland |
| be | Belgium | fj | Fiji |
| bf | Burkina Faso | fk | Malvinas |
| bg | Bulgaria | fm | Micronesia |
| bh | Bahrain | fo | Faroe Islands |
| bi | Burundi | fr | France |
| bj | Benin | ga | Gabon |
| bm | Bermuda | gb | UK |
| bn | Brunei | gd | Grenada |
| bo | Bolivia | ge | Georgia |
| br | Brazil | gf | French Guiana |
| bs | Bahamas | gh | Ghana |
| bt | Bhutan | gi | Gibraltar |
| bv | Bouvet Island | gl | Greenland |
| bw | Botswana | gm | Gambia |
| by | Byelorussia | gn | Guinea |
| bz | Belize | gp | Guadeloupe |
| ca | Canada | gq | Equatorial Guinea |
| cc | Cocos (Keeling) Islands | gr | Greece |
| cd | Democratic Republic Congo | gs | Sth Georgia and the Sth Sandwich Islands |
| cf | Central African Republic | gt | Guatemala |
| cg | Congo | gu | Guam |
| ch | Switzerland | gw | Guinea-Bissau |
| ci | Ivory Coast | gy | Guyana |
| ck | Cook Islands | hk | Hong Kong |
| cl | Chile | hm | Heard and Mc Donald Islands |
| cm | Cameroon | hn | Honduras |
| cn | People's Republic of China | hr | Croatia |
| co | Colombia | ht | Haiti |
| cr | Costa Rica | hu | Hungary |

| cny-code | Full name | cny-code | Full name |
|----------|--------------------------------|----------|-------------------------|
| id | Indonesia | mt | Malta |
| ie | Ireland | mu | Mauritius |
| il | Israel | mv | Maldives |
| in | India | mw | Malawi |
| io | British Indian Ocean Territory | mx | Mexico |
| iq | Iraq | my | Malaysia |
| ir | Iran | mz | Mozambique |
| is | Iceland | na | Namibia |
| it | Italy | nc | New Caledonia |
| jm | Jamaica | ne | Niger |
| jo | Jordan | nf | Norfolk Island |
| jp | Japan | ng | Nigeria |
| ke | Kenya | ni | Nicaragua |
| kg | Kirgiziya | nl | Netherlands |
| kh | Cambodia | no | Norway |
| ki | Kiribati | np | Nepal |
| km | Comoros | nr | Nauru |
| kn | Saint Kitts and Nevis | nu | Niue |
| kp | North Korea | nz | New Zealand |
| kr | South Korea | om | Oman |
| kw | Kuwait | pa | Panama |
| ky | Cayman Islands | pe | Peru |
| kz | Kazakhstan | pf | French Polynesia |
| la | Laos | pg | Papua New Guinea |
| lb | Lebanon | ph | Philippines |
| lc | Saint Lucia | pk | Pakistan |
| li | Liechtenstein | pl | Poland |
| lk | Sri Lanka | pm | St. Pierre and Miquelon |
| lr | Liberia | pn | Pitcairn |
| ls | Lesotho | pr | Puerto Rico |
| lt | Lithuania | pt | Portugal |
| lu | Luxembourg | pw | Palau |
| lv | Latvia | py | Paraguay |
| ly | Libyan Arab Jamahiriya | qa | Qatar |
| ma | Morocco | re | Reunion |
| mc | Monaco | ro | Romania |
| md | Moldavia | ru | Russia |
| mg | Madagascar | rw | Rwanda |
| mh | Marshall Islands | sa | Saudi Arabia |
| mk | Macedonia | sb | Solomon Islands |
| ml | Mali | sc | Seychelles |
| mm | Burma | sd | Sudan |
| mn | Mongolia | se | Sweden |
| mo | Macau | sg | Singapore |
| mp | Northern Mariana Islands | sh | St. Helena |
| mq | Martinique | si | Slovenia |
| mr | Mauritania | sj | Svalbard and Jan Mayen |
| ms | Montserrat | sk | Slovak Republic |

| cny-code | Full name |
|----------|--------------------------------|
| sl | Sierra Leone |
| sm | San Marino |
| sn | Senegal |
| so | Somalia |
| sr | Suriname |
| st | Sao Tome and Principe |
| sv | El Salvador |
| sy | Syria |
| sz | Swaziland |
| tc | Turks and Caicos Islands |
| td | Chad |
| tf | French Southern Territories |
| tg | Togo |
| th | Thailand |
| tj | Tadzhikistan |
| tk | Tokelau |
| tm | Turkmenistan |
| tn | Tunisia |
| to | Tonga |
| tp | East Timor |
| tr | Turkey |
| tt | Trinidad and Tobago |
| tv | Tuvalu |
| tw | Taiwan |
| tz | Tanzania |
| ua | Ukraine |
| ug | Uganda |
| um | US Minor Outlying Islands |
| us | USA |
| uy | Uruguay |
| uz | Uzbekistan |
| va | Vatican City State |
| vc | St. Vincent and the Grenadines |
| ve | Venezuela |
| vg | British Virgin Islands |
| vi | US Virgin Islands |
| vn | Viet Nam |
| vu | Vanuatu |
| wf | Wallis and Futuna Islands |
| ws | Samoa |
| ye | Yemen |
| yt | Mayotte |
| yu | Minor Yugoslavia |
| zm | South Africa |
| zr | Zambia |
| zw | Zimbabwe |

Appendix G

ISO 639 language list

This appendix gives a description of the two-letter languages codes from International Standard ISO 639. The attribute `language` of the element `contribution` takes values in this list; it is used to specify the language of the contribution.

Note that the `language` attribute of the elements `art`, `atl`, `abs` and `kwdg` take their values in the subset consisting of the six language codes `de`, `en`, `es`, `fr`, `pt` and `ru`.

| language | Language | language | Language | language | Language |
|----------|--------------|----------|----------------|----------|----------------|
| ab | Abkhazian | is | Icelandic | gd | Scots Gaelic |
| aa | Afar | in | Indonesian | sr | Serbian |
| af | Afrikaans | ia | Interlingua | sh | Serbo-Croatian |
| sq | Albanian | ie | Interlingue | st | Sesotho |
| am | Amharic | ik | Inupiak | tn | Setswana |
| ar | Arabic | ga | Irish | sn | Shona |
| hy | Armenian | it | Italian | sd | Sindhi |
| as | Assamese | ja | Japanese | si | Singhalese |
| ay | Aymara | jw | Javanese | ss | Siswati |
| az | Azerbaijani | kn | Kannada | sk | Slovak |
| ba | Bashkir | ks | Kashmiri | sl | Slovenian |
| eu | Basque | kk | Kazakh | so | Somali |
| bn | Bengali | rw | Kinyarwanda | es | Spanish |
| dz | Bhutani | ky | Kirghiz | su | Sudanese |
| bh | Bihari | rn | Kirundi | sw | Swahili |
| bi | Bislama | ko | Korean | sv | Swedish |
| br | Breton | ku | Kurdish | tl | Tagalog |
| bg | Bulgarian | lo | Laothian | tg | Tajik |
| my | Burmese | la | Latin | ta | Tamil |
| be | Byelorussian | lv | Latvian | tt | Tatar |
| km | Cambodian | ln | Lingala | te | Tegulu |
| ca | Catalan | lt | Lithuanian | th | Thai |
| zh | Chinese | mk | Macedonian | bo | Tibetan |
| co | Corsican | mg | Malagasy | ti | Tigrinya |
| hr | Croatian | ms | Malay | to | Tonga |
| cs | Czech | ml | Malayalam | ts | Tsonga |
| da | Danish | mt | Maltese | tr | Turkish |
| nl | Dutch | mi | Maori | tk | Turkmen |
| en | English | mr | Marathi | tw | Twi |
| eo | Esperanto | mo | Moldavian | uk | Ukranian |
| et | Estonian | mn | Mongolian | ur | Urdu |
| fo | Faeroese | na | Nauru | uz | Uzbek |
| fa | Farsi | ne | Nepali | vi | Vietnamese |
| fj | Fiji | no | Norwegian | vo | Volapuk |
| fi | Finnish | oc | Occitan | cy | Welsh |
| fr | French | or | Oriya | wo | Wolof |
| fy | Frisian | om | Oromo | xh | Xhosa |
| gl | Galician | ps | Pashto | ji | Yiddish |
| ka | Georgian | pl | Polish | yo | Yoruba |
| de | German | pt | Portuguese | zu | Zulu |
| el | Greek | pa | Punjabi | | |
| kl | Greenlandic | qu | Quechua | | |
| gn | Guarani | rm | Rhaeto-Romance | | |
| gu | Gujarati | ro | Romanian | | |
| ha | Hausa | ru | Russian | | |
| iw | Hebrew | sm | Samoan | | |
| hi | Hindi | sg | Sangro | | |
| hu | Hungarian | sa | Sanskrit | | |

Appendix H

Character set

The character set is defined by entity references whose definitions can be found in a separate file `chars401.ent`. A typical definition looks like this:

```
<!ENTITY cup SDATA "&cup;">
```

For every entity ('symbol') in this list, an appropriate identification of the equivalent in the presentation system must be found.

| Entity name | Meaning | Sample output |
|---------------------------|---------------------|---------------|
| <code>&dagger;</code> | dagger symbol | † |
| <code>&AElig;</code> | A-E ligature | Æ |
| <code>&oplus;</code> | plus sign in circle | ⊕ |
| <code>&omega;</code> | Greek letter omega | ω |

Two entities require some explanation.

- ` `: This entity does not correspond to a printable character. It functions as a non-breaking space, i.e. an inter-word space that cannot be used as a line-breaking point during hyphenation and justification (H&J).
- ` `: This entity is used for punctuation space, or thousand-separator, in large numbers. It can be represented, for instance, by a thin space or a comma, depending on the style.

The complete set of symbols used in all publications of Elsevier Science – is given in the *Handbook Procedures and Standards*, chapter 45.01.01. On the following three pages we reproduce the tables that contain this set of symbols; these tables, B, C and P, are often called the 'Elsevier Science Grid'.

The entity references for this character set are incorporated in one document that is referenced from the DTDs.

It is assumed that the characters RE, RS and TAB are never used in document instances, even though they are allowed by the SGML declaration, see appendix C. Multiple spaces count as one. The character (byte) values 32–126 are the only ASCII characters that can be used 'as is' in document instances, with the exception of the characters given below.

| | | |
|---|------------------------------|-------------------------|
| " | quotation mark, double quote | <code>&quot;</code> |
| & | ampersand | <code>&amp;</code> |
| < | less-than sign | <code>&lt;</code> |

Following the Grid we include three tables that serve as indexes to the Grid. These tables give the Grid coordinates of the symbol, the name of the entity reference corresponding to the symbol, and a short description. The first index is sorted alphabetically on the entity names; the second one is sorted on the Grid coordinates. The Grid coordinates are used in the following way: the coordinates are given as a sequence of three letters, for example 'Bcd'. The entity with these coordinates can be found in table B, column c, row d.

Some of the cells in the grid do not contain an entity name, but an accent construction. We decompose certain glyphs in a letter and an accent for structural reasons (for information about this practice in the area of phonetics please refer to [5]). This does not mean that during presentation it always has to be *created* as such. It is well possible that for some letter-accent combinations there is a mapping to a position in a (virtual) font. This resembles the situation with ligatures,

e.g. the well-known ‘fi’ ligature. Structurally, we distinguish the letters ‘f’ and ‘i’ as being separate, but together they sometimes (depending on the font, and perhaps the position in the word) combine to a special glyph.

| | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | | |
|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a | ↔ | ↘ | ↓ | < | > | ‡ | ‡ | & | ∇ | Σ | < | ≠ | > | ≠ | ∈ | ∉ | ⊃ | ⊄ | × | ‡ | | a | |
| b | ⇒ | ↘ | ↓ | ⌞ | ⌟ | | | € | ∃ | ∏ | ≠ | ≠ | ≠ | | | | | | x | ‡ | | b | |
| c | ↔ | ↗ | ↓ | ⌈ | ⌊ | § | | \$ | ∅ | ∏ | ≠ | | ≠ | | ∩ | ∩ | ∩ | ∩ | · | ± | € | c | |
| d | ↔ | ↗ | ↓ | ⌈ | ⌊ | ¶ | | £ | ∩ | ∏ | ≠ | ≠ | ≠ | ≠ | ∩ | ∩ | ∩ | ∩ | × | ‡ | | d | |
| e | ← | ↗ | ↑ | | | ⊗ | | f | | √ | ≠ | ≠ | ≠ | ≠ | | ∩ | | ∩ | × | ‡ | | e | |
| f | ← | ← | ↑ | | | ↘ | ◇ | ¥ | ∩ | ∩ | ≠ | ≠ | ≠ | ≠ | | ∩ | | ∩ | × | * | | f | |
| g | ← | ↗ | ↑ | | | ◇ | ◇ | ℙ | ∩ | ∩ | ≠ | ≠ | ≠ | ≠ | ∩ | ∩ | ∩ | ∩ | < | | h | g | |
| h | ← | ↗ | ↑ | | | ◇ | ◇ | ∩ | ∩ | ∩ | ≠ | ≠ | ≠ | ≠ | ∩ | ∩ | ∩ | ∩ | > | | h | h | |
| i | ↔ | | ↗ | | ‡ | ♥ | ♦ | ∩ | S | ≠ | ≠ | ≠ | ≠ | | ∩ | | ∩ | | ∩ | | | i | |
| j | ↔ | ↗ | ↓ | | ‡ | ♠ | | ∩ | ∩ | ≠ | ≠ | ≠ | ≠ | ∩ | | ∩ | | | | | | j | |
| k | ↔ | ↗ | ↗ | | : | ♣ | | ∩ | ∩ | ≠ | ≠ | ≠ | ≠ | ∩ | ∩ | ∩ | ∩ | ⊕ | | | ∩ | k | |
| l | ↔ | ↗ | ↗ | | : | ☆ | | ∩ | ∩ | ≠ | | ≠ | | ∩ | ∩ | ∩ | ∩ | ⊖ | - | | | l | |
| m | → | → | ↕ | | : | ★ | | % | ∩ | ∩ | ≠ | | ≠ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | m | |
| n | ⇒ | ⇒ | ↕ | | | □ | ○ | % | ∩ | ∩ | ≠ | ∩ | ≠ | | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | n | |
| o | → | | | | | ■ | ● | | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | o | |
| p | ⇒ | ↻ | ↻ | ⊥ | | ▣ | ▣ | | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | p | |
| q | ⇒ | ↻ | ↻ | ⊥ | | ▣ | ▣ | | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | q | |
| r | ↔ | ↔ | ↕ | ⊥ | | ▣ | ▣ | © | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | r | |
| s | ↔ | ↔ | ↕ | ⊥ | ∩ | ▣ | ▣ | ® | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | s | |
| t | ↔ | | ↕ | ⊥ | | ▣ | ● | ™ | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | t | |
| u | ↔ | | ↕ | ⊥ | ∩ | ▣ | ● | | ∩ | f | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | u | |
| v | ← | | | ⊥ | ∩ | ▣ | ● | | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | v | |
| w | → | ↗ | ↗ | ⊥ | | ▣ | ● | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | w | |
| x | → | | ↗ | ⊥ | ∩ | ▣ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | x | |
| y | ← | | ↗ | ⊥ | ∩ | ▣ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | y | |
| z | ↔ | | ↗ | | | ▣ | | ∩ | f | ∩ | ∩ | ∩ | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | z | |
| 1 | → | ↗ | ↕ | | | △ | △ | | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | 1 | |
| 2 | ↔ | ↗ | ↕ | | | ▽ | ▽ | | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | 2 | |
| 3 | ↔ | ↗ | | └ | └ | ▽ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | 3 | |
| 4 | | ↗ | | └ | └ | △ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | 4 | |
| 5 | | ↗ | | └ | └ | ▲ | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | | ∩ | | ∩ | ∩ | ∩ | ∩ | ∩ | 5 | |
| 6 | | | | | + | ▼ | ▣ | ∩ | | ∩ | | ∩ | | ∩ | | ∩ | | ∩ | ∩ | ∩ | ∩ | 6 | |
| 7 | | | | | # | ▶ | ▣ | ∩ | < | ∩ | | ∩ | | ∩ | | ∩ | | ∩ | ∩ | ∩ | ∩ | 7 | |
| 8 | | | | | | ▶ | ▣ | ∩ | < | ∩ | * | * | ∩ | | ∩ | | ∩ | | ∩ | ∩ | ∩ | 8 | |
| 9 | | | | | | ▶ | ▣ | ∩ | < | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | 9 |
| 0 | | | | | | | | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | ∩ | 0 |
| | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | | |

Figure H.1: Grid table B: symbols

| | A | B | C | D | E | F | G | H | I | J | |
|---|---|---|---|---|---|---|---|---|---|----------|---|
| a | ´ | a | А | α | Λ | æ | | ⋈ | | | a |
| b | ` | б | Б | β | В | Æ | | ⋈ | | <i>B</i> | b |
| c | ” | ц | Ц | χ | Х | ċ | | ⋈ | | | c |
| d | ^ | д | Д | δ | Δ | Ð | | λ | | | d |
| e | ¨ | е | Е | ε | Ε | œ | i | | | | e |
| f | | ф | Ф | φ | Φ | Œ | | | | | f |
| g | ° | г | Г | γ | Γ | | | | | | g |
| h | ¸ | х | Х | η | Н | ı | | | | <i>H</i> | h |
| i | ˘ | и | И | ι | І | J | | | | | i |
| j | ˇ | я | Я | ϑ | Θ | | | | | | j |
| k | ˇ | к | К | κ | Κ | | | | | | k |
| l | ¸ | л | Л | λ | Λ | ł | | | | <i>L</i> | l |
| m | ˘ | м | М | μ | Μ | Ł | | | | <i>M</i> | m |
| n | • | н | Н | ν | Ν | | | | | | n |
| o | • | о | О | ο | Ο | ø | | | | <i>O</i> | o |
| p | … | п | П | π | Π | ∅ | | | | | p |
| q | … | ч | Ч | θ | Θ | | ı | | | | q |
| r | | р | Р | ρ | Ρ | | | | | | r |
| s | | с | С | σ | Σ | ß | | | | | s |
| t | | т | Т | τ | Τ | | | | | | t |
| u | | у | У | υ | Υ | ª | | | | | u |
| v | | в | В | ς | | º | | | | | v |
| w | | щ | Щ | ω | Ω | | | | | | w |
| x | ¸ | ш | Ш | ξ | Ξ | | | | | | x |
| y | / | ы | Ы | ψ | Ψ | | | | | | y |
| z | / | з | З | ζ | Z | | | | | | z |
| 1 | | э | Э | | ∇ | | | | | | 1 |
| 2 | | і | І | ω | Ω | | | | | | 2 |
| 3 | | й | Й | ε | | | | | | | 3 |
| 4 | | ь | Ь | φ | | | | | | | 4 |
| 5 | | ю | Ю | Ϝ | | | | | | | 5 |
| 6 | | ъ | Ъ | ð | | | | | | | 6 |
| 7 | | ж | Ж | ϐ | < | > | | | | | 7 |
| 8 | | | | κ | « | » | | | | | 8 |
| 9 | | | | ϙ | ‘ | ’ | | | | | 9 |
| 0 | | | | ι | “ | ” | | | | | 0 |
| | A | B | C | D | E | F | G | H | I | J | |

Figure H.2: Grid table C: alphabets and accents

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | | |
| a | à | á | â | ã | ä | Å | À | Á | | | | | | | | | | | | | | a |
| b | â | á | â | ã | ä | | | | | | | | | | | | | | | | | b |
| c | ç | ć | ċ | ċ | ċ | | | | | | | | | | | | | | | | | c |
| d | đ | ď | đ | đ | ð | Ð | đ | Ð | đ | | | | | | | | | | | | | d |
| e | è | é | ê | ë | Ê | É | Ë | È | Ë | È | | | | | | | | | | | | e |
| f | ƒ | | | | | | | | | | | | | | | | | | | | | f |
| g | ġ | ĝ | Ĝ | Ț | Ț | Ĝ | | | | | | | | | | | | | | | | g |
| h | ĥ | ħ | ĥ | ĥ | ĥ | H | ĥ | ħ | ĥ | | | | | | | | | | | | | h |
| i | ï | í | ı | ı | ı | | | | | | | | | | | | | | | | | i |
| j | ĵ | ĵ | Ĵ | ĵ | Ĵ | | | | | | | | | | | | | | | | | j |
| k | ķ | ķ | Ķ | | | | | | | | | | | | | | | | | | | k |
| l | ł | ł | Ł | ł | Ł | L | ł | ł | | | | | | | | | | | | | | l |
| m | ṃ | ṃ | Ṃ | | | | | | | | | | | | | | | | | | | m |
| n | ñ | ñ | Ñ | ñ | Ñ | N | ñ | ñ | | | | | | | | | | | | | | n |
| o | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | | | | | | | | | | | | o |
| p | Ɔ | Ɔ | Ɔ | Ɔ | Ɔ | | | | | | | | | | | | | | | | | p |
| q | q | | | | | | | | | | | | | | | | | | | | | q |
| r | ŕ | ŕ | Ŗ | ŕ | Ŗ | R | ŕ | ŕ | ŕ | ŕ | | | | | | | | | | | | r |
| s | š | š | Š | š | Š | S | š | š | | | | | | | | | | | | | | s |
| t | ţ | ţ | Ţ | ţ | Ţ | T | ţ | ţ | | | | | | | | | | | | | | t |
| u | ŭ | ŭ | Ŭ | ŭ | Ŭ | | | | | | | | | | | | | | | | | u |
| v | v | v | | | | | | | | | | | | | | | | | | | | v |
| w | w | w | | | | | | | | | | | | | | | | | | | | w |
| x | x | x | | | | | | | | | | | | | | | | | | | | x |
| y | ŷ | ŷ | Ŷ | | | | | | | | | | | | | | | | | | | y |
| z | ž | ž | Ž | ž | Ž | Z | ž | ž | | | | | | | | | | | | | | z |
| 0 | ⁀ | ⁀ | ⁀ | | | | | | | | | | | | | | | | | | | 0 |
| 1 | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | ⁁ | 1 |
| 2 | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | ⁂ | 2 |
| 3 | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | ⁃ | 3 |
| 4 | ⁄ | ⁄ | ⁄ | | | | | | | | | | | | | | | | | | | 4 |
| 5 | ⁅ | ⁅ | ⁅ | | | | | | | | | | | | | | | | | | | 5 |
| 6 | ⁆ | ⁆ | ⁆ | ⁆ | ⁆ | | | | | | | | | | | | | | | | | 6 |
| 7 | ⁇ | ⁇ | ⁇ | ⁇ | ⁇ | ⁇ | ⁇ | ⁇ | ⁇ | ⁇ | | | | | | | | | | | | 7 |
| 8 | ⁈ | ⁈ | | | | | | | | | | | | | | | | | | | | 8 |
| | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | | |

Figure H.3: Grid table P: phonetic alphabet and accents

| Entity name | Description | Coordinate |
|---------------------------|--|------------|
| <code>&acoint;</code> | contour integral, anti-clockwise | Bj1 |
| <code>&acute;</code> | acute (accent) | CAa |
| <code>&aelig;</code> | ash (phonetic symbol) | Pea |
| <code>&AElig;</code> | ligature AE | CFb |
| <code>&aleph;</code> | Aleph (Hebrew) | CHa |
| <code>&alpha;</code> | alpha – Greek – | CDa |
| <code>&amalg;</code> | inverted prod. (conjunction); amalgamation, coprod | Bjd |
| <code>&amp;</code> | ampersand | Bha |
| <code>&and;</code> | logical and; small infinum; wedge | Bin |
| <code>&And;</code> | double infinum (conjunction); double logical and | Bir |
| <code>&ang;</code> | angle | Bk1 |
| <code>&ang90;</code> | right (90 degree) angle; factorial sign | Bk5 |
| <code>&angmsd;</code> | angle-measured | Bk2 |
| <code>&angsph;</code> | spherical angle | Bk3 |
| <code>&ap;</code> | approximate; asymptotic | Bq4 |
| <code>&ape;</code> | approximate, equals; asymptotic or equal to | Bq5 |
| <code>&apid;</code> | triple tilde; approximately identical to | Bq6 |
| <code>&ast;</code> | mid asterisk | Bk8 |
| <code>&asymp;</code> | cupcap; asymptotically equal to | Brs |
| <code>&Barwed;</code> | double bar wedge; log and, dbl bar | Biz |
| <code>&barwed;</code> | logical and, bar above; projective | Bix |
| <code>&bcong;</code> | reverse congruent | Bq9 |
| <code>&bcy;</code> | beh – Cyrillic– | CBb |
| <code>&Bcy;</code> | Beh – Cyrillic – | CCb |
| <code>&becaus;</code> | because | Brt |
| <code>&beta;</code> | beta (phonetic symbol) | Pdb |
| <code>&beth;</code> | Beth (Hebrew) | CHb |
| <code>&bowtie;</code> | bowtie | Bsf |
| <code>&bprime;</code> | backprime; reverse prime | B15 |
| <code>&breve;</code> | breve (accent) | CAj |
| <code>&brvbar;</code> | broken vertical bar | Ben |
| <code>&bsim;</code> | reverse mainline tilde; reverse similar | Bq7 |
| <code>&bsime;</code> | reverse similar, equals | Bq8 |
| <code>&bull;</code> | filled circle; bullet | Bgo |
| <code>&bump;</code> | bumpy equals; geometrically equiv. to; appr. equal | Brr |
| <code>&bumpe;</code> | bumpy equals, equals; approximately equal to | Brp |
| <code>&cap;</code> | prod. of intrsctn of cl./sets; vee; small intrsctn | Big |
| <code>&Cap;</code> | double intersection; (Cap) | Bii |
| <code>&caron;</code> | Hacek (Czech.), caron, wedge (accent) | CAk |
| <code>&ccoint;</code> | contour integral, clockwise | Bj2 |
| <code>&cedil;</code> | cedilla (accent) | CAI |
| <code>&cent;</code> | cent sign | Bhb |
| <code>&check;</code> | check mark; tick | Bff |
| <code>&chi;</code> | chi (phonetic symbol) | Pbx |
| <code>&cir;</code> | circle, open | Bgn |
| <code>&circ;</code> | circumflex, Caret (accent) | CAd |
| <code>&cire;</code> | circle, equals | Bqn |

| Entity name | Description | Coordinate |
|---------------------------|--|------------|
| <code>&clubs;</code> | clubsuit; club, filled | Bfk |
| <code>&Colon;</code> | four dots in square; as | Btt |
| <code>&colone;</code> | colon, equals; is defined as | Bqt |
| <code>&comp;</code> | stretched c (phonetic symbol) | Pec |
| <code>&compfn;</code> | centered circle; composite function; convolution | Bk9 |
| <code>&cong;</code> | congruent with; similar to | Bq3 |
| <code>&conint;</code> | contour integral; circuital integral | Bjv |
| <code>&coprod;</code> | inverted product (cumulator) | Bjc |
| <code>&copy;</code> | copyright sign (circled C) | Bhr |
| <code>&ctdot;</code> | triple dot, centered | Bn9 |
| <code>&cuepr;</code> | curly equals (above), precedes | Bkv |
| <code>&cuesc;</code> | curly equals (above), succeeds | Bmv |
| <code>&cularr;</code> | left curved arrow; anti-clockwise arrow | Bcp |
| <code>&Cup;</code> | double union; (Cup) | Bih |
| <code>&cup;</code> | sum or union of classes or sets; logical sum | Bif |
| <code>&curarr;</code> | right curved arrow; clockwise arrow | Bcq |
| <code>&cuvee;</code> | curly logical or | Biv |
| <code>&cuwed;</code> | curly logical and | Biu |
| <code>&cwint;</code> | clockwise integral | Bj3 |
| <code>&dagger;</code> | dagger | Bfa |
| <code>&Dagger;</code> | double dagger; diesis | Bga |
| <code>&daleth;</code> | Daleth (Hebrew) | CHc |
| <code>&dArr;</code> | down double arrow; implies | Bcd |
| <code>&darr;</code> | downward arrow; decreases | Bcc |
| <code>&darr2;</code> | two downward arrows | Bcu |
| <code>&dashv;</code> | dash, vertical; turnstile | Bdt |
| <code>&dblac;</code> | double acute (accent) | CAc |
| <code>&Dcy;</code> | Deh – Cyrillic – | CCd |
| <code>&dcy;</code> | deh – Cyrillic– | CBd |
| <code>&deg;</code> | degree sign | Bk7 |
| <code>&delta;</code> | delta – Greek – | CDd |
| <code>&Delta;</code> | delta (capital); increment – Greek – | CEd |
| <code>&dharrl;</code> | down harpoon left | Bca |
| <code>&dharr;</code> | down harpoon right | Bcb |
| <code>&diam;</code> | diamond | Bfg |
| <code>&diams;</code> | diamondsuit; diamond, filled | Bfh |
| <code>&divide;</code> | division sign | Bto |
| <code>&divonx;</code> | division on times | Btf |
| <code>&dlcorn;</code> | down left corner | Bd3 |
| <code>&dminus;</code> | minus with dot beneath; tight dotted minus | Btm |
| <code>&doplus;</code> | plus sign, dot below; tight dotted plus | Bta |
| <code>&dot;</code> | dot above (accent) | CAo |
| <code>&DotDot;</code> | quadruple dot (accent) | CAq |
| <code>&drcorn;</code> | down right corner | Be3 |
| <code>&dtdot;</code> | triple dot, diagonal NW-SE | Bp9 |
| <code>&dtri;</code> | down triangle open | Bf2 |
| <code>&dtrif;</code> | down triangle, filled | Bf6 |

| Entity name | Description | Coordinate |
|---------------------------|--|------------|
| <code>&ecir;</code> | circle in equals sign | Bqs |
| <code>&ecolon;</code> | equals, colon; defines | Bqu |
| <code>&Ecy;</code> | Eh – Cyrillic – | CC1 |
| <code>&ecy;</code> | eh – Cyrillic – | CB1 |
| <code>&eDDot;</code> | equal, double dot above and under | Bqv |
| <code>&edot;</code> | equals, dot above; approaches the limit | Bqo |
| <code>&eDot;</code> | equals, even dots; approximately equal | Bqp |
| <code>&efDot;</code> | equals, falling dots; appr. equal to; image of | Bqz |
| <code>&egs;</code> | equal-or-greater, slanted | Bmc |
| <code>&ell;</code> | roman script-l | Buk |
| <code>&els;</code> | equal-or-less, slanted | Bkc |
| <code>&empty;</code> | slashed zero; empty set | Bu0 |
| <code>&emptyv;</code> | solidus in circle; empty set; null set; diameter | Bs1 |
| <code>&epsi;</code> | epsilon (Porson) – Greek – | CDe |
| <code>&epsiv;</code> | epsilon (phonetic symbol) | Pfe |
| <code>&equest;</code> | equal, questionmark | Bqm |
| <code>&equiv;</code> | equivalent; identical with; triple equals | Bqx |
| <code>&erDot;</code> | equal, rising dots | Bqy |
| <code>&esim;</code> | equal, similar | Bkp |
| <code>&eta;</code> | eta – Greek – | CDh |
| <code>&eth;</code> | eth (phonetic symbol) | Ped |
| <code>&ETH;</code> | ETH (phonetic symbol) | Pfd |
| <code>&exist;</code> | reversed cap. E; there exists; at least one exists | Bib |
| <code>&fcy;</code> | ef – Cyrillic– | CBf |
| <code>&Fcy;</code> | Ef – Cyrillic – | CCf |
| <code>&female;</code> | Venus; female | Bh4 |
| <code>&flat;</code> | flat (music) | Bhw |
| <code>&forall;</code> | inverted capital A; for all | Bia |
| <code>&fork;</code> | pitchfork | Bm3 |
| <code>&frown;</code> | down curve, frown | Bm2 |
| <code>&Gamma;</code> | gamma (capital) – Greek – | CEg |
| <code>&gamma;</code> | gamma – Greek – | CDg |
| <code>&gammad;</code> | digamma | CD5 |
| <code>&gap;</code> | greater than, approximately | Bmg |
| <code>&gcy;</code> | geh – Cyrillic– | CBg |
| <code>&Gcy;</code> | Geh – Cyrillic – | CCg |
| <code>&gdot;</code> | greater than, with dot | Bmo |
| <code>&ge;</code> | greater than or equal to | Bmd |
| <code>&gE;</code> | greater than or double equal to | Bme |
| <code>&gEl;</code> | greater, (double) equal, or less | Bmk |
| <code>&geli;</code> | greater, equal, or less | Bmj |
| <code>&ges;</code> | greater than or equal to, slanted | Bmb |
| <code>&Gg;</code> | much greater than (triple) | Bmn |
| <code>&gimel;</code> | Gimel (Hebrew) | CHd |
| <code>&gl;</code> | greater than or less than | Bmi |
| <code>&gnap;</code> | greater than but not approximate | Bng |
| <code>&gne;</code> | greater than, not equals to | Bnd |

| Entity name | Description | Coordinate |
|-------------|--|------------|
| ≩ | greater than but not (double) equal to | Bne |
| ⋧ | greater than but not similar to | Bnf |
| ` | grave (accent) | CAb |
| ≳ | greater than or similar to; greater than approx. | Bmf |
| ≫ | much greater than (double) | Bml |
| Ъ | Tvyordyy znak – Cyrillic – | CC6 |
| ъ | tyvordyy znak – Cyrillic– | CB6 |
| ↔ | left-right arrow; mutually implies | Bar |
| ↭ | left and right arrow-wavy | Bai |
| ♥ | heartsuit; heart, filled | Bfi |
| … | triple dot | Bm9 |
| ⊹ | hermitian conjugative matrix | Bte |
| &homthr; | homothetic | Bq0 |
| И | Ee – Cyrillic – | CCi |
| и | ee – Cyrillic– | CBi |
| ¡ | inverted exclamation mark (Spanish) | CGe |
| ⇔ | left-right dbl arrow; if and only if; mut. implies | Bas |
| ℩ | inverted iota – Greek – | CD0 |
| ⊷ | image of | Bop |
| ∞ | infinity sign | Blz |
| ı | i, undotted (phonetic symbol) | Pei |
| ∫ | integral operator | Bjp |
| ⊺ | intercal; true | Bdq |
| ι | iota (phonetic symbol) | Pci |
| &iproduct; | intprod | Bk6 |
| ¿ | inverted question mark (Spanish) | CGq |
| ∈ | set membership; member | Boa |
| й | ee kratkoyeh – Cyrillic– | CB3 |
| Й | Ee kratkoyeh – Cyrillic – | CC3 |
| &jnodot; | j, undotted (phonetic symbol) | Pfj |
| κ | kappa – Greek – | CDk |
| ϰ | kappa (cursive,rounded) – Greek – | CD8 |
| К | Kah – Cyrillic – | CCk |
| к | kah – Cyrillic– | CBk |
| х | tchek – Cyrillic– | CBq |
| Х | Tchek – Cyrillic – | CCq |
| ⇚ | left triple arrow | Baq |
| Λ | lambda (capital) – Greek – | CEl |
| λ | lambda (phonetic symbol) | Pgl |
| ⟨ | left angle bracket | Bda |
| ⪅ | less than and double approximate | Bkg |
| « | open double guillemet; angle open quote | CE8 |
| ⇐ | left double arrow; is implied by | Bah |
| ↞ | two-head left arrow | Bav |
| ← | left arrow; relata of a relation | Bag |
| &larr2; | two left arrows | Bau |
| ↩ | left arrow-hooked | Bae |

| Entity name | Description | Coordinate |
|-------------|--|------------|
| ↫ | left arrow, looped | Bbe |
| ↢ | left arrow-tailed | Bay |
| ⌈ | left ceiling; bottomless left bracket | Bd2 |
| Л | El – Cyrillic – | CCI |
| л | el – Cyrillic– | CBI |
| &ldot; | less than, with dot | Bko |
| “ | double quotation mark, left | CE0 |
| ≦ | less than or (double) equal | Bke |
| ≤ | less than or equal | Bkd |
| ⪋ | less, (double) equal, or greater | Bkk |
| ⋚ | less, equal, or greater | Bkj |
| ⩽ | less than or equal to, slanted | Bkb |
| ⥼ | left fish tail | Bey |
| ⌊ | left floor; topless left bracket | Bd1 |
| ≶ | less than or greater than | Bki |
| ↽ | left harpoon, down | Bbf |
| ↼ | left harpoon-up | Baf |
| ⋘ | much less than (triple) | Bkn |
| ⪉ | less than but not approximate | Blg |
| ⪇ | less than but not equals | Bld |
| ≨ | less than but not (double) equal to | Ble |
| ⋦ | less than, not similar | Blf |
| ⟬ | left open angular bracket | Bdd |
| &lbrk; | left open bracket | Bdc |
| ◊ | lozenge open; total mark | Bgf |
| ⧫ | lozenge, filled | Bgi |
| ⦓ | left parenthesis, less than | Bi7 |
| &lrarr2; | left over right arrow; reversible reaction | Bac |
| &lrhar2; | left over right harpoon; reversible reaction | Baa |
| ↰ | left hook arrow up | Bbw |
| ≲ | less than or similar to; less, approximate | Bkf |
| ‘ | turned comma (phonetic symbol) | PI2 |
| < | less than sign | Bka |
| ≪ | much less than (double) | Bkl |
| ⋋ | left three times | Bsh |
| ⋉ | times sign, left closed | Bsd |
| ◃ | left triangle open | Bf4 |
| ⊴ | left triangle, equal | Btu |
| ◂ | left triangle, filled | Bf8 |
| ¯ | overbar, macron (accent) | CAM |
| ♂ | Mars; male | Bh7 |
| ✠ | Maltese cross | Bfe |
| ⤅ | two-head right arrow, ended | Bax |
| ↦ | mapping; maps to | Bao |
| м | em – Cyrillic– | CBm |
| — | em dash, copymarked 1/M | Btr |
| ∺ | geometric properties | Btp |

| Entity name | Description | Coordinate |
|---------------------------|--|------------|
| <code>&mid;</code> | divides; mid (Height of capital I) | Bdi |
| <code>&middot;</code> | center dot | Bsc |
| <code>&minus;</code> | minus sign | Btl |
| <code>&minusb;</code> | minus sign in box | Bs6 |
| <code>&minusd;</code> | minus with dot above; symmetric difference | Btn |
| <code>&mnplus;</code> | minus or plus sign | Btd |
| <code>&mu;</code> | mu – Greek – | CDm |
| <code>&mumap;</code> | multimap | Boo |
| <code>&nabla;</code> | differential vector; nabla; | CE1 |
| <code>&nap;</code> | not approximate; not asymptotic to | Br4 |
| <code>&napid;</code> | not approximately, double; dashed triple tilde | Br6 |
| <code>&natur;</code> | natural (music) | Bhy |
| <code>&nbspc;</code> | no break (required) space | Ba0 |
| <code>&ncong;</code> | not congruent with; neither appr. nor act. equal | Br3 |
| <code>&ncy;</code> | en – Cyrillic– | CBn |
| <code>&ndash;</code> | en dash (long hyphen), copymarked 1/N | Btq |
| <code>&ne;</code> | double-barred slash (phonetic symbol) | Ph1 |
| <code>&nearhk;</code> | N-E arrow, hooked | Bbd |
| <code>&nearr;</code> | arrow, north-east; grows | Bck |
| <code>&nequiv;</code> | not equivalent, not identical with | Brx |
| <code>&nesear;</code> | N-E, S-E arrows | Bb2 |
| <code>&nexist;</code> | not rev. cap. E; not exists; there does not exist | Bic |
| <code>&nge;</code> | not greater-than-or-equal | Bnj |
| <code>&ngE;</code> | not greater, double equals | Bnk |
| <code>&nges;</code> | neither greater than nor equal to, slanted | Bnb |
| <code>&ngt;</code> | not greater than | Bna |
| <code>&nhArr;</code> | not left-right dbl arrow; negation of mut. implies | Bbs |
| <code>&nharr;</code> | not left-right arrow | Bbr |
| <code>&ni;</code> | contains; owns; includes | Bqa |
| <code>&nlarr;</code> | not left arrow | Bbg |
| <code>&nlArr;</code> | not left double arrow; not implied by | Bbh |
| <code>&nle;</code> | not less, double equals | Blk |
| <code>&nle;</code> | not less-than-or-equal | Blj |
| <code>&nles;</code> | neither less than nor equal to, slanted | Blb |
| <code>&nlt;</code> | not less than | Bla |
| <code>&nltri;</code> | not left triangle | Bi4 |
| <code>&nltrie;</code> | not left triangle, equals | Btw |
| <code>&nmid;</code> | not mid | Bei |
| <code>&not;</code> | logical not sign | Bro |
| <code>&notin;</code> | not an element of; is not a member of | Bpa |
| <code>&notni;</code> | does not contain as a member | Bra |
| <code>&npar;</code> | not parallel | Bej |
| <code>&npr;</code> | does not precede | Blq |
| <code>&npre;</code> | not precedes, equals | Blu |
| <code>&nrarr;</code> | not right arrow; does not tend to | Bbm |
| <code>&nrArr;</code> | not right double arrow; does not imply | Bbn |
| <code>&nrtri;</code> | not right triangle | Bi2 |

| Entity name | Description | Coordinate |
|-------------|--|------------|
| ⋭ | not right triangle, equals | Btx |
| ⊁ | does not succeed | Bnq |
| ⪰̸ | not succeeds, equals | Bnu |
| ≁ | not similar; not equivalent to | Br1 |
| ≄ | not similar, equals; not asymptotically equal to | Br2 |
| &nsu; | not subset; non-proper inclusion in set | Bpc |
| &nsu; | not subset, equals; not contained in or not eql to | Bpf |
| &nsuE; | not subset, double equals | Bpi |
| &nsu; | not superset; does not properly include in set | Brc |
| ⊉ | not superset, equals; does not contain as subset | Brf |
| &nsuE; | not superset, double equals | Bri |
| ν | nu – Greek – | CDn |
| ⊭ | not vertical, double-dash | Bex |
| ⊯ | not double vertical, double dash | Bev |
| ⊮ | not double vertical, dash | Beu |
| ⊬ | not vertical, dash | Bes |
| ⤣ | N-W arrow, hooked | Bbc |
| ↖ | arrow, north-west | Bci |
| ⤧ | N-W, N-E arrows | Bb5 |
| ⊛ | circled asterisk | Bs2 |
| ⊚ | open dot in circle | Bsn |
| ⊝ | circled dash; hyphen in circle | Bsl |
| ⊙ | bull's eye (phonetic symbol) | Pbo |
| Œ | small capital O-E ligature (phonetic symbol) | Pfo |
| œ | o-e ligature (phonetic symbol) | Peo |
| ˛ | polish hook, Ogonek (accent) | CAX |
| ↺ | left arrow in circle | Bbp |
| ω | lower-case omega (phonetic symbol) | Pho |
| Ω | omega (capital) – Greek – | CEw |
| &omicr; | omicron – Greek – | CDo |
| ⊖ | minus sign in circle; symmetric difference | Bsp |
| ⊕ | plus sign in circle; direct sum; earth sign | Bsr |
| ⩔ | double supremum (conjunction); double logical or | Biq |
| ∨ | logical or; small supremum | Bim |
| ↻ | right arrow in circle | Bbq |
| ⊶ | original of | Bpp |
| Ø | capital O, slashed | CFp |
| ø | slashed o (phonetic symbol) | Pdo |
| ⊘ | solidus in circle | Bsm |
| ⊗ | multiplication sign in circle; direct product | Bss |
| ⌽ | circle, and vertical bar | Bsq |
| ∥ | double Pipe (phonetic symbol) | Pi1 |
| ¶ | paragraph sign; pilcrow | Bfd |
| ∂ | curly d; differential – Greek – | CD6 |
| п | peh – Cyrillic– | CBp |
| П | Peh – Cyrillic – | CCp |
| ‰ | per thousand; per mille | Bhm |

| Entity name | Description | Coordinate |
|---------------------------|--|------------|
| <code>&perp;</code> | perpendicular; orthogonal to | Bdp |
| <code>&phi;</code> | phi – Greek – | CDf |
| <code>&Phi;</code> | phi (capital) – Greek – | CEf |
| <code>&phiv;</code> | phi (cursive,open) – Greek – | CD4 |
| <code>&phone;</code> | telephone-symbol | Bg9 |
| <code>&pi;</code> | pi – Greek – | CDp |
| <code>&Pi;</code> | pi (capital) – Greek – | CEp |
| <code>&piv;</code> | physicians' pi – Greek – | CD2 |
| <code>&plankv;</code> | Planck constant; h-bar (Dirac) | Buh |
| <code>&plusb;</code> | plus sign in box | Bs7 |
| <code>&plusdo;</code> | plus sign, dot above; direct sum | Btb |
| <code>&plusmn;</code> | plus or minus sign | Btc |
| <code>&pound;</code> | pound sign | Bhd |
| <code>&pr;</code> | precedes; has lower rank than; is dominated by | Bkq |
| <code>&prap;</code> | precedes, approximate | Bks |
| <code>&prcue;</code> | curly prec. equal; has rank lower than or equal to | Bku |
| <code>&pre;</code> | precedes, equals | Bkt |
| <code>&prime;</code> | prime; minutes; feet | Bm5 |
| <code>&Prime;</code> | double prime; seconds; inches | Bm6 |
| <code>&prnap;</code> | precedes, not approximately | Bls |
| <code>&prnE;</code> | precedes, not double equal | Blt |
| <code>&prnsim;</code> | precedes, not similar | Blr |
| <code>&prod;</code> | product operator | Bjb |
| <code>&prop;</code> | is proportional to; varies as | Bmz |
| <code>&prsim;</code> | precedes, similar; dominance; contained in, equiv. | Bkr |
| <code>&psi;</code> | psi – Greek – | CDy |
| <code>&Psi;</code> | psi (capital) – Greek – | CEy |
| <code>&puncsp;</code> | Punctuation space; thousand separator | Ba9 |
| <code>&rAarr;</code> | right triple arrow | Bap |
| <code>&radic;</code> | root; radical sign | Bje |
| <code>&rang;</code> | right angle bracket | Bea |
| <code>&raquo;</code> | close double guillemet; angle close quote | CF8 |
| <code>&rarr;</code> | right arrow; approaches | Bam |
| <code>&rArr;</code> | right double arrow; implies | Ban |
| <code>&Rarr;</code> | two-head right arrow; on to map | Baw |
| <code>&rarr2;</code> | two right arrows | Bat |
| <code>&rarrhk;</code> | right arrow-hooked | Bak |
| <code>&rarrlp;</code> | right arrow, looped | Bbk |
| <code>&rarrtl;</code> | right arrow-tailed | Baz |
| <code>&rarrw;</code> | right arrow-wavy; functional relationship | Baj |
| <code>&rceil;</code> | right ceiling; bottomless right bracket | Be2 |
| <code>&rdquo;</code> | double quotation mark, right | CF0 |
| <code>&rect;</code> | rectangle open, horizontal | Bgx |
| <code>&reg;</code> | registered sign (circled R) | Bhs |
| <code>&rfisht;</code> | right fish tail; element precedes under relation; | Bdy |
| <code>&rfloor;</code> | right floor; topless right bracket | Be1 |
| <code>&rhard;</code> | right harpoon, down | Bbj |

| Entity name | Description | Coordinate |
|---------------------------|---|------------|
| <code>&rharu;</code> | right harpoon-up | Bal |
| <code>&rho;</code> | rho – Greek – | CDr |
| <code>&rhov;</code> | rho (cursive, round) – Greek – | CD9 |
| <code>&ring;</code> | circle (accent) | CAg |
| <code>&rlarr2;</code> | right over left arrow; reversible reaction | Bad |
| <code>&rlhar2;</code> | right over left harpoon; reversible reaction | Bab |
| <code>&roang;</code> | right open angular bracket | Bed |
| <code>&robrk;</code> | right open bracket | Bec |
| <code>&rpargt;</code> | right parenthesis, greater | Bi0 |
| <code>&rsh;</code> | right hook arrow up | Bcw |
| <code>&rsquo;</code> | apostrophe (phonetic symbol) | Pj2 |
| <code>&rthree;</code> | right three times | Bsg |
| <code>&rtimes;</code> | times sign, right closed | Bse |
| <code>&rtri;</code> | right triangle open | Bf3 |
| <code>&rtrie;</code> | right triangle, equal | Btv |
| <code>&rtrif;</code> | right triangle, filled | Bf7 |
| <code>&sc;</code> | succeeds; has higher rank than; dominates | Bmq |
| <code>&scap;</code> | succeeds, approximate | Bms |
| <code>&sccue;</code> | succ., curly eq; has rank higher than or equal to | Bmu |
| <code>&sce;</code> | succeeds, equals | Bmt |
| <code>&scnap;</code> | succeeds, not approximate | Bns |
| <code>&scnE;</code> | succeeds but, not (double) equal to | Bnt |
| <code>&scnsim;</code> | succeeds, not similar | Bnr |
| <code>&scsim;</code> | succeeds, similar | Bmr |
| <code>&searhk;</code> | S-E arrow, hooked | Bbb |
| <code>&searr;</code> | arrow, south-east; decays | Bcj |
| <code>&sect;</code> | section sign | Bfc |
| <code>&seswar;</code> | S-E, S-W arrows | Bb3 |
| <code>&sharp;</code> | sharp (music) | Bhx |
| <code>&shchcy;</code> | shchah – Cyrillic– | CBw |
| <code>&SHCHcy;</code> | Shchah – Cyrillic – | CCw |
| <code>&shcy;</code> | shah – Cyrillic– | CBx |
| <code>&SHcy;</code> | Shah – Cyrillic – | CCx |
| <code>&sigma;</code> | sigma – Greek – | CDs |
| <code>&Sigma;</code> | sigma (capital) – Greek – | CEs |
| <code>&sigmav;</code> | sigma (final) – Greek – | CDv |
| <code>&sim;</code> | similar; equivalent to; varies linearly with | Bq1 |
| <code>&sime;</code> | similar, equals; asymptotically equal to | Bq2 |
| <code>&simg;</code> | greater than, approximately | Bmh |
| <code>&siml;</code> | less than and approximately | Bkh |
| <code>&smile;</code> | up curve, smile | Bm1 |
| <code>&softcy;</code> | myakhky znak – Cyrillic– | CB4 |
| <code>&SOFTcy;</code> | Myakhky znak – Cyrillic – | CC4 |
| <code>&spades;</code> | spadesuit; spade, filled | Bfj |
| <code>&sqcap;</code> | square intersection | Bik |
| <code>&sqcup;</code> | square union | Bij |
| <code>&sqsub;</code> | square subset; image of | Bok |

| Entity name | Description | Coordinate |
|---------------------------|--|------------|
| <code>&sqsube;</code> | square subset, equals | Bol |
| <code>&sqsup;</code> | square superset; original of | Bqk |
| <code>&sqsupe;</code> | square superset, equals | Bql |
| <code>&squ;</code> | square; D'Alembertian operator | Bfn |
| <code>&sqf;</code> | square filled, end of proof; Halmos | Bfo |
| <code>&star;</code> | star, open | Bfl |
| <code>&starf;</code> | small (5-point) star, filled | Bl0 |
| <code>&sub;</code> | subset; proper inclusion in set; is implied by | Boc |
| <code>&Sub;</code> | double subset | Boj |
| <code>&subE;</code> | subset, double equals | Bog |
| <code>&sube;</code> | subset, equals; identity or inclusion in set | Bod |
| <code>&subne;</code> | subset, not equals | Bpd |
| <code>&subnE;</code> | subset, not double equal | Bpg |
| <code>&sum;</code> | summation operator | Bja |
| <code>&Sup;</code> | double superset | Bqj |
| <code>&sup;</code> | superset; properly includes in set; implies | Bqc |
| <code>&supe;</code> | superset, equals; ident.with or contains as subset | Bqd |
| <code>&supE;</code> | superset, double equals | Bqg |
| <code>&supne;</code> | superset, not equals | Brd |
| <code>&supnE;</code> | superset, not double equals | Brg |
| <code>&swarhk;</code> | S-W arrow, hooked | Bba |
| <code>&swarr;</code> | arrow, south-west | Bcl |
| <code>&swnwar;</code> | S-W, N-W arrows | Bb4 |
| <code>&szlig;</code> | es-zet (German) | CFs |
| <code>&tau;</code> | tau – Greek – | CDt |
| <code>&tcy;</code> | teh – Cyrillic– | CBt |
| <code>&there4;</code> | therefore | Bru |
| <code>&Theta;</code> | theta (capital) – Greek – | CEq |
| <code>&theta;</code> | theta (phonetic symbol) | Pft |
| <code>&thetav;</code> | theta (cursive, rounded) – Greek – | CDj |
| <code>&thorn;</code> | thorn (phonetic symbol) | Pbp |
| <code>&THORN;</code> | THORN (phonetic symbol) | Pcp |
| <code>&tilde;</code> | tilde (accent) | CAi |
| <code>&times;</code> | multiplication sign | Bsa |
| <code>&timesb;</code> | multiplication sign in box | Bs8 |
| <code>&tprime;</code> | triple prime | Bm7 |
| <code>&trade;</code> | trade mark sign (circled TM) | Bht |
| <code>&trie;</code> | triangle, equal; equal by definition | Bqr |
| <code>&TScy;</code> | Tseh – Cyrillic – | CCc |
| <code>&tscy;</code> | tseh – Cyrillic– | CBc |
| <code>&twixt;</code> | between | Bln |
| <code>&uarr;</code> | upward arrow; increase; exponent | Bce |
| <code>&uArr;</code> | up double arrow; implies | Bcf |
| <code>&uarr2;</code> | two upward arrows | Bct |
| <code>&Ucy;</code> | Oo – Cyrillic – | CCu |
| <code>&uharl;</code> | up harpoon left | Bcg |
| <code>&uharr;</code> | up harpoon right | Bch |

| Entity name | Description | Coordinate |
|-----------------------------|--|------------|
| <code>&ulcorn;</code> | up left corner | Bd4 |
| <code>&uml;</code> | double dot, umlaut, diaeresis (accent) | CAe |
| <code>&uplus;</code> | plus sign in union | Bi1 |
| <code>&upsi;</code> | upsilon – Greek – | CDu |
| <code>&Upsi;</code> | upsilon (capital) – Greek – | CEu |
| <code>&urcorn;</code> | corner (phonetic symbol) | Pg2 |
| <code>&utri;</code> | up triangle open | Bf1 |
| <code>&utrif;</code> | up triangle, filled | Bf5 |
| <code>&varr;</code> | up-down arrow; vertical relationship | Bcr |
| <code>&vArr;</code> | up and down double arrow; if and only if | Bcs |
| <code>&Vbar;</code> | double perpendicular | Bdr |
| <code>&vcy;</code> | veh – Cyrillic– | CBv |
| <code>&VDash;</code> | double vertical, double dash | Bdv |
| <code>&vDash;</code> | vert., 2-dsh; models; statement is true; result in | Bdx |
| <code>&Vdash;</code> | double vertical, dash | Bdu |
| <code>&vdash;</code> | vertical, dash; assertion; reduced to | Bds |
| <code>&veebar;</code> | logical or, bar below; injective | Biw |
| <code>&Vvdash;</code> | triple vertical, dash | Bdw |
| <code>&wedgeq;</code> | estimates; corresponds to | Bqq |
| <code>&weierp;</code> | Weierstrass elliptic function | Bjo |
| <code>&wreath;</code> | wreath product | Bsi |
| <code>&xcap;</code> | intersection of classes; prod.of cl/sets betw. lmt | Bjg |
| <code>&xcup;</code> | union of classes/sets; sum or sets between limits | Bjf |
| <code>&xdtri;</code> | big down triangle open | Bg2 |
| <code>&xi;</code> | xi – Greek – | CDx |
| <code>&Xi;</code> | xi (capital) – Greek – | CEx |
| <code>&xsqcup;</code> | big square union | Bjj |
| <code>&xuplus;</code> | plus sign in big union | Bjl |
| <code>&xutri;</code> | big up triangle open | Bg1 |
| <code>&xvee;</code> | large supremum | Bjm |
| <code>&xwedge;</code> | large infimum | Bjn |
| <code>&yacy;</code> | yah – Cyrillic– | CBj |
| <code>&YAcy;</code> | Yah – Cyrillic – | CCj |
| <code>&ycy;</code> | yery – Cyrillic– | CBY |
| <code>&Ycy;</code> | Yery – Cyrillic – | CCY |
| <code>&yen;</code> | yen sign | Bhf |
| <code>&yucy;</code> | u – Cyrillic– | CB5 |
| <code>&YUcy;</code> | U – Cyrillic – | CC5 |
| <code>&z.aacute;</code> | extra high, accent (phonetic symbol) | Pa6 |
| <code>&z.And;</code> | double logical and | Bip |
| <code>&z.archs;</code> | subscript arch (phonetic symbol) | Pr2 |
| <code>&z.arrdl;</code> | rounded arrow down, left | Bcz |
| <code>&z.arrdr;</code> | rounded arrow down, right | Bcy |
| <code>&z.atr;</code> | advanced tongue root (phonetic symbol) | Pf3 |
| <code>&z.ausco;</code> | a-underscore | CFu |
| <code>&z.bar;</code> | bar (phonetic symbol) | Pb5 |
| <code>&z.Barpip;</code> | double-barred pipe (phonetic symbol) | Pg1 |

| Entity name | Description | Coordinate |
|-------------|---|------------|
| &z.betav; | curly beta – Greek – | CD7 |
| &z.bigdot; | big dot above (accent) | CAn |
| &z.btdl; | belted l (phonetic symbol) | Pcl |
| &z.btmlig; | bottom ligature (phonetic symbol) | Pt2 |
| &z.btyogh; | yogh, bent tail (phonetic symbol) | Pgz |
| &z.cansls; | cancellation slash (overlay) | CAz |
| &z.ccirf; | centered small circle, filled | BI9 |
| &z.Cint; | principal-value integral: cauchy integral | Bju |
| &z.cirfb; | circle, bottom filled | Bgw |
| &z.cirfl; | circle, left filled | Bgt |
| &z.cirfr; | circle, right filled | Bgu |
| &z.cirft; | circle, top filled | Bgv |
| &z.clomeg; | closed omega (phonetic symbol) | Pio |
| &z.crepsv; | closed reversed epsilon (phonetic symbol) | Pie |
| &z.ctl; | curly tail (phonetic symbol) | Pb8 |
| &z.dbnd; | double bond; length as m-dash | Boq |
| &z.dbnd6; | 6-point double bond; length half of m-dash | Bpq |
| &z.ddfnc; | dotted fence | Bem |
| &z.defas; | defined as | Bqw |
| &z.dfnc; | double-rule fence; norm of a matrix | Bdl |
| &z.dlcornt; | left bottom corner, long | Bd5 |
| &z.drcornt; | right bottom corner, long | Be5 |
| &z.drule; | -45 degree rule | Bow |
| &z.dshfnc; | dashed fence | Beo |
| &z.duarr; | dbl arrow, left down, right up | Bcn |
| &z.duhar2; | harpoon down, up | Bcl |
| &z.dyogh; | d-Yogh ligature (phonetic symbol) | Pdd |
| &z.Ehac; | equiangular; equals with hacek | Brq |
| &z.eint; | edge-integral | Bjz |
| &z.eng; | eng (phonetic symbol) | Pdn |
| &z.esh; | esh (phonetic symbol) | Pds |
| &z.fals; | falling, symbol (phonetic symbol) | Pj7 |
| &z.fhr; | fish-hook r (phonetic symbol) | Pbr |
| &z.ggrave; | extra low, accent (phonetic symbol) | Pb6 |
| &z.glst; | glottal stop (phonetic symbol) | Pa1 |
| &z.Gt; | much greater than (double) | Bmm |
| &z.gull; | seagull (phonetic symbol) | Pe3 |
| &z.hbar; | horizontal bar (phonetic symbol) | Pd3 |
| &z.heng; | heng (phonetic symbol) | Pih |
| &z.herma; | hermaphrodite | Bh8 |
| &z.hex; | hexagon | Bo2 |
| &z.hfl; | guilders sign | Bhe |
| &z.highs; | high, symbol (phonetic symbol) | Pf7 |
| &z.hlmrk; | half-length mark (phonetic symbol) | Ph2 |
| &z.hris; | high rising, accent (phonetic symbol) | Pc6 |
| &z.hriss; | high rising, symbol (phonetic symbol) | Pc7 |
| &z.hrttrh; | turned h, hook right tail (phonetic symbol) | Pgh |

| Entity name | Description | Coordinate |
|-------------|---|------------|
| &z.ht; | hooktop (phonetic symbol) | Pa8 |
| &z.hvlig; | h-v ligature (phonetic symbol) | Phh |
| &z.Inf; | double infinum (cumulator) | Bit |
| &z.inglst; | inverted glottal stop (phonetic symbol) | Pb1 |
| &z.invv; | inverted v (phonetic symbol) | Pga |
| &z.invw; | inverted w (phonetic symbol) | Pbw |
| &z.jup; | Jupiter | Bh5 |
| &z.lam; | laminal (phonetic symbol) | Pa3 |
| &z.Lap; | up triangle open with dot; Laplace operator | Bj5 |
| &z.lbd2bd; | 2 bonds on the lefthand side, bottom double | Bn4 |
| &z.lbd2td; | 2 bonds on the lefthand side, top double | Bn3 |
| &z.lbond2; | 2 bonds on the lefthand side | Bpw |
| &z.lbond3; | 3 bonds on the lefthand side | Bpu |
| &z.ldang; | left double angle bracket | Bdb |
| &z.lmrk; | length mark (phonetic symbol) | Pi2 |
| &z.low; | lowering sign (phonetic symbol) | Pc2 |
| &z.lows; | low, symbol (phonetic symbol) | Ph7 |
| &z.lozfl; | lozenge, left filled | Bgg |
| &z.lozfr; | lozenge, right filled | Bgh |
| &z.lpargt; | left parenthesis, gt | Bi9 |
| &z.lris; | low rising, accent (phonetic symbol) | Pd6 |
| &z.lriss; | low rising, symbol (phonetic symbol) | Pd7 |
| &z.lsquo; | open single guillemet | CE7 |
| &z.Lt; | much less than (double) | Bkm |
| &z.ltlmr; | m with leftward tail at right (phonetic symbol) | Pbm |
| &z.ltlr; | n with left tail at left (phonetic symbol) | Pcn |
| &z.ltril; | left elongated triangle; implied by | Bi1 |
| &z.lyogh; | l-Yogh ligature (phonetic symbol) | Pe1 |
| &z.mdc; | mid centralized (phonetic symbol) | Pq3 |
| &z.merc; | Mercury | Bh3 |
| &z.mho; | mho | CE2 |
| &z.mids; | mid, symbol (phonetic symbol) | Pg7 |
| &z.minhat; | minus with hat | Bts |
| &z.mstpos; | most positive | Bkz |
| &z.nasymp; | not asymptotically equivalent | Brw |
| &z.nbump; | not isomorphic | Brn |
| &z.nept; | Neptune | Bh9 |
| &z.nesim; | not equal, similar | Bmp |
| &z.nglpar; | angle and left parentheses | Bk4 |
| &z.ngtneq; | neither greater than nor equivalent to | Bnh |
| &z.ngtnlt; | neither greater than nor less than | Bni |
| &z.nlr; | n, long right leg (phonetic symbol) | Pgn |
| &z.nltneq; | neither less than nor equivalent to | Blh |
| &z.nltngt; | neither less than nor greater than | Bli |
| &z.nrarrc; | slashed curly arrow | Bb1 |
| &z.nsubE; | not subset, double equals | Bph |
| &z.nsubne; | not subset, not equals | Bpe |

| Entity name | Description | Coordinate |
|-------------|--|------------|
| &z.nsupE; | not superset, double equals | Brh |
| &z.nsupne; | not superset, not equals | Bre |
| &z.odiv; | circle divide | Bsk |
| &z.openo; | open o (phonetic symbol) | Pgo |
| &z.oplusl; | semi-direct sum | Bst |
| &z.oplusr; | semi-direct sum | Bsv |
| &z.Or; | double logical or | Bio |
| &z.otims1; | semi-direct product | Bsu |
| &z.otimsr; | semi-direct product | Bsw |
| &z.ousco; | o-underscore | CFv |
| &z.pa; | lower-case a (phonetic symbol) | Paa |
| &z.palh; | palatization hook (phonetic symbol) | Po2 |
| &z.parl; | parallelogram | Bgz |
| &z.pbgam; | baby gamma (phonetic symbol) | Peg |
| &z.pdbdbd; | partial double bond, bottom dashed | Bo4 |
| &z.pdbdtd; | partial double bond, top dashed | Bo3 |
| &z.pdbond; | Partial double bond | Bo8 |
| &z.pent; | pentagon | Bo1 |
| &z.pes; | Pesetas sign | Bhg |
| &z.pg; | lower-case 'script' g (phonetic symbol) | Pag |
| &z.pgamma; | gamma (phonetic symbol) | Pdg |
| &z.plims; | circle and long bar; Plimsoll sign | Bs3 |
| &z.ppcnt; | per 10 000 | Bhn |
| &z.pphi; | phi (phonetic symbol) | Pep |
| &z.pscra; | script a (phonetic symbol) | Pca |
| &z.pscrvi; | script v (phonetic symbol) | Pbv |
| &z.pSlash; | double Slash (phonetic symbol) | Pj1 |
| &z.ptbdbd; | partial triple bond, bottom dashed | Bo6 |
| &z.ptbdtd; | partial triple bond, top dashed | Bo5 |
| &z.pupsil; | upsilon (phonetic symbol) | Pcu |
| &z.qbnd; | quadruple bond; length as m-dash | Bos |
| &z.qbnd6; | six-point quadruple bond; length half of m-dash | Bps |
| &z.qprime; | fourfold prime | Bm8 |
| &z.rad; | radical dot | Bo0 |
| &z.rais; | raising sign (phonetic symbol) | Pb2 |
| &z.rarrc; | curly arrow | Ba1 |
| &z.rarrx; | right arrow, crossed | Bbl |
| &z.rbd2bd; | 2 bonds on the righthand side, bottom double | Bn6 |
| &z.rbd2td; | 2 bonds on the righthand side, top double | Bn5 |
| &z.rbond2; | 2 bonds on the righthand side | Bpv |
| &z.rbond3; | 3 bonds on the righthand side | Bpt |
| &z.rdang; | right double angle bracket | Beb |
| &z.reapos; | reversed apostrophe (phonetic symbol) | Pk2 |
| &z.refhr; | fish-hook r, reversed (phonetic symbol) | Pjr |
| &z.refhrl; | reversed fish-hook r, long leg (phonetic symbol) | Plr |
| &z.reglst; | reversed glottal stop (phonetic symbol) | Pc1 |
| &z.repsiv; | reversed epsilon (phonetic symbol) | Pge |

| Entity name | Description | Coordinate |
|--------------|--|------------|
| &z.reshtl; | esh reversed, top loop (phonetic symbol) | Pfs |
| &z.resmck; | small capital K, reversed (phonetic symbol) | Pdk |
| &z.reve; | reversed e (phonetic symbol) | Pde |
| &z.rh; | right hook (phonetic symbol) | Pp2 |
| &z.rhkd; | right hook, down | Bcx |
| &z.risfla; | rising-falling, accent (phonetic symbol) | Pe6 |
| &z.risfls; | rising-falling, symbol (phonetic symbol) | Pe7 |
| &z.riss; | rising, symbol (phonetic symbol) | Pi7 |
| &z.rl; | r with long leg (phonetic symbol) | Pcr |
| &z.rLarr; | short arrow right, long arrow left | Ba3 |
| &z.Rlarr; | long arrow right, short arrow left | Ba2 |
| &z.rndcap; | round cap (phonetic symbol) | Pq2 |
| &z.rparlt; | right parenthesis, less than | Bi8 |
| &z.rsquo; | close single guillemet | CF7 |
| &z.rtld; | right-tail d (phonetic symbol) | Pcd |
| &z.rtll; | l with right tail (phonetic symbol) | Pdl |
| &z.rtlm; | m with right tail (phonetic symbol) | Pen |
| &z.rtlr; | r with right tail (phonetic symbol) | Pdr |
| &z.rtls; | s with right tail (phonetic symbol) | Pcs |
| &z.rtlt; | t with right tail (phonetic symbol) | Pct |
| &z.rtlz; | z with right tail (phonetic symbol) | Pdz |
| &z.rtr; | retracted tongue root (phonetic symbol) | Pg3 |
| &z.rtrfhr; | reversed fish-hook r, right tail (phonetic symbol) | Pkr |
| &z.rtrnr; | turned r with right tail (phonetic symbol) | Pfr |
| &z.rvbullet; | reversed video bullet | Bg7 |
| &z.S; | S-sign | Bji |
| &z.sat; | Saturn | Bh6 |
| &z.sbrgr; | subscript bridge (phonetic symbol) | Pa2 |
| &z.sbrgrt; | subscript bridge, turned (phonetic symbol) | Pa5 |
| &z.sblhr; | left half-ring (phonetic symbol) | Pm2 |
| &z.sbond; | single bond | Bo7 |
| &z.sbrhr; | right half-ring (phonetic symbol) | Pn2 |
| &z.sbs; | small backslash (phonetic symbol) | P11 |
| &z.sbw; | subscript w (phonetic symbol) | Pc3 |
| &z.schwa; | schwa (phonetic symbol) | Pbe |
| &z.scis; | scissor-symbol | Bg8 |
| &z.sfnc; | single-rule fence | Bdk |
| &z.shtsls; | short slash (overlay) | CAy |
| &z.simne; | approximately but not actually equal to | Brz |
| &z.sint; | surface integral | Bjw |
| &z.sqfb; | square, bottom filled | Bfw |
| &z.sqfl; | square, left filled | Bft |
| &z.sqfne; | square with filled N-E-corner | Bfp |
| &z.sqfnw; | square with filled N-W-corner | Bfq |
| &z.sqfr; | square, right filled | Bfu |
| &z.sqfse; | square with filled S-E-corner | Bfs |
| &z.sqfsw; | square with filled S-W-corner | Bfr |

| Entity name | Description | Coordinate |
|-------------|--|------------|
| &z.sqft; | square, top filled | Bfv |
| &z.sqh; | legend symbol; horizontally striped box | Bgp |
| &z.sqint; | lattice-integral | Bj4 |
| &z.sqne; | legend symbol; north-east striped box | Bgs |
| &z.sqnrsub; | square not reflex subset | Bpl |
| &z.sqnrsp; | square not reflex superset | Brl |
| &z.sqnsup; | square not subset | Bpk |
| &z.sqnsup; | square not superset | Brk |
| &z.sqsbne; | Square subset, not equal | Bpm |
| &z.sqshd; | legend symbol; shaded box | Bg6 |
| &z.sqspne; | square superset, not equal | Brm |
| &z.sqsw; | legend symbol; south-west striped box | Bgr |
| &z.sqv; | legend symbol; vertically striped box | Bgq |
| &z.Sup; | double supremum (cumulator) | Bis |
| &z.syllab; | syllabicity mark (phonetic symbol) | Pf2 |
| &z.tbnd; | triple bond; length as m-dash | Bor |
| &z.tbnd6; | 6-point triple bond; length half of m-dash | Bpr |
| &z.tdcol; | triple dot colon | Bek |
| &z.tdfnc; | triple dot fence | Bel |
| &z.tDot; | triple dot (accent) | CAp |
| &z.tesh; | t-esh ligature (phonetic symbol) | Pdt |
| &z.tfnc; | triple vertical-rule fence | Bdm |
| &z.Theta; | Theta (capital, round) | CEj |
| &z.Thr; | big square intersection | Bjk |
| &z.Times; | vector multiplication | Bsb |
| &z.toplig; | top ligature (phonetic symbol) | Ps2 |
| &z.trgull; | seagull, turned (phonetic symbol) | Pb3 |
| &z.trisla; | triple Slash (phonetic symbol) | Pk1 |
| &z.Trkhk; | Turkish hook (accent) | CAh |
| &z.trna; | turned a (phonetic symbol) | Pba |
| &z.trnh; | turned h (phonetic symbol) | Peh |
| &z.trnk; | turned k (phonetic symbol) | Pck |
| &z.trnm; | turned m (phonetic symbol) | Pcm |
| &z.trnmlr; | turned m with long right leg (phonetic symbol) | Pdm |
| &z.trnomeg; | inverted omega (phonetic symbol) | Pko |
| &z.trnr; | turned r (phonetic symbol) | Per |
| &z.trnrl; | turned longlegged r (phonetic symbol) | Pgr |
| &z.trnsa; | turned script a (phonetic symbol) | Pda |
| &z.trnt; | turned t (phonetic symbol) | Pet |
| &z.trny; | turned y (phonetic symbol) | Pby |
| &z.udarr; | dbl arrow, left up, right down; anti-parallel to | Bcm |
| &z.udhar2; | harpoon up, down | Bc2 |
| &z.urule; | +45 degree rule | Box |
| &z.utdot; | triple dot, diagonal SW-NE | Bo9 |
| &z.veeBar; | logical or, dbl bar below | Biy |
| &z.verti; | vertical stroke (inferior) (phonetic symbol) | Pe2 |
| &z.verts; | vertical stroke (superior) (phonetic symbol) | Pd2 |

| Entity name | Description | Coordinate |
|-----------------------------|--|------------|
| <code>&z.vint;</code> | volume integral | Bjx |
| <code>&z.vrecto;</code> | rectangle open, vertical | Bgy |
| <code>&z.xhair;</code> | crosshairs; circle and (big) plus sign | Bs4 |
| <code>&z.xhighs;</code> | extra high, symbol (phonetic symbol) | Pa7 |
| <code>&z.xl;</code> | cross, short horizontal line (phonetic symbol) | Pc5 |
| <code>&z.xlows;</code> | extra low, symbol (phonetic symbol) | Pb7 |
| <code>&z.xrat;</code> | cross ratio | Bjh |
| <code>&z.yogh;</code> | yogh (phonetic symbol) | Pez |
| <code>&Zcy;</code> | Zeh – Cyrillic – | CCz |
| <code>&zcy;</code> | zeh – Cyrillic– | CBz |
| <code>&zeta;</code> | zeta – Greek – | CDz |
| <code>&zncy;</code> | zheh – Cyrillic– | CB7 |
| <code>&ZHcy;</code> | Zheh – Cyrillic – | CC7 |

| Coordinate | Content | Description |
|------------|------------|--|
| Ba0 | | no break (required) space |
| Ba1 | &z.rarrc; | curly arrow |
| Ba2 | &z.Rlarr; | long arrow right, short arrow left |
| Ba3 | &z.rLarr; | short arrow right, long arrow left |
| Ba9 |   | Punctuation space; thousand separator |
| Baa | &lrlhar2; | left over right harpoon; reversible reaction |
| Bab | &rlhar2; | right over left harpoon; reversible reaction |
| Bac | &lrrarr2; | left over right arrow; reversible reaction |
| Bad | &rlarr2; | right over left arrow; reversible reaction |
| Bae | ↩ | left arrow-hooked |
| Baf | ↼ | left harpoon-up |
| Bag | ← | left arrow; relata of a relation |
| Bah | ⇐ | left double arrow; is implied by |
| Bai | ↭ | left and right arrow-wavy |
| Baj | ↝ | right arrow-wavy; functional relationship |
| Bak | ↪ | right arrow-hooked |
| Bal | ⇀ | right harpoon-up |
| Bam | → | right arrow; approaches |
| Ban | ⇒ | right double arrow; implies |
| Bao | ↦ | mapping; maps to |
| Bap | ⇛ | right triple arrow |
| Baq | ⇚ | left triple arrow |
| Bar | ↔ | left-right arrow; mutually implies |
| Bas | ⇔ | left-right dbl arrow; if and only if; mut. implies |
| Bat | &rarr2; | two right arrows |
| Bau | &larr2; | two left arrows |
| Bav | ↞ | two-head left arrow |
| Baw | ↠ | two-head right arrow; on to map |
| Bax | ⤅ | two-head right arrow, ended |
| Bay | ↢ | left arrow-tailed |
| Baz | ↣ | right arrow-tailed |
| Bb1 | &z.nrarrc; | slashed curly arrow |
| Bb2 | ⤨ | N-E, S-E arrows |
| Bb3 | ⤩ | S-E, S-W arrows |
| Bb4 | ⤪ | S-W, N-W arrows |
| Bb5 | ⤧ | N-W, N-E arrows |
| Bba | ⤦ | S-W arrow, hooked |
| Bbb | ⤥ | S-E arrow, hooked |
| Bbc | ⤣ | N-W arrow, hooked |
| Bbd | ⤤ | N-E arrow, hooked |
| Bbe | ↫ | left arrow, looped |
| Bbf | ↽ | left harpoon, down |
| Bbg | ↚ | not left arrow |
| Bbh | ⇍ | not left double arrow; not implied by |
| Bbj | ⇁ | right harpoon, down |
| Bbk | ↬ | right arrow, looped |

| Coordinate | Content | Description |
|------------|-----------------------------|--|
| Bbl | <code>&z.rarrx;</code> | right arrow, crossed |
| Bbm | <code>&nrarr;</code> | not right arrow; does not tend to |
| Bbn | <code>&nrArr;</code> | not right double arrow; does not imply |
| Bbp | <code>&olarr;</code> | left arrow in circle |
| Bbq | <code>&orarr;</code> | right arrow in circle |
| Bbr | <code>&nharr;</code> | not left-right arrow |
| Bbs | <code>&nhArr;</code> | not left-right dbl arrow; negation of mut. implies |
| Bbw | <code>&lsh;</code> | left hook arrow up |
| Bcl | <code>&z.duhar2;</code> | harpoon down, up |
| Bc2 | <code>&z.udhar2;</code> | harpoon up, down |
| Bca | <code>&dharl;</code> | down harpoon left |
| Bcb | <code>&dharr;</code> | down harpoon right |
| Bcc | <code>&darr;</code> | downward arrow; decreases |
| Bcd | <code>&dArr;</code> | down double arrow; implies |
| Bce | <code>&uarr;</code> | upward arrow; increase; exponent |
| Bcf | <code>&uArr;</code> | up double arrow; implies |
| Bcg | <code>&uharl;</code> | up harpoon left |
| Bch | <code>&uharr;</code> | up harpoon right |
| Bci | <code>&nwarr;</code> | arrow, north-west |
| Bcj | <code>&searr;</code> | arrow, south-east; decays |
| Bck | <code>&nearr;</code> | arrow, north-east; grows |
| Bcl | <code>&swarr;</code> | arrow, south-west |
| Bcm | <code>&z.udarr;</code> | dbl arrow, left up, right down; anti-parallel to |
| Bcn | <code>&z.duarr;</code> | dbl arrow, left down, right up |
| Bcp | <code>&cularr;</code> | left curved arrow; anti-clockwise arrow |
| Bcq | <code>&curarr;</code> | right curved arrow; clockwise arrow |
| Bcr | <code>&varr;</code> | up-down arrow; vertical relationship |
| Bcs | <code>&vArr;</code> | up and down double arrow; if and only if |
| Bct | <code>&uarr2;</code> | two upward arrows |
| Bcu | <code>&darr2;</code> | two downward arrows |
| Bcw | <code>&rsh;</code> | right hook arrow up |
| Bcx | <code>&z.rhkd;</code> | right hook, down |
| Bcy | <code>&z.arrdr;</code> | rounded arrow down, right |
| Bcz | <code>&z.arrdl;</code> | rounded arrow down, left |
| Bd1 | <code>&lflor;</code> | left floor; topless left bracket |
| Bd2 | <code>&lceil;</code> | left ceiling; bottomless left bracket |
| Bd3 | <code>&dlcorn;</code> | down left corner |
| Bd4 | <code>&ulcorn;</code> | up left corner |
| Bd5 | <code>&z.dlcorn;</code> | left bottom corner, long |
| Bd6 | <code>&mid;</code> | shortmid (Height of small x) |
| Bd7 | <code>&par;</code> | short parallel (Height small x) |
| Bda | <code>&lang;</code> | left angle bracket |
| Bdb | <code>&z.ldang;</code> | left double angle bracket |
| Bdc | <code>&llobrk;</code> | left open bracket |
| Bdd | <code>&loang;</code> | left open angular bracket |
| Bdi | <code>&mid;</code> | divides; mid (Height of capital I) |

| Coordinate | Content | Description |
|------------|-----------------------------|--|
| Bdj | <code>&par;</code> | parallel to (height of capital I) |
| Bdk | <code>&z.sfn;</code> | single-rule fence |
| Bdl | <code>&z.dfn;</code> | double-rule fence; norm of a matrix |
| Bdm | <code>&z.tfn;</code> | triple vertical-rule fence |
| Bdp | <code>&perp;</code> | perpendicular; orthogonal to |
| Bdq | <code>&intcal;</code> | intercal; true |
| Bdr | <code>&Vbar;</code> | double perpendicular |
| Bds | <code>&vdash;</code> | vertical, dash; assertion; reduced to |
| Bdt | <code>&dashv;</code> | dash, vertical; turnstile |
| Bdu | <code>&Vdash;</code> | double vertical, dash |
| Bdv | <code>&VDash;</code> | double vertical, double dash |
| Bdw | <code>&Vvdash;</code> | triple vertical, dash |
| Bdx | <code>&vDash;</code> | vert., 2-dsh; models; statement is true; result in |
| Bdy | <code>&rfisht;</code> | right fish tail; element precedes under relation; |
| Be1 | <code>&rfloor;</code> | right floor; topless right bracket |
| Be2 | <code>&rceil;</code> | right ceiling; bottomless right bracket |
| Be3 | <code>&drcorn;</code> | down right corner |
| Be4 | <code>&urcorn;</code> | up right corner |
| Be5 | <code>&z.drcorn;</code> | right bottom corner, long |
| Be6 | <code>&nmid;</code> | nshortmid |
| Be7 | <code>&npar;</code> | not short parallel |
| Bea | <code>&rang;</code> | right angle bracket |
| Beb | <code>&z.rdang;</code> | right double angle bracket |
| Bec | <code>&robrk;</code> | right open bracket |
| Bed | <code>&roang;</code> | right open angular bracket |
| Bei | <code>&nmid;</code> | not mid |
| Bej | <code>&npar;</code> | not parallel |
| Bek | <code>&z.tdcol;</code> | triple dot colon |
| Bel | <code>&z.tdfn;</code> | triple dot fence |
| Bem | <code>&z.ddfn;</code> | dotted fence |
| Ben | <code>&brvbar;</code> | broken vertical bar |
| Beo | <code>&z.dshfn;</code> | dashed fence |
| Bes | <code>&nvdash;</code> | not vertical, dash |
| Beu | <code>&nVdash;</code> | not double vertical, dash |
| Bev | <code>&nVDash;</code> | not double vertical, double dash |
| Bex | <code>&nvDash;</code> | not vertical, double-dash |
| Bey | <code>&lfisht;</code> | left fish tail |
| Bf1 | <code>&utri;</code> | up triangle open |
| Bf2 | <code>&dtri;</code> | down triangle open |
| Bf3 | <code>&rtri;</code> | right triangle open |
| Bf4 | <code>&ltri;</code> | left triangle open |
| Bf5 | <code>&utrif;</code> | up triangle, filled |
| Bf6 | <code>&dtrif;</code> | down triangle, filled |
| Bf7 | <code>&rtrif;</code> | right triangle, filled |
| Bf8 | <code>&ltrif;</code> | left triangle, filled |
| Bfa | <code>&dagger;</code> | dagger |

| Coordinate | Content | Description |
|------------|------------|---|
| Bfc | § | section sign |
| Bfd | ¶ | paragraph sign; pilcrow |
| Bfe | ✠ | Maltese cross |
| Bff | ✓ | check mark; tick |
| Bfg | ⋄ | diamond |
| Bfh | ♦ | diamondsuit; diamond, filled |
| Bfi | ♥ | heartsuit; heart, filled |
| Bfj | ♠ | spadesuit; spade, filled |
| Bfk | ♣ | clubsuit; club, filled |
| Bfl | ☆ | star, open |
| Bfm | ★ | big (5-point) star, filled |
| Bfn | □ | square; D'Alembertian operator |
| Bfo | ▪ | square filled, end of proof; Halmos |
| Bfp | &z.sqfne; | square with filled N-E-corner |
| Bfq | &z.sqfnw; | square with filled N-W-corner |
| Bfr | &z.sqfsw; | square with filled S-W-corner |
| Bfs | &z.sqfse; | square with filled S-E-corner |
| Bft | &z.sqfl; | square, left filled |
| Bfu | &z.sqfr; | square, right filled |
| Bfv | &z.sqft; | square, top filled |
| Bfw | &z.sqfb; | square, bottom filled |
| Bg1 | △ | big up triangle open |
| Bg2 | &xdttri; | big down triangle open |
| Bg6 | &z.sqshd; | legend symbol; shaded box |
| Bg7 | &z.rvbull; | reversed video bullet |
| Bg8 | &z.scis; | scissor-symbol |
| Bg9 | ☎ | telephone-symbol |
| Bga | ‡ | double dagger; diesis |
| Bgf | ◊ | lozenge open; total mark |
| Bgg | &z.lozfl; | lozenge, left filled |
| Bgh | &z.lozfr; | lozenge, right filled |
| Bgi | ⧫ | lozenge, filled |
| Bgn | ○ | circle, open |
| Bgo | • | filled circle; bullet |
| Bgp | &z.sqh; | legend symbol; horizontally striped box |
| Bgq | &z.sqv; | legend symbol; vertically striped box |
| Bgr | &z.sqsw; | legend symbol; south-west striped box |
| Bgs | &z.sqne; | legend symbol; north-east striped box |
| Bgt | &z.cirfl; | circle, left filled |
| Bgu | &z.cirfr; | circle, right filled |
| Bgv | &z.cirft; | circle, top filled |
| Bgw | &z.cirfb; | circle, bottom filled |
| Bgx | ▭ | rectangle open, horizontal |
| Bgy | &z.vrecto; | rectangle open, vertical |
| Bgz | &z.parl; | parallelogram |
| Bh3 | &z.merc; | Mercury |

| Coordinate | Content | Description |
|------------|------------|--|
| Bh4 | ♀ | Venus; female |
| Bh5 | &z.jup; | Jupiter |
| Bh6 | &z.sat; | Saturn |
| Bh7 | ♂ | Mars; male |
| Bh8 | &z.herma; | hermaphrodite |
| Bh9 | &z.nept; | Neptune |
| Bha | & | ampersand |
| Bhb | ¢ | cent sign |
| Bhc | \$ | dollar sign |
| Bhd | £ | pound sign |
| Bhe | &z.hfl; | guilders sign |
| Bhf | ¥ | yen sign |
| Bhg | &z.pes; | Pesetas sign |
| Bhj | ð | eth |
| Bhm | ‰ | per thousand; per mille |
| Bhn | &z.ppcent; | per 10 000 |
| Bhr | © | copyright sign (circled C) |
| Bhs | ® | registered sign (circled R) |
| Bht | ™ | trade mark sign (circled TM) |
| Bhw | ♭ | flat (music) |
| Bhx | ♯ | sharp (music) |
| Bhy | ♮ | natural (music) |
| Bi0 | ⦔ | right parenthesis, greater |
| Bi1 | &z.ltril; | left elongated triangle; implied by |
| Bi2 | ⋫ | not right triangle |
| Bi4 | ⋪ | not left triangle |
| Bi7 | ⦓ | left parenthesis, less than |
| Bi8 | &z.rparlt; | right parenthesis, less than |
| Bi9 | &z.lpargt; | left parenthesis, gt |
| Bia | ∀ | inverted capital A; for all |
| Bib | ∃ | reversed cap. E; there exists; at least one exists |
| Bic | ∄ | not rev. cap. E; not exists; there does not exist |
| Bid | ∁ | complement |
| Bif | ∪ | sum or union of classes or sets; logical sum |
| Big | ∩ | prod. of intrsctn of cl./sets; vee; small intrsctn |
| Bih | ⋓ | double union; (Cup) |
| Bii | ⋒ | double intersection; (Cap) |
| Bij | ⊔ | square union |
| Bik | ⊓ | square intersection |
| Bil | ⊎ | plus sign in union |
| Bim | ∨ | logical or; small supremum |
| Bin | ∧ | logical and; small infimum; wedge |
| Bio | &z.Or; | double logical or |
| Bip | &z.And; | double logical and |
| Biq | ⩔ | double supremum (conjunction); double logical or |
| Bir | ⩓ | double infimum (conjunction); double logical and |

| Coordinate | Content | Description |
|------------|-----------------------------|--|
| Bis | <code>&z.Sup;</code> | double supremum (cumulator) |
| Bit | <code>&z.Inf;</code> | double infimum (cumulator) |
| Biu | <code>&cuwed;</code> | curly logical and |
| Biv | <code>&cuvee;</code> | curly logical or |
| Biw | <code>&veebar;</code> | logical or, bar below; injective |
| Bix | <code>&barwed;</code> | logical and, bar above; projective |
| Biy | <code>&z.veeBar;</code> | logical or, dbl bar below |
| Biz | <code>&Barwed;</code> | double bar wedge; log and, dbl bar |
| Bj1 | <code>&acoint;</code> | contour integral, anti-clockwise |
| Bj2 | <code>&ccoint;</code> | contour integral, clockwise |
| Bj3 | <code>&cwint;</code> | clockwise integral |
| Bj4 | <code>&z.sqint;</code> | lattice-integral |
| Bj5 | <code>&z.Lap;</code> | up triangle open with dot; Laplace operator |
| Bja | <code>&sum;</code> | summation operator |
| Bjb | <code>&prod;</code> | product operator |
| Bjc | <code>&coprod;</code> | inverted product (cumulator) |
| Bjd | <code>&amalg;</code> | inverted prod. (conjunction); amalgamation, coprod |
| Bje | <code>&radic;</code> | root; radical sign |
| Bjf | <code>&xcup;</code> | union of classes/sets; sum or sets between limits |
| Bjg | <code>&xcap;</code> | intersection of classes; prod.of cl/sets betw. lmt |
| Bjh | <code>&z.xrat;</code> | cross ratio |
| Bji | <code>&z.S;</code> | S-sign |
| Bjj | <code>&xscup;</code> | big square union |
| Bjk | <code>&z.Thr;</code> | big square intersection |
| Bjl | <code>&xuplus;</code> | plus sign in big union |
| Bjm | <code>&xvee;</code> | large supremum |
| Bjn | <code>&xwedge;</code> | large infimum |
| Bjo | <code>&weierp;</code> | Weierstrass elliptic function |
| Bjp | <code>&int;</code> | integral operator |
| Bju | <code>&z.Cint;</code> | principal-value integral: cauchy integral |
| Bjv | <code>&conint;</code> | contour integral; circuital integral |
| Bjw | <code>&z.sint;</code> | surface integral |
| Bjx | <code>&z.vint;</code> | volume integral |
| Bjz | <code>&z.eint;</code> | edge-integral |
| Bk1 | <code>&ang;</code> | angle |
| Bk2 | <code>&angmsd;</code> | angle-measured |
| Bk3 | <code>&angsph;</code> | spherical angle |
| Bk4 | <code>&z.nglpar;</code> | angle and left parentheses |
| Bk5 | <code>&ang90;</code> | right (90 degree) angle; factorial sign |
| Bk6 | <code>&iproduct;</code> | intprod |
| Bk7 | <code>&deg;</code> | degree sign |
| Bk8 | <code>&ast;</code> | mid asterisk |
| Bk9 | <code>&compfn;</code> | centered circle; composite function; convolution |
| Bka | <code>&lt;</code> | less than sign |
| Bkb | <code>&les;</code> | less than or equal to, slanted |
| Bkc | <code>&els;</code> | equal-or-less, slanted |

| Coordinate | Content | Description |
|------------|------------|--|
| Bkd | ≤ | less than or equal |
| Bke | ≦ | less than or (double) equal |
| Bkf | ≲ | less than or similar to; less, approximate |
| Bkg | ⪅ | less than and double approximate |
| Bkh | ⪝ | less than and approximately |
| Bki | ≶ | less than or greater than |
| Bkj | ⋚ | less, equal, or greater |
| Bkk | ⪋ | less, (double) equal, or greater |
| Bkl | ≪ | much less than (double) |
| Bkm | &z.Lt; | much less than (double) |
| Bkn | ⋘ | much less than (triple) |
| Bko | &ldot; | less than, with dot |
| Bkp | ≂ | equal, similar |
| Bkq | ≺ | precedes; has lower rank than; is dominated by |
| Bkr | ≾ | precedes, similar; dominance; contained in, equiv. |
| Bks | ⪷ | precedes, approximate |
| Bkt | ⪯ | precedes, equals |
| Bku | ≼ | curly prec. equal; has rank lower than or equal to |
| Bkv | ⋞ | curly equals (above), precedes |
| Bkz | &z.mstpos; | most positive |
| B10 | ★ | small (5-point) star, filled |
| B15 | ‵ | backprime; reverse prime |
| B18 | * | pseudo-superscript asterisk (ASCII *) |
| B19 | &z.ccirf; | centered small circle, filled |
| Bla | ≮ | not less than |
| Blb | ⩽̸ | neither less than nor equal to, slanted |
| Bld | ⪇ | less than but not equals |
| Ble | ≨ | less than but not (double) equal to |
| Blf | ⋦ | less than, not similar |
| Blg | ⪉ | less than but not approximate |
| Blh | &z.nltneq; | neither less than nor equivalent to |
| Bli | &z.nltngt; | neither less than nor greater than |
| Blj | ≰ | not less-than-or-equal |
| Blk | ≦̸ | not less, double equals |
| Bln | ≬ | between |
| Blq | ⊀ | does not precede |
| Blr | ⋨ | precedes, not similar |
| Bls | ⪹ | precedes, not approximately |
| Blt | ⪵ | precedes, not double equal |
| Blu | ⪯̸ | not precedes, equals |
| Blz | ∞ | infinity sign |
| Bm1 | ⌣ | up curve, smile |
| Bm2 | ⌢ | down curve, frown |
| Bm3 | ⋔ | pitchfork |
| Bm5 | ′ | prime; minutes; feet |
| Bm6 | ″ | double prime; seconds; inches |

| Coordinate | Content | Description |
|------------|------------|---|
| Bm7 | ‴ | triple prime |
| Bm8 | &z.qprime; | fourfold prime |
| Bm9 | … | triple dot |
| Bma | ; | greater than sign |
| Bmb | ⩾ | greater than or equal to, slanted |
| Bmc | ⪖ | equal-or-greater, slanted |
| Bmd | ≥ | greater than or equal to |
| Bme | ≧ | greater than or double equal to |
| Bmf | ≳ | greater than or similar to; greater than approx. |
| Bmg | ⪆ | greater than, approximately |
| Bmh | ⪞ | greater than, approximately |
| Bmi | ≷ | greater than or less than |
| Bmj | ⋛ | greater, equal, or less |
| Bmk | ⪌ | greater, (double) equal, or less |
| Bml | ≫ | much greater than (double) |
| Bmm | &z.Gt; | much greater than (double) |
| Bmn | ⋙ | much greater than (triple) |
| Bmo | ġ | greater than, with dot |
| Bmp | &z.nesim; | not equal, similar |
| Bmq | ≻ | succeeds; has higher rank than; dominates |
| Bmr | ≿ | succeeds, similar |
| Bms | ⪸ | succeeds, approximate |
| Bmt | ⪰ | succeeds, equals |
| Bmu | ≽ | succ., curly eq; has rank higher than or equal to |
| Bmv | ⋟ | curly equals (above), succeeds |
| Bmz | ∝ | is proportional to; varies as |
| Bn3 | &z.lbd2td; | 2 bonds on the lefthand side, top double |
| Bn4 | &z.lbd2bd; | 2 bonds on the lefthand side, bottom double |
| Bn5 | &z.rbd2td; | 2 bonds on the righthand side, top double |
| Bn6 | &z.rbd2bd; | 2 bonds on the righthand side, bottom double |
| Bn9 | ⋯ | triple dot, centered |
| Bna | ≯ | not greater than |
| Bnb | ⩾̸ | neither greater than nor equal to, slanted |
| Bnd | ⪈ | greater than, not equals to |
| Bne | ≩ | greater than but not (double) equal to |
| Bnf | ⋧ | greater than but not similar to |
| Bng | ⪊ | greater than but not approximate |
| Bnh | &z.ngtneq; | neither greater than nor equivalent to |
| Bni | &z.ngtnlt; | neither greater than nor less than |
| Bnj | ≱ | not greater-than-or-equal |
| Bnk | ≧̸ | not greater, double equals |
| Bnq | ⊁ | does not succeed |
| Bnr | ⋩ | succeeds, not similar |
| Bns | ⪺ | succeeds, not approximate |
| Bnt | ⪶ | succeeds but, not (double) equal to |
| Bnu | ⪰̸ | not succeeds, equals |

| Coordinate | Content | Description |
|------------|-------------|--|
| Bo0 | &z.rad; | radical dot |
| Bo1 | &z.pent; | pentagon |
| Bo2 | &z.hex; | hexagon |
| Bo3 | &z.pdbdtd; | partial double bond, top dashed |
| Bo4 | &z.pdbdbd; | partial double bond, bottom dashed |
| Bo5 | &z.ptbdttd; | partial triple bond, top dashed |
| Bo6 | &z.ptbdbd; | partial triple bond, bottom dashed |
| Bo7 | &z.sbond; | single bond |
| Bo8 | &z.pdbond; | Partial double bond |
| Bo9 | &z.utdot; | triple dot, diagonal SW-NE |
| Boa | ∈ | set membership; member |
| Boc | ⊂ | subset; proper inclusion in set; is implied by |
| Bod | ⊆ | subset, equals; identity or inclusion in set |
| Bog | ⫅ | subset, double equals |
| Boj | ⋐ | double subset |
| Bok | ⊏ | square subset; image of |
| Bol | ⊑ | square subset, equals |
| Boo | ⊸ | multimap |
| Bop | ⊷ | image of |
| Boq | &z.dbnd; | double bond; length as m-dash |
| Bor | &z.tbnd; | triple bond; length as m-dash |
| Bos | &z.qbnd; | quadruple bond; length as m-dash |
| Bow | &z.drule; | -45 degree rule |
| Box | &z.urule; | +45 degree rule |
| Bp9 | ⋱ | triple dot, diagonal NW-SE |
| Bpa | ∉ | not an element of; is not a member of |
| Bpc | &nsb; | not subset; non-proper inclusion in set |
| Bpd | ⊊ | subset, not equals |
| Bpe | &z.nsubne; | not subset, not equals |
| Bpf | &nsbe; | not subset, equals; not contained in or not eql to |
| Bpg | ⫋ | subset, not double equal |
| Bph | &z.nsubE; | not subset, double equals |
| Bpi | &nsbE; | not subset, double equals |
| Bpk | &z.sqnsb; | square not subset |
| Bpl | &z.sqnrsb; | square not reflex subset |
| Bpm | &z.sqsbne; | Square subset, not equal |
| Bpp | ⊶ | original of |
| Bpq | &z.dbnd6; | 6-point double bond; length half of m-dash |
| Bpr | &z.tbnd6; | 6-point triple bond; length half of m-dash |
| Bps | &z.qbnd6; | six-point quadruple bond; length half of m-dash |
| Bpt | &z.rbond3; | 3 bonds on the righthand side |
| Bpu | &z.lbond3; | 3 bonds on the lefthand side |
| Bpv | &z.rbond2; | 2 bonds on the righthand side |
| Bpw | &z.lbond2; | 2 bonds on the lefthand side |
| Bpz | ∼ | most positive |
| Bq0 | &homthr; | homothetic |

| Coordinate | Content | Description |
|------------|---------------|--|
| Bq1 | $\∼$ | similar; equivalent to; varies linearly with |
| Bq2 | $\≃$ | similar, equals; asymptotically equal to |
| Bq3 | $\≅$ | congruent with; similar to |
| Bq4 | $\≈$ | approximate; asymptotic |
| Bq5 | $\≊$ | approximate, equals; asymptotic or equal to |
| Bq6 | $\≋$ | triple tilde; approximately identical to |
| Bq7 | $\∽$ | reverse mainline tilde; reverse similar |
| Bq8 | $\⋍$ | reverse similar, equals |
| Bq9 | $\≌$ | reverse congruent |
| Bqa | $\∋$ | contains; owns; includes |
| Bqc | $\⊃$ | superset; properly includes in set; implies |
| Bqd | $\⊇$ | superset, equals; ident.with or contains as subset |
| Bqg | $\⫆$ | superset, double equals |
| Bqj | $\⋑$ | double superset |
| Bqk | $\⊐$ | square superset; original of |
| Bql | $\⊒$ | square superset, equals |
| Bqm | $\?$ | equal, questionmark |
| Bqn | $\ˆ$ | circle, equals |
| Bqo | $\ė$ | equals, dot above; approaches the limit |
| Bqp | $\≑$ | equals, even dots; approximately equal |
| Bqq | $\≙$ | estimates; corresponds to |
| Bqr | $\≜$ | triangle, equal; equal by definition |
| Bqs | $\≖$ | circle in equals sign |
| Bqt | $\≔$ | colon, equals; is defined as |
| Bqu | $\≕$ | equals, colon; defines |
| Bqv | $\⩷$ | equal, double dot above and under |
| Bqw | $\&z.defas;$ | defined as |
| Bqx | $\≡$ | equivalent; identical with; triple equals |
| Bqy | $\≓$ | equal, rising dots |
| Bqz | $\≒$ | equals, falling dots; appr. equal to; image of |
| Br1 | $\≁$ | not similar; not equivalent to |
| Br2 | $\≄$ | not similar, equals; not asymptotically equal to |
| Br3 | $\≇$ | not congruent with; neither appr. nor act. equal |
| Br4 | $\≉$ | not approximate; not asymptotic to |
| Br6 | $\≋̸$ | not approximately, double; dashed triple tilde |
| Bra | $\∌$ | does not contain as a member |
| Brc | $\⊅$ | not superset; does not properly include in set |
| Brd | $\⊋$ | superset, not equals |
| Bre | $\&z.nsupne;$ | not superset, not equals |
| Brf | $\⊉$ | not superset, equals; does not contain as subset |
| Brg | $\⫌$ | superset, not double equals |
| Brh | $\&z.nsupE;$ | not superset, double equals |
| Bri | $\⫆̸$ | not superset, double equals |
| Brk | $\&z.sqnsup;$ | square not superset |
| Brl | $\&z.sqnrsp;$ | square not reflex superset |
| Brm | $\&z.sqspne;$ | square superset, not equal |

| Coordinate | Content | Description |
|------------|----------------|--|
| Brn | $\&z.nbump;$ | not isomorphic |
| Bro | $\¬$ | logical not sign |
| Brp | $\≏$ | bumpy equals, equals; approximately equal to |
| Brq | $\&z.Ehac;$ | equiangular; equals with hacek |
| Brr | $\≎$ | bumpy equals; geometrically equiv. to; appr. equal |
| Brs | $\≈$ | cupcap; asymptotically equal to |
| Brt | $\∵$ | because |
| Bru | $\∴$ | therefore |
| Brv | $\≠$ | not equal to |
| Brw | $\&z.nasympt;$ | not asymptotically equivalent |
| Brx | $\≢$ | not equivalent, not identical with |
| Brz | $\&z.simne;$ | approximately but not actually equal to |
| Bs1 | $\∅$ | solidus in circle; empty set; null set; diameter |
| Bs2 | $\⊛$ | circled asterisk |
| Bs3 | $\&z.plims;$ | circle and long bar; Plimsoll sign |
| Bs4 | $\&z.xhair;$ | crosshairs; circle and (big) plus sign |
| Bs6 | $\⊟$ | minus sign in box |
| Bs7 | $\⊞$ | plus sign in box |
| Bs8 | $\⊠$ | multiplication sign in box |
| Bsa | $\×$ | multiplication sign |
| Bsb | $\&z.Times;$ | vector multiplication |
| Bsc | $\·$ | center dot |
| Bsd | $\⋉$ | times sign, left closed |
| Bse | $\⋊$ | times sign, right closed |
| Bsf | $\⋈$ | bowtie |
| Bsg | $\⋌$ | right three times |
| Bsh | $\⋋$ | left three times |
| Bsi | $\≀$ | wreath product |
| Bsk | $\&z.odiv;$ | circle divide |
| Bsl | $\⊝$ | circled dash; hyphen in circle |
| Bsm | $\⊘$ | solidus in circle |
| Bsn | $\⊚$ | open dot in circle |
| Bso | $\⊙$ | middle dot in circle; sun-symbol; Tensor product |
| Bsp | $\⊖$ | minus sign in circle; symmetric difference |
| Bsq | $\⌽$ | circle, and vertical bar |
| Bsr | $\⊕$ | plus sign in circle; direct sum; earth sign |
| Bss | $\⊗$ | multiplication sign in circle; direct product |
| Bst | $\&z.oplusl;$ | semi-direct sum |
| Bsu | $\&z.otimsl;$ | semi-direct product |
| Bsv | $\&z.oplusr;$ | semi-direct sum |
| Bsw | $\&z.otimsr;$ | semi-direct product |
| Bta | $\&doplus;$ | plus sign, dot below; tight dotted plus |
| Btb | $\∔$ | plus sign, dot above; direct sum |
| Btc | $\±$ | plus or minus sign |
| Btd | $\∓$ | minus or plus sign |
| Bte | $\⊹$ | hermitian conjugative matrix |

| Coordinate | Content | Description |
|------------|---|--|
| Btf | ⋇ | division on times |
| Btl | − | minus sign |
| Btm | &dminus; | minus with dot beneath; tight dotted minus |
| Btn | ∸ | minus with dot above; symmetric difference |
| Bto | ÷ | division sign |
| Btp | ∺ | geometric properties |
| Btq | – | en dash (long hyphen), copymarked 1/N |
| Btr | — | em dash, copymarked 1/M |
| Bts | &z.minhat; | minus with hat |
| Btt | ∷ | four dots in square; as |
| Btu | ⊴ | left triangle, equal |
| Btv | ⊵ | right triangle, equal |
| Btw | ⋬ | not left triangle, equals |
| Btx | ⋭ | not right triangle, equals |
| Bu0 | ∅ | slashed zero; empty set |
| Buc | <ac>C</ac><ac>&z.xl;</ac> | Cambrian (era) |
| Bug | ℏ | Planck's constant (italic) |
| Buh | ℏ | Planck constant; h-bar (Dirac) |
| Buk | ℓ | roman script-l |
| Buw | <a><ac>A</ac><ac>˚</ac> | angstrom |
| CAa | ´ | acute (accent) |
| CAb | ` | grave (accent) |
| CAc | ˝ | double acute (accent) |
| CAd | ˆ | circumflex, Caret (accent) |
| CAe | ¨ | double dot, umlaut, diaeresis (accent) |
| CAg | ˚ | circle (accent) |
| CAh | &z.Trkxhk; | Turkish hook (accent) |
| CAi | ˜ | tilde (accent) |
| CAj | ˘ | breve (accent) |
| CAk | ˇ | Hacek (Czech.), caron, wedge (accent) |
| CAl | ¸ | cedilla (accent) |
| CAm | ¯ | overbar, macron (accent) |
| CAn | &z.bigdot; | big dot above (accent) |
| CAo | ˙ | dot above (accent) |
| CAp | &z.tDot; | triple dot (accent) |
| CAq | ⃜ | quadruple dot (accent) |
| CAX | ˛ | polish hook, Ogonek (accent) |
| CAy | &z.shts/s; | short slash (overlay) |
| CAz | &z.cans/s; | cancellation slash (overlay) |
| CB1 | э | eh – Cyrillic – |
| CB2 | i | Ukrainian i – Cyrillic– |
| CB3 | й | ee kratkoyeh – Cyrillic– |
| CB4 | ь | myakhky znak – Cyrillic– |
| CB5 | ю | u – Cyrillic– |

| Coordinate | Content | Description |
|------------|----------|----------------------------|
| CB6 | ъ | tvjordyy znak – Cyrillic– |
| CB7 | &zncy; | zheh – Cyrillic– |
| CBa | a | ah – Cyrillic– |
| CBb | б | beh – Cyrillic– |
| CBc | ц | tseh – Cyrillic– |
| CBd | д | deh – Cyrillic– |
| CBe | e | yeh – Cyrillic– |
| CBf | ф | ef – Cyrillic– |
| CBg | г | geh – Cyrillic– |
| CBh | x | khah – Cyrillic– |
| CBi | и | ee – Cyrillic– |
| CBj | я | yah – Cyrillic– |
| CBk | к | kah – Cyrillic– |
| CBl | л | el – Cyrillic– |
| CBm | м | em – Cyrillic– |
| CBn | н | en – Cyrillic– |
| CBo | o | aw – Cyrillic– |
| CBp | п | peh – Cyrillic– |
| CBq | х | tcheh – Cyrillic– |
| CBr | p | ehr – Cyrillic– |
| CBs | c | es – Cyrillic– |
| CBt | т | teh – Cyrillic– |
| CBu | y | oo – Cyrillic– |
| CBv | в | veh – Cyrillic– |
| CBw | щ | shchah – Cyrillic– |
| CBx | ш | shah – Cyrillic– |
| CBy | ы | yery – Cyrillic– |
| CBz | з | zeh – Cyrillic– |
| CC1 | Э | Eh – Cyrillic – |
| CC2 | I | Ukrainian I – Cyrillic – |
| CC3 | Й | Ee kratkoyeh – Cyrillic – |
| CC4 | Ь | Myakhkyy znak – Cyrillic – |
| CC5 | Ю | U – Cyrillic – |
| CC6 | Ъ | Tvyordyy znak – Cyrillic – |
| CC7 | Ж | Zheh – Cyrillic – |
| CCa | A | Ah – Cyrillic – |
| CCb | Б | Beh – Cyrillic – |
| CCc | Ц | Tseh – Cyrillic – |
| CCd | Д | Deh – Cyrillic – |
| CCe | E | Yeh – Cyrillic – |
| CCf | Ф | Ef – Cyrillic – |
| CCg | Г | Geh – Cyrillic – |
| CCh | X | Khah – Cyrillic – |
| CCi | И | Ee – Cyrillic – |
| CCj | Я | Yah – Cyrillic – |
| CCK | К | Kah – Cyrillic – |

| Coordinate | Content | Description |
|------------|-----------|------------------------------------|
| CCl | Л | El – Cyrillic – |
| CCm | M | Em – Cyrillic – |
| CCn | H | En – Cyrillic – |
| CCo | O | Aw – Cyrillic – |
| CCp | П | Peh – Cyrillic – |
| CCq | Х | Tchek – Cyrillic – |
| CCr | P | Ehr – Cyrillic – |
| CCs | C | Es – Cyrillic – |
| CCt | T | Teh – Cyrillic – |
| CCu | У | Oo – Cyrillic – |
| CCv | B | Veh – Cyrillic – |
| CCw | Щ | Shchah – Cyrillic – |
| CCx | Ш | Shah – Cyrillic – |
| CCy | Ы | Yery – Cyrillic – |
| CCz | З | Zeh – Cyrillic – |
| CD0 | ℩ | inverted iota – Greek – |
| CD2 | ϖ | physicians' pi – Greek – |
| CD3 | ϵ | epsilon (cursive) – Greek – |
| CD4 | ϕ | phi (cursive,open) – Greek – |
| CD5 | ϝ | digamma |
| CD6 | ∂ | curly d; differential – Greek – |
| CD7 | &z.betav; | curly beta – Greek – |
| CD8 | ϰ | kappa (cursive,rounded) – Greek – |
| CD9 | ϱ | rho (cursive, round) – Greek – |
| CDa | α | alpha – Greek – |
| CDb | β | beta – Greek – |
| CDc | χ | chi – Greek – |
| CDd | δ | delta – Greek – |
| CDe | ε | epsilon (Porson) – Greek – |
| CDf | φ | phi – Greek – |
| CDg | γ | gamma – Greek – |
| CDh | η | eta – Greek – |
| CDi | ι | iota – Greek – |
| CDj | ϑ | theta (cursive, rounded) – Greek – |
| CDk | κ | kappa – Greek – |
| CDl | λ | lambda – Greek – |
| CDm | μ | mu – Greek – |
| CDn | ν | nu – Greek – |
| CDo | &omicr; | omicron – Greek – |
| CDp | π | pi – Greek – |
| CDq | θ | theta – Greek – |
| CDr | ρ | rho – Greek – |
| CDs | σ | sigma – Greek – |
| CDt | τ | tau – Greek – |
| CDu | &upsil; | upsilon – Greek – |
| CDv | ς | sigma (final) – Greek – |

| Coordinate | Content | Description |
|------------|---|---|
| CDw | ω | omega – Greek – |
| CDx | ξ | xi – Greek – |
| CDy | ψ | psi – Greek – |
| CDz | ζ | zeta – Greek – |
| CE0 | “ | double quotation mark, left |
| CE1 | ∇ | differential vector; nabla; |
| CE2 | &z.mho; | mho |
| CE7 | &z.lsguo; | open single guillemet |
| CE8 | « | open double guillemet; angle open quote |
| CE9 | ‘ | single quotation mark, left |
| CEa | A | capital alpha – Greek – |
| CEb | B | capital beta – Greek – |
| CEc | X | capital chi – Greek – |
| CEd | Δ | delta (capital); increment – Greek – |
| CEe | E | capital epsilon – Greek – |
| CEf | Φ | phi (capital) – Greek – |
| CEg | Γ | gamma (capital) – Greek – |
| CEh | H | capital eta – Greek – |
| CEi | I | capital iota – Greek – |
| CEj | &z.Theta; | Theta (capital, round) |
| CEk | K | capital kappa – Greek – |
| CEl | Λ | lambda (capital) – Greek – |
| CEm | M | capital mu – Greek – |
| CEn | N | capital nu – Greek – |
| CEo | O | capital omicron – Greek – |
| CEp | Π | pi (capital) – Greek – |
| CEq | Θ | theta (capital) – Greek – |
| CEr | P | capital rho – Greek – |
| CEs | Σ | sigma (capital) – Greek – |
| CEt | T | capital tau – Greek – |
| CEu | Υ | upsilon (capital) – Greek – |
| CEw | Ω | omega (capital) – Greek – |
| CEx | Ξ | xi (capital) – Greek – |
| CEy | Ψ | psi (capital) – Greek – |
| CEz | Z | capital zeta – Greek – |
| CF0 | ” | double quotation mark, right |
| CF7 | &z.rsquo; | close single guillemet |
| CF8 | » | close double guillemet; angle close quote |
| CF9 | ’ | single quotation mark, right |
| CFa | æ | ligature ae |
| CFb | Æ | ligature AE |
| CFc | <ac>d</ac><ac>z.xl</ac> | crossed l.c. d |
| CFd | <ac>D</ac><ac>z.xl</ac> | crossed cap. D |
| CFe | œ | ligature oe |

| Coordinate | Content | Description |
|------------|---|--|
| CFf | Œ | ligature OE |
| CFh | ı | undotted l.c. i |
| CFi | &jnodot; | undotted l.c. j |
| CFl | <ac>l</ac><ac>&z.xl</ac> | crossed l.c. l |
| CFm | <ac>L</ac><ac>&z.xl</ac> | crossed cap. L |
| CFo | ø | small o, slashed |
| CFp | Ø | capital O, slashed |
| CFs | ß | es-zet (German) |
| CFu | &z. ausco; | a-underscore |
| CFv | &z. ousco; | o-underscore |
| CGe | ¡ | inverted exclamation mark (Spanish) |
| CGq | ¿ | inverted question mark (Spanish) |
| CHa | ℵ | Aleph (Hebrew) |
| CHb | ℶ | Beth (Hebrew) |
| CHc | ℸ | Daleth (Hebrew) |
| CHd | ℷ | Gimel (Hebrew) |
| CJb | <sc>B</sc> | B Bernoulli function |
| CJh | <sc>H</sc> | H Hamiltonian |
| CJl | <sc>L</sc> | L Lagrangian |
| CJm | <sc>M</sc> | M physics M-matrix |
| CJo | <sc>O</sc> | O order of |
| Pa0 | <ac>&z.glst</ac><ac>&z.bar</ac> | glottal stop, barred (phonetic symbol) |
| Pa1 | &z.glst; | glottal stop (phonetic symbol) |
| Pa2 | &z.sbbrg; | subscript bridge (phonetic symbol) |
| Pa3 | &z.lam; | laminal (phonetic symbol) |
| Pa5 | &z.sbbrgt; | subscript bridge, turned (phonetic symbol) |
| Pa6 | &z.aacute; | extra high, accent (phonetic symbol) |
| Pa7 | &z.xhighs; | extra high, symbol (phonetic symbol) |
| Pa8 | &z.ht; | hooktop (phonetic symbol) |
| Paa | &z.pa; | lower-case a (phonetic symbol) |
| Pab | b | lower-case b (phonetic symbol) |
| Pac | c | lower-case c (phonetic symbol) |
| Pad | d | lower-case d (phonetic symbol) |
| Pae | e | lower-case e (phonetic symbol) |
| Paf | f | lower-case f (phonetic symbol) |
| Pag | &z.pg; | lower-case 'script' g (phonetic symbol) |
| Pah | h | lower-case h (phonetic symbol) |
| Pai | i | lower-case i (phonetic symbol) |
| Paj | j | lower-case j (phonetic symbol) |
| Pak | k | lower-case k (phonetic symbol) |
| Pal | l | lower-case l (phonetic symbol) |
| Pam | m | lower-case m (phonetic symbol) |
| Pan | n | lower-case n (phonetic symbol) |

| Coordinate | Content | Description |
|------------|--|--|
| Pao | o | lower-case o (phonetic symbol) |
| Pap | p | lower-case p (phonetic symbol) |
| Paq | q | lower-case q (phonetic symbol) |
| Par | r | lower-case r (phonetic symbol) |
| Pas | s | lower-case s (phonetic symbol) |
| Pat | t | lower-case t (phonetic symbol) |
| Pau | u | lower-case u (phonetic symbol) |
| Pav | v | lower-case v (phonetic symbol) |
| Paw | w | lower-case w (phonetic symbol) |
| Pax | x | lower-case x (phonetic symbol) |
| Pay | y | lower-case y (phonetic symbol) |
| Paz | z | lower-case z (phonetic symbol) |
| Pb0 | <ac>&z.inglst;/ac><ac>&z.xl;/ac> | inverted glottal stop, crossed (phonetic symbol) |
| Pb1 | &z.inglst; | inverted glottal stop (phonetic symbol) |
| Pb2 | &z.raisi; | raising sign (phonetic symbol) |
| Pb3 | &z.trgull; | seagull, turned (phonetic symbol) |
| Pb4 | <ac>2</ac><ac>&z.xl;/ac> | crossed 2 (phonetic symbol) |
| Pb5 | &z.bar; | bar (phonetic symbol) |
| Pb6 | &z.ggrave; | extra low, accent (phonetic symbol) |
| Pb7 | &z.xlows; | extra low, symbol (phonetic symbol) |
| Pb8 | &z.ctli; | curly tail (phonetic symbol) |
| Pba | &z.trna; | turned a (phonetic symbol) |
| Pbb | <a><ac>b</ac><ac>&z.ht;/ac> | b hooktop (phonetic symbol) |
| Pbc | <a><ac>c</ac><ac>ˇ/ac> | c wedge (phonetic symbol) |
| Pbd | <a><ac>d</ac><ac>&z.ht;/ac> | d hooktop (phonetic symbol) |
| Pbe | &z.schwa; | schwa (phonetic symbol) |
| Pbg | <a><ac>&z.pg;/ac><ac>&z.ht;/ac> | g hooktop (phonetic symbol) |
| Pbh | <ac>h</ac><ac>&z.xl;/ac> | crossed h (phonetic symbol) |
| Pbi | <ac>i</ac><ac>&z.bar;/ac> | barred i (phonetic symbol) |
| Pbj | <a><ac>jnodot</ac><ac>ˇ/ac> | j wedge (phonetic symbol) |
| Pbk | <a><ac>k</ac><ac>&z.ht;/ac> | k hooktop (phonetic symbol) |
| Pbl | <ac>l</ac><ac>&z.bar;/ac> | barred l (phonetic symbol) |
| Pbm | &z.ltlmr; | m with leftward tail at right (phonetic symbol) |
| Pbn | <a><ac>n</ac><ac>˜/ac> | tilde n (phonetic symbol) |

| Coordinate | Content | Description |
|------------|---|---|
| Pbo | ⊙ | bull's eye (phonetic symbol) |
| Pbp | þ | thorn (phonetic symbol) |
| Pbr | &z.fhr; | fish-hook r (phonetic symbol) |
| Pbs | <a><ac>s</ac><ac>ˇ</ac> | s wedge (phonetic symbol) |
| Pbt | <a><ac>t</ac><ac>&z.palhi</ac> | left-hook t (phonetic symbol) |
| Pbu | <ac>u</ac><ac>&z.bar;</ac> | barred u (phonetic symbol) |
| Pbv | &z.pscrv; | script v (phonetic symbol) |
| Pbw | &z.invw; | inverted w (phonetic symbol) |
| Pbx | χ | chi (phonetic symbol) |
| Pby | &z.trny; | turned y (phonetic symbol) |
| Pbz | <a><ac>z</ac><ac>ˇ</ac> | z wedge (phonetic symbol) |
| Pc0 | <ac>&z.reglst;</ac><ac>&z.bar;</ac> | glottal stop reversed, barred (phonetic symbol) |
| Pc1 | &z.reglst; | reversed glottal stop (phonetic symbol) |
| Pc2 | &z.low; | lowering sign (phonetic symbol) |
| Pc3 | &z.sbw; | subscript w (phonetic symbol) |
| Pc5 | &z.xl; | cross, short horizontal line (phonetic symbol) |
| Pc6 | &z.hris; | high rising, accent (phonetic symbol) |
| Pc7 | &z.hriss; | high rising, symbol (phonetic symbol) |
| Pca | &z.pscra; | script a (phonetic symbol) |
| Pcb | <scpb></scpb> | small capital B (phonetic symbol) |
| Pcc | <ac>c</ac><ac>¸</ac> | c cedilla (phonetic symbol) |
| Pcd | &z.rtdl; | right-tail d (phonetic symbol) |
| Pce | <a><ac>&z.schwa;</ac><ac>&z.rh;</ac> | right-hook schwa (phonetic symbol) |
| Pcg | <scpg></scpg> | small capital G (phonetic symbol) |
| Pch | <a><ac>h</ac><ac>&z.ht;</ac> | h hooktop (phonetic symbol) |
| Pci | ι | iota (phonetic symbol) |
| Pcj | <ac>&jnodot;</ac><ac>&z.bar;</ac> | barred dotless j (phonetic symbol) |
| Pck | &z.trnk; | turned k (phonetic symbol) |
| Pcl | &z.btldl; | belted l (phonetic symbol) |
| Pcm | &z.trnm; | turned m (phonetic symbol) |
| Pcn | &z.ltl;n; | n with left tail at left (phonetic symbol) |
| Pco | <ac>o</ac><ac>&z.bar;</ac> | barred o (phonetic symbol) |
| Pcp | Þ | THORN (phonetic symbol) |
| Pcr | &z.rl; | r with long leg (phonetic symbol) |
| Pcs | &z.rtls; | s with right tail (phonetic symbol) |
| Pct | &z.rtl;t; | t with right tail (phonetic symbol) |

| Coordinate | Content | Description |
|------------|---|--|
| Pcu | &z.pupsil; | upsilon (phonetic symbol) |
| Pcy | <scp>y</scp> | small capital Y (phonetic symbol) |
| Pcz | <ac>z</ac><ac>&z.ctl</ac> | curly-tail z (phonetic symbol) |
| Pd1 | ! | exclamation point (phonetic symbol) |
| Pd2 | &z.verts; | vertical stroke (superior) (phonetic symbol) |
| Pd3 | &z.hbar; | horizontal bar (phonetic symbol) |
| Pd6 | &z.lris; | low rising, accent (phonetic symbol) |
| Pd7 | &z.lriss; | low rising, symbol (phonetic symbol) |
| Pda | &z.trnsa; | turned script a (phonetic symbol) |
| Pdb | β | beta (phonetic symbol) |
| Pdc | <ac>c</ac><ac>&z.ctl</ac> | curly-tail c (phonetic symbol) |
| Pdd | &z.dyogh; | d-Yogh ligature (phonetic symbol) |
| Pde | &z.reve; | reversed e (phonetic symbol) |
| Pdg | &z.pgamm; | gamma (phonetic symbol) |
| Pdh | <a><ac>&z.heng</ac><ac>&z.ht</ac> | heng hooktop (phonetic symbol) |
| Pdi | <scp>i</scp> | small capital I (phonetic symbol) |
| Pdj | <ac><a><ac>&jnodot</ac><ac>&z.ht</ac></ac><ac>&z.bar</ac> | dotless j, bar hooktop (phonetic symbol) |
| Pdk | &z.resmck; | small capital K, reversed (phonetic symbol) |
| Pdl | &z.rttl; | l with right tail (phonetic symbol) |
| Pdm | &z.trnmlr; | turned m with long right leg (phonetic symbol) |
| Pdn | &z.eng; | eng (phonetic symbol) |
| Pdo | ø | slashed o (phonetic symbol) |
| Pdp | <a><ac>p</ac><ac>&z.ht</ac> | p hooktop (phonetic symbol) |
| Pdr | &z.rtlr; | r with right tail (phonetic symbol) |
| Pds | &z.esh; | esh (phonetic symbol) |
| Pdt | &z.tesh; | t-esh ligature (phonetic symbol) |
| Pdu | <scp>u</scp> | small capital U (phonetic symbol) |
| Pdz | &z.rtlz; | z with right tail (phonetic symbol) |
| Pe1 | — | pipe (phonetic symbol) |
| Pe2 | &z.verti; | vertical stroke (inferior) (phonetic symbol) |
| Pe3 | &z.gull; | seagull (phonetic symbol) |
| Pe6 | &z.risfla; | rising-falling, accent (phonetic symbol) |
| Pe7 | &z.risfls; | rising-falling, symbol (phonetic symbol) |
| Pea | æ | ash (phonetic symbol) |
| Peb | <ac>b</ac><ac>&z.xl</ac> | crossed b (phonetic symbol) |
| Pec | ∁ | stretched c (phonetic symbol) |
| Ped | ð | eth (phonetic symbol) |
| Pee | <scp>e</scp> | small capital E (phonetic symbol) |
| Peg | &z.pbgam; | baby gamma (phonetic symbol) |
| Peh | &z.trnh; | turned h (phonetic symbol) |

| Coordinate | Content | Description |
|------------|---|--|
| Pei | ı | i, undotted (phonetic symbol) |
| Pej | <ac>j</ac><ac>&z.ctl;</ac> | curly-tail j (phonetic symbol) |
| Pel | &z.lyogh; | l-Yogh ligature (phonetic symbol) |
| Pem | M | capital M (phonetic symbol) |
| Pen | &z.rtl;n; | n with right tail (phonetic symbol) |
| Peo | œ | o-e ligature (phonetic symbol) |
| Pep | &z.pphi; | phi (phonetic symbol) |
| Per | &z.trnr; | turned r (phonetic symbol) |
| Pes | <ac>&z.esh;</ac><ac>&z.ctl;</ac> | curly-tail esh (phonetic symbol) |
| Pet | &z.trnt; | turned t (phonetic symbol) |
| Pez | &z.yogh; | yogh (phonetic symbol) |
| Pf1 | / | slash (phonetic symbol) |
| Pf2 | &z.syllab; | syllabicity mark (phonetic symbol) |
| Pf3 | &z.atr; | advanced tongue root (phonetic symbol) |
| Pf7 | &z.highs; | high, symbol (phonetic symbol) |
| Pfa | <sc>a</sc> | small capital A (phonetic symbol) |
| Pfc | <a><ac>c</ac><ac>&z.ht;</ac> | c hooktop (phonetic symbol) |
| Pfd | Ð | ETH (phonetic symbol) |
| Pfe | ϵ | epsilon (phonetic symbol) |
| Pfg | <a><ac><sc>g</sc></ac><ac>&z.ht;</ac> | G small cap hooktop (phonetic symbol) |
| Pfh | H | capital H (phonetic symbol) |
| Pfj | &jnodot; | j, undotted (phonetic symbol) |
| Pfl | L | capital L (phonetic symbol) |
| Pfn | <sc>n</sc> | small capital N (phonetic symbol) |
| Pfo | Œ | small capital O-E ligature (phonetic symbol) |
| Pfr | &z.rtrtrnr; | turned r with right tail (phonetic symbol) |
| Pfs | &z.reshtl; | esh reversed, top loop (phonetic symbol) |
| Pft | θ | theta (phonetic symbol) |
| Pfz | <ac>&z.yogh;</ac><ac>&z.ctl;</ac> | curly-tail yogh (phonetic symbol) |
| Pg1 | &z.Barpip; | double-barred pipe (phonetic symbol) |
| Pg2 | ⌝ | corner (phonetic symbol) |
| Pg3 | &z.rtr; | retracted tongue root (phonetic symbol) |
| Pg7 | &z.mids; | mid, symbol (phonetic symbol) |
| Pga | &z.invv; | inverted v (phonetic symbol) |
| Pgd | <ac>d</ac><ac>&z.xl;</ac> | crossed d (phonetic symbol) |
| Pge | &z.repsiv; | reversed epsilon (phonetic symbol) |
| Pgh | &z.hrttrh; | turned h, hook right tail (phonetic symbol) |
| Pgl | &lambd; | lambda (phonetic symbol) |
| Pgn | &z.nlr; | n, long right leg (phonetic symbol) |
| Pgo | &z.openo; | open o (phonetic symbol) |

| Coordinate | Content | Description |
|------------|--|--|
| Pgr | &z.trnrl; | turned longlegged r (phonetic symbol) |
| Pgt | <a><ac>t</ac><ac>&z.hti</ac> | t hooktop (phonetic symbol) |
| Pgz | &z.btyogh; | yogh, bent tail (phonetic symbol) |
| Ph1 | ≠ | double-barred slash (phonetic symbol) |
| Ph2 | &z.hlmrk; | half-length mark (phonetic symbol) |
| Ph7 | &z.lows; | low, symbol (phonetic symbol) |
| Pha | <a><ac>&z.pscra;</ac><ac>&z.rhi</ac> | script a, right hook (phonetic symbol) |
| Phd | <ac>D</ac><ac>&z.xli</ac> | crossed D (phonetic symbol) |
| Phe | <a><ac>&z.repsivi</ac><ac>&z.rhi</ac> | right hook reversed epsilon (phonetic symbol) |
| Phh | &z.hvlig; | h-v ligature (phonetic symbol) |
| Phl | <ac>λ</ac><ac>&z.xli</ac> | lambda, crossed (phonetic symbol) |
| Phn | <ac>n</ac><ac>&z.ctli</ac> | curly-tail n (phonetic symbol) |
| Pho | ω | lower-case omega (phonetic symbol) |
| Phr | <scp>r</scp> | small capital R (phonetic symbol) |
| Pht | <ac>t</ac><ac>&z.ctli</ac> | curly-tail t (phonetic symbol) |
| Pi1 | ∥ | double Pipe (phonetic symbol) |
| Pi2 | &z.lmrk; | length mark (phonetic symbol) |
| Pi7 | &z.riss; | rising, symbol (phonetic symbol) |
| Pid | <ac>d</ac><ac>&z.ctli</ac> | curly-tail d (phonetic symbol) |
| Pie | &z.crepsv; | closed reversed epsilon (phonetic symbol) |
| Pih | &z.heng; | heng (phonetic symbol) |
| Pio | &z.clomeg; | closed omega (phonetic symbol) |
| Pir | <scp>&z.pinvR</scp> | inverted small capital R (phonetic symbol) |
| Pj1 | &z.pSlash; | double Slash (phonetic symbol) |
| Pj2 | ’ | apostrophe (phonetic symbol) |
| Pj7 | &z.fals; | falling, symbol (phonetic symbol) |
| Pje | <a><ac>&epsivi</ac><ac>&z.rhi</ac> | epsilon, upper right hook (phonetic symbol) |
| Pjo | <a><ac>&z.openo;</ac><ac>&z.rhi</ac> | open o, upper right hook (phonetic symbol) |
| Pjr | &z.refhr; | fish-hook r, reversed (phonetic symbol) |
| Pk1 | &z.trisla; | triple Slash (phonetic symbol) |
| Pk2 | &z.reapos; | reversed apostrophe (phonetic symbol) |
| Pko | &z.trnomeg; | inverted omega (phonetic symbol) |
| Pkr | &z.rtrfhr; | reversed fish-hook r, right tail (phonetic symbol) |
| Pl1 | &z.sbs; | small backslash (phonetic symbol) |
| Pl2 | ‘ | turned comma (phonetic symbol) |
| Plr | &z.refhrl; | reversed fish-hook r, long leg (phonetic symbol) |

| Coordinate | Content | Description |
|------------|------------|-------------------------------------|
| Pm2 | &z.sblhr; | left half-ring (phonetic symbol) |
| Pn2 | &z.sbrhr; | right half-ring (phonetic symbol) |
| Po2 | &z.palh; | palatization hook (phonetic symbol) |
| Pp2 | &z.rh; | right hook (phonetic symbol) |
| Pq2 | &z.rndcap; | round cap (phonetic symbol) |
| Pq3 | &z.mdc; | mid centralized (phonetic symbol) |
| Pr2 | &z.archs; | subscript arch (phonetic symbol) |
| Ps2 | &z.toplig; | top ligature (phonetic symbol) |
| Pt2 | &z.btmlig; | bottom ligature (phonetic symbol) |

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