**Astronomy
&
Astrophysics**

Astronomy & Astrophysics - Author's guide

A&A Editorial Office

Contents

1. General remarks

Astronomy & Astrophysics publishes new results of astronomical and astrophysical research. Details about the current A&A editorial policy can be found in the editorial published in A&A 420(3), E1-E14 (2004).

Manuscripts submitted for publication to A&A should not be submitted to any other refereed journal, but can be sent to preprint servers such as astro-ph. By submitting a manuscript to A&A, the corresponding author explicitly states that the work is original and that all co-authors have read the manuscript and agree with its contents. A&A Editors expect to be informed when a submitted manuscript has previously been rejected by another Journal.

1.1. Ethical issues: the A&A policy concerning plagiarism and improper attribution

Plagiarism is the severest ethical problem encountered by A&A Editors. It is defined as the act of reproducing text or other content from works written by others without giving proper credit to the source of that content. Note that citing a text literally is not the only condition for determining plagiarism, which also includes any paraphrased text that discusses an already published idea without citing its original source.

Plagiarism is a major ethical breach and may also constitute a legal breach of copyright if the reproduced material has already been published. This is particularly true when authors cite text from their own previously published works. A&A Editors refer to this as "self-plagiarism".

Authors who wish to quote directly from other published work must cite the original reference and include any cited text in quotation marks. Figures may only be reproduced with permission and must be cited in the figure caption. Because A&A focuses on publishing original research results, authors are discouraged from using direct quotations of previously published papers and figures. A citation and brief discussion of previous results in the context of the submitted paper is usually more relevant than direct quotation.

Papers published in A&A should cite previously published papers that are directly relevant to the results being presented. Improper attribution – i.e., the deliberate refusal to cite prior, corroborating, or contradicting results – represents an ethical breach comparable to plagiarism.

Plagiarism, self-plagiarism, and improper attribution can result in the summary rejection of a manuscript submitted to A&A. In the severest cases of plagiarism, offending authors can be banned from publishing in A&A for a determinate period of time. In such cases, the Editor in Chief can also inform the Editors in Chief of the other professional astronomy journals of the author's ethical misconduct.

1.2. Manuscript categories

There are different kinds of manuscripts published in A&A, all of them must be written in English and formatted in LaTeX2e using the current A&A macro package[1]. Submissions and manuscript follow-up are made via the A&A on-line manuscript management system (See Sect. 4).

Letters to the Editor

A&A Letters are short manuscripts on a significant result or idea. They are limited to 3000 words (four or five pages) but can have unlimited supporting material as appendices. They are free for all researchers across the world: they have both no page charges for publication and immediate open-access status. They are treated on a fast-track: a referee's report is expected about ten days after submission, and authors are expected to react to referee reports in a similar time.

Regular papers

Regular papers submitted to A&A should present new astronomical results or ideas of sufficient interest to the community as concisely as possible.

Other submissions

Errata concerning published A&A papers must be sent directly to the editorial office for consideration by the Editor in Chief.

Comments are usually not published by A&A, except in exceptional cases. Three conditions are necessary for a comment to be considered for publication (a) it refers to a paper published by A&A, (b) it does unambiguously solve the problem or question it raises, and (c) its publication will be useful to the community. Comments should also be sent directly to the editorial office.

1.3. About the language

Most papers in A&A have been written by non-native English speakers. Those authors with a limited experience of English are strongly recommended to find help in writing their papers, preferably from a native-speaking colleague. It is the policy of A&A to hold the authors responsible for a correct formulation of their text. A&A offers help, but only after the scientific content of a manuscript has been judged to be sufficient for publication, so it should be understandable before it goes to a referee. If necessary the Editor will send back poorly written submissions to the author with a request for an initial revision of the language by a native English speaker.

1.4. Structure of a paper

Most scientific papers have the same structure:

– Introduction
– Observations or calculations or mathematical derivations
– Results
– Discussion
– Conclusions

This is a well-tried format; authors should have good reasons for deviating from it. The goal of a scientific paper is not to impress the readers by poetic language but to transfer facts and new insights as lucidly as possible.

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[1] Instructions to download and install the A&A macro package are available at `ftp://ftp.edpsciences.org/pub/aa/readme.html`

The first page of a manuscript contains: A title, the authors' names, the addresses of authors' institution, an abstract and six keywords at most.

All this information is also entered in the manuscript management system at submission time. Authors are asked at the same time to suggest the section of the Journal in which the paper will appear.

1.5. The A&A sections

The current A&A sections are as follows.

 1. Letters*
 2. Astrophysical processes
 3. Cosmology (including clusters of galaxies)
 4. Extragalactic astronomy
 5. Galactic structure, stellar clusters and populations
 6. Interstellar and circumstellar matter
 7. Stellar structure and evolution
 8. Stellar atmospheres
 9. The Sun
10. Planets and planetary systems
11. Celestial mechanics and astrometry
12. Atomic, molecular, and nuclear data*
13. Astronomical instrumentation*
14. Catalogs and data*
15. Numerical methods and codes*

* Free access at no cost

Sections 12–15 of A&A have topics of potential use by a wide range of astronomers. Thanks to the generosity of our publisher, who provides free access to these sections and to A&A Letters, these important parts of our Journal are freely available to the worldwide community of astronomers.

Note concerning papers submitted for Section 13

Recognizing the importance of state-of-the-art instrumentation, the A&A Board of Directors has decided to develop the corresponding journal section, thus aiming at making A&A a reference journal also for astronomers whose main interest is instrumentation. We therefore introduce hereby the new editorial policy concerning these papers. In Sect. 13, we will publish papers that describe:

– new concepts and ideas that might lead to actual future instruments,
– crucial instrumental developments in ongoing ground-based or space projects,
– studies that are essential to the preparation of large instrumental projects,
– ground-breaking data processing and mining methods, provided these works report a significant advance on current capabilities and are of interest to a sizable fraction of the community.

Compared to our previous editorial policy for Section 13, the main change is that we no longer request that papers describing instruments and related studies also present astronomical results.

Details on this new policy can be found in the editorial published in A&A 459, E3 (2006).

2. Paper organization: general guidelines

Here, we give some general guidelines concerning the style of the most important elements of a paper. More details and instructions for the LaTeX implementation of these elements are given in the following section, and stylistic considerations are reviewed in Sect. C.

2.1. The title

Make the title short and communicative; do not use acronyms, except those that are in general use; avoid acronyms known only to those deeply specialized.

2.2. The abstract

The abstract should be short but informative. Sometimes this is difficult to achieve as these two criteria contradict each other to some extent. The abstract should give in a few lines the essence of the results. A good abstract eliminates to a large extent the need for the section with conclusions at the end of the paper.

A&A encourages the use of structured abstracts (see the editorial published in A&A 441, E3-E6). Just like a traditional abstract, a structured abstract summarizes the content of the paper, but it does make the structure of the article explicit and visible. For doing so, the structured abstract uses headings that define several short paragraphs. Three paragraphs, entitled respectively "Aims", "Methods", and "Results", are mandatory. When appropriate, the structured abstract may use an introductory paragraph entitled "Context", and a final paragraph entitled "Conclusions".

The objectives of the paper are defined in "Aims", the methods of the investigation are outlined in "Methods", and the results are summarized in "Results". The heading "Context" is used when needed to give background information on the research conducted in the paper, and "Conclusions" can be used to explicit the general conclusions that can be drawn from the paper.

Note that the use of structured abstracts in A&A articles and Letters is not mandatory. Authors who prefer the traditional form are invited to implicitly follow the logical structure indicated above.

2.3. The introduction

The introduction should state clearly why the study was started and place the research in a broad context e.g. by referring to previous work of relevance. The introduction should not contain the conclusions. Some authors tend to expand an introduction into a review paper by itself; this should be avoided; it is better to refer to papers in the well-established review journals. At the end of the introduction the outline of the paper may be described.

2.4. Tables and figures

All tables and figures must be mentioned explicitly by number in the body of the article and appear in correct numerical order in the body of the text.

2.4.1. Table title style

Every table should have a concise title; more extensive descriptions or additional information should be incorporated in a note to the table. Each column, including the first, must have a heading. Column headings should label the entries concisely (one or two words); the first letter of each word is capitalized. Units of measurement should be given in parentheses immediately below the column headings, not listed with the data in the body of the table. To indicate the omission of an entry, ellipsis dots (...) are used.

2.4.2. References in tables

References cited in a table should be numbered, either in the order in which they are listed in the column or following an alphabetical ordering of the references. The reference should list the number, with the full citation by name(s) and year in a note below the table. Alphanumeric abbreviations (e.g., DS86) may be used in place of numbers if these are used elsewhere in the text. The note to the table should then read, e.g., "References. (1) Dupont and Smith 1986; (2) Rees 1998." All references cited in tables must also have a complete entry in the reference list.

2.4.3. Figure legend style

Figure legends should concisely label and explain figures and parts of figures. The first sentence of each figure legend should be a descriptive phrase, omitting the initial article (the, a, an). In multipart figures, the legends should distinguish (a), (b), (c), etc., components of the figure. Note that if parts are identified in the legend as (a), (b), (c), particularly for single figures composed of multiple panels, these letters should be clearly labeled in the figure itself. Otherwise panels should be referred to by position (top right, top left, middle, bottom, etc.). All lines (solid, dashed, dot-dashed, dash-dotted, etc.) and symbols (filled or open circles, squares, triangles, crosses, arrows, etc.) should be explained in the legend. Graphics should not be used in figure legends.

The scientific discussion of the table or figure contents should appear in the main body of the article, not in the table title or figure legend.

2.5. Multimedia

A&A can also publish multimedia and 3D models embedded within HTML and PDF versions of articles. (see also http://www.aanda.org/author-information/latex-issues/multi-media).

2.5.1. Movies

When you submit your video files, please make certain their size is appropriate: as small as possible (and not larger than 10 Mb) but still big enough for all the important scientific information and details to be clearly visible. We will not resize videos, so authors are expected to submit their video files in the size and format in which they wish them to appear.

We accept .mov, .avi, .mpg, and .mp4 files. Please note that we cannot accept movie files that require the reader to download particular codecs; files must be playable on standard media players such as QuickTime, Windows Media Player, or VLC.

2.5.2. 3D models

When you submit your 3D model files, please make certain their size is appropriate: as small as possible but still big enough for all the important scientific information and details to be clearly visible. We will not resize your files, so authors are expected to submit their video files in the size and format they wish them to appear.

U3D or PRC files may be embedded directly into the PDF with the "media9" package

See, for example, figure 15 in the PDF file of the following article:

http://www.aanda.org/articles/aa/abs/2014/01/aa22032-13/aa22032-13.html.

The size of the whole PDF document should not exceed 50 Mb, and the same requirements as for videos apply.

At the present time, the technical tools for automatically standardizing the process of including a 3D object in an HTML format do not exist. To overcome this technical limitation, A&A will accept links to 3D models on your site or on any specialised site such as Sketchfab. In this case, links should be included in your article as footnotes at the appropriate places.

2.6. Appendices

N.B.: From July 2021, Appendices are published as camera-ready material, please check this guide to prepare your Appendices for publication.

In principle, all information that is not crucial for understanding the paper can be published in appendices, following the Editor-in-Chief's decision. For instance, such material can be observation logs, tables of properties that are also reproduced in figures, long mathematical derivations, redundant figures when only one example is needed to understand the discussion, etc.

The appendices are included at the end of the article, after the reference list (or after the long list of affiliations, if any in the PDF file). They must begin on the next page.

Appendices must be prepared carefully, because this part of the article will be published as a camera ready copy, i.e., they will not be typeset by the Publisher. No correction, no copyediting, nor change of the layout in the appendices pages will be made in the LaTeX file after the receipt of the accepted version by the Publisher.

3. TEX file preparation

As the articles for the A&A will be available online in different formats – one of these is full-text-searchable hyper-text – we strongly suggest you strictly obey the LATEX conventions.

The A&A document class was derived from the LATEX 2_ε `article.cls` based on TEX version 3.141 and LATEX 2_ε. You may use it with the LaTeX engine or the pdfLATEX engine. Be sure that the LaTeX version is at least the 2007 version. Hence formulas and text are typed using the standard LATEX 2_ε commands. The standard sectioning commands are also kept. Using `aa.cls` with other versions or implementations may cause difficulties. If this is the case, please contact us and we will try to help you.

Please refrain from using any self-made definitions since these will get lost during further conversion of your text. If you use typing abbreviations, "search and replace" them before submitting your article to the publisher.

3.1. The preamble of your TEX file

3.1.1. Loading the class: various A&A layouts

```
\documentclass{aa}
```

To get the standard A&A 2-column-layout (i.e. single-line spacing), you have to include this command at the beginning of your article.

```
\documentclass[referee]{aa}
```

Both for refereeing purposes and, after acceptance, for language editing purposes, the authors are requested to send their article in "Referee format", i.e. with a special double-line spacing layout. To set this class option, please include the referee *option. This special layout also provides a list of all astronomical objects indexed with the* \object *command (see Sect. 3.8).*

```
\documentclass[longauth]{aa}
```

In articles that are the result of consortia, the number of authors and the list of affiliations are very long. With the longauth *option, all the institutes are set below the references.*

```
\documentclass[onecolumn]{aa}
```

Some papers contain a lot of large mathematical formulae which are sometimes not easily readable and cannot be written in a 2-column format. In this case, the authors can submit their articles using the option onecolumn. *After the submission, the editors will confirm if the article will actually be displayed in 1 column, right across the page.*

```
\documentclass[bibyear]{aa}
```

If you don't use structured references (according to the author-year natbib *style), add this option.*

PDF files for the different layouts obtained with this A&A class will **display the line numbers**. Please note that the "linenoaa.sty" package must always be in the directory of the source (article) to be compiled.

3.1.2. TX fonts

A&A uses the Postscript TX Times-fonts. The TX fonts consist of virtual text roman fonts using Adobe Times with some modified and additional text symbols. The TX fonts are distributed under the GNU public license and are available in the distributions of LATEX since December 2000.

```
\documentclass{aa}
\usepackage[varg]{txfonts}
...
\begin{document}
```

As the use of the TX *fonts results in a slightly different page make-up from* CM *fonts, we encourage you to use* TX *fonts, following this example.*

3.2. The manuscript header

3.2.1. Title

Make the title short and communicative; do not use acronyms, except those that are in general use; avoid acronyms known only to those deeply specialized. The main title and the subtitle should not be capitalized, except for the first letter and any other words that are always capitalized. Math variables and symbols should be typeset as in the text.

In the manuscript TEX file, please code the title and subtitle of your article as follows.

```
\title{<your title>}
\subtitle{<your subtitle>}
```

If a long \title *or* \subtitle *needs to split across two or more lines, please insert linebreaks (**).*

3.2.2. Authors and addresses

For every manuscript, all authors and all addresses should be listed. Addresses should contain e-mail addresses where possible. A number should precede each address and the authors' names should be marked with the appropriate numerical superscript(s). Unless the authors request otherwise, the e-mail addresses will be included in the affiliation to facilitate information exchange between readers and authors.

Names of authors The preferred form for each name is: initial(s) of the forename(s) followed by the family name.

```
\author{<first author's name>
\and <second author's name> }
\and <third author's name>... }
```

If there is more than one author, the order is optional. The names should be separated by \and. *If the authors have different affiliations, each name has to be followed by* \inst{<number>}. *Numbers referring to different addresses should be attached to each author, pointing to the corresponding institute.*

A&A offers authors the possibility of being identified with non-Roman alphabets, such as Chinese, Japanese, Cyrillic characters (see specific instructions here).

Addresses

```
\institute{<name of the first
institute>
\and <name of the second
institute> ...}
```

If there is more than one address, the entries are numbered automatically with \and, *in the order in which you type them. Please make sure that the numbers match those placed next to the authors' names.*

The authors' institutes can also be given using labels, so that there is no need to rewrite the full institutes list if the order of the authors changes during the evaluation process. An example is given below:

```
\author{V.~Arsenijevic\inst{\ref{inst1}}\and S.~Fabbro\inst{\ref{inst2}}\and
A.~M.~Mour\~ao\inst{\ref{inst3}}\and A.~J.~Rica da Silva\inst{\ref{inst1}}}

\institute{Multidisciplinar de Astrof\'{\i}sica, IST, Avenida Rovisco Pais, 1049
Lisbon, Portugal\email{arsenije@ist.utl.pt}\label{inst1}
\and
Multidisciplinar de Astrof\'{\i}sica, IST, Avenida Rovisco Pais, 1049
Lisbon, Portugal\email{arsenije@ist.utl.pt}\label{inst2}
\and
Multidisciplinar de Astrof\'{\i}sica, IST, Avenida Rovisco Pais, 1049
Lisbon, Portugal\email{arsenije@ist.utl.pt}\label{inst3}
}
```

In the case of large collaborations involving several tens of authors, a special formatting of the authors' list is requested in order to save space. With the longauth option, all the institutes are set below the references (see section 3.1.1) .

3.2.3. Footnote to the title block

```
...\thanks{<text of footnote>}
```

If footnotes to the title, subtitle, author's names or institute addresses are needed, please use thanks *immediately after the word where the footnote indicator should be placed.*

These footnotes are marked by asterisks (*). If you need more than one consecutive footnote, use \fnmsep to typeset the comma separating the asterisks (see an example in the file aa.dem available in the macro package).

3.2.4. Dates of receipt and acceptance

Enter the receipt and acceptance dates as follows:

```
\date{Received <date> /
      Accepted <date>}
```

The date is in format "day month year" (e.g. 1 January 2005).

The proper receipt and acceptance dates of your manuscript will be set by the editors and inserted by the publisher.

3.2.5. Abstract

A new concept "Structured Abstract" is implemented with the version 6.0 of the A&A macro package. Just like a traditional abstract, a structured abstract summarizes the content of the paper, but it does make the structure of the article explicit and visible. For doing so, the structured abstract uses headings that define several short paragraphs. Three paragraphs, entitled respectively Aims, Methods, and Results, are mandatory. When appropriate, the structured abstract may use an introductory paragraph entitled Context, and a final paragraph entitled Conclusions. More details about the structured format can be found in the Editorial (A&A 441, E3).

Proceed as follows:

`\abstract` `{}{}{}{}{}`	*The second, third and fourth arguments have to be completed. The first one and the last one might be left empty.*

For example:

`\abstract {} {Text of aims} {Text of methods} {Text of results} {}`

The abstract should accurately summarize the paper's content, be limited to 300 words, and be self-contained (no references, no abbreviations or acronyms except for the truly obvious and familiar ones). A counter of words has been added with an error message for an abstract exceeding 300 words. Citations in an abstract display an error message. Please note that `abstract` is a command with 5 arguments, and not an environment.

Remark : Authors who prefer to keep an unstructured format can do so using the command `\abstract{...}`, which will make the abstract a single paragraph without headings.

3.2.6. Key words

A maximum of 6 key words should be listed after the abstract. These must be selected from a list that is published each year in the first issue in January and is also available in Appendix A or on the A&A web site. This list is common to the major astronomical and astrophysical journals.

In your TeX file, the key words should read as follows:

`\keywords{<keyword 1 - keyword 2 - keyword 3>}}`

3.2.7. Formatting the header and the running title

Having entered the commands described above to set the title block of the article, please format the complete heading of your article by typing:

`\maketitle`

If you leave it out, the work done so far will produce no text. The command `\maketitle` will automatically generate the running title, derivating it from the author and title inputs. If the title is too long for the space available, you will be asked to supply a shorter version. In this case, enter before `\maketitle` :

`\titlerunning{<short title>}`
`\authorrunning{<name(s) of`
`author(s)}`
	If there are two authors, both names, separated by an ampersand (&, coded as \&), should be given; if there are more than two authors, the name of the first plus "et al." should be given. The title should be shortened to a maximum of about 60 characters, spaces ignored, following the wording of the original title as closely as possible. If a paper has a numbered subtitle, the main title (length permitting) should be given, followed by the roman numeral of the subtitle.

The Editors reserve the right to modify the running head suggested by the authors, should this be necessary.

The required style is illustrated below (the colon will be inserted by the macro):

N. Copernicus: How active is NGC 4258?
E. Hertzsprung & E.P. Hubble: Optical spectroscopy of WR stars in M33 and M31. II
A.S. Eddington et al.: Infrared lines as probes of solar magnetic features. IV

C. Barbieri et al.: (RN) First HST/FOC images of the low mass companion of the astronomic binary Gliese 623

Appendix B provides an example of a manuscript header coded with LaTeX.

3.3. The main text

Manuscripts should be divided into numbered sections and subsections, starting with "1. Introduction". Subsections should be numbered 2.1, 2.2, 3.1, etc. All sections must have a short descriptive title. In the TeX file, the sections appear as follows.

```
\section{Title}
\subsection{Title}
\subsubsection{Title}
\paragraph{Title}
```

3.3.1. Cross-referencing

Please always give a `\label` where possible (figures, tables, section) and use `\ref` for cross-referencing. Such cross-references will be converted to HTML hyper-links. The `\cite`- and `\bibitem`-mechanism for bibliographic references as well as the `\object` command is also mandatory.

3.3.2. Acknowledgements

A special section for acknowledgements may be included before the References list. It will appear as follows:

```
\begin{acknowledgements} ... \end{acknowledgements}
```

3.3.3. Some aspects of typographic style within the text

The following expressions should always be abbreviated unless they appear at the beginning of a sentence (i.e. Sect., Sects., Fig., Figs., Col., Cols.). Table is never abbreviated.
Abbreviations of concepts, methods, instruments, observatories, etc may be used throughout the text, but the full wording followed by the abbreviation in parentheses should be given once in the Abstract (if appropriate) and/or once when first mentioned in the main text (usually in the Introduction).
Examples: ...very long baseline interferometry (VLBI)...; ... Westerbork Radio Telescope (WRT)...

3.4. Figures

Figures submitted to the Journal must be of the highest quality to ensure accuracy and clarity in the final published copy. You can supply graphics in eps, pdf, jpg, and tiff formats, or as native Photoshop/Illustrator files. We recommend that you refrain from using conversion tools that might decrease the quality of the figures.
We urge the author to limit the empty space in and around figures. Artwork should be in sharp focus, with clean, clear numbers and letters and with sharp black lines. Thin lines should be avoided, particularly in figures requiring considerable reduction. Authors should check whether laser-printed originals of these figures are acceptable (especially for grayscale).
Background grids and colors are not allowed in figures, unless they contain additional information (galactic coordinate grid superposed on an image with equatorial coordinate axes for example).
The author is warned that changes in the size and arrangement of figures can be made by the publisher at the production stage. Because of the bulk of the Journal, the production office will reduce most figures to fit a one-column format (88 mm). If necessary, figures may extend across the entire page width (max. 180 mm). Intermediate widths with a side caption are also possible (max. 120 mm). The illustrations should be placed at the top of the column and flush-left according to layout conventions.
If lettered parts of a figure (e.g., 1a, 1b, 1c, etc.) are referred to in the figure legend, each part of the figure should be labeled with the appropriate letter within the image area. Symbols should be explained in the caption and not in the figure. Please use lower case for any words in figures to comply with the A& A style.
See appendix B.3 for examples of how figures should be coded in the TeX file.

3.4.1. About figures format

Depending of your preferred LaTeX engine (LaTeX or pdfLaTeX), figures should be sent as encapsulated PostScript files or in any other format as PDF, JPG, TIF, BMP, and GIF (compatible with pdfLaTeX). All graphics are either vector graphics or bitmap graphics. Vector figures are graphics consisting of individual, scalable objects such as lines, curves, and shapes with editable attributes, therefore you can resize a vector without loss of quality. The bitmap figures are graphics composed of dots called pixels. Because bitmaps have a fixed resolution, enlarging or reducing them produce jagged and distorted images because extra pixels are added or supressed. Some software packages leave a considerable margin around the figures. You may have to adjust the BoundingBox for EPS figures by hand with the help of ghostview, for example. The figure can also be automatically changed with the psfixbb command, which you will find in almost any LaTeX distribution. For other formats as PDF, JPG, and bitmap formats, crop out any extra spaces around the figures and also check very carefully that the resolution is at least 250/300 dpi and not 92 dpi, as in standard screen JPG files. The easiest way to include your figures is by using the graphicx package, which comes along with the standard LaTeX2e distribution. See the document by Keith Reckdahl "Using Imported Graphics in LaTeX2e", which explains how to use imported graphics in LaTeX2e documents. The Part I, Background Information provides historical information and describes basic LaTeX2e terminology and graphic formats.

3.5. Tables

Tables should be prepared using the `table` environment, following the examples given below.

Tables should be self-explanatory. The table headings should contain the essential information needed to understand the data presented. Details should not clutter the header and are better presented as explanatory footnotes. Dates in tables should be given in the IAU abridged format, i.e., 2012-Jul-13, or 2012-07-13. Large tables containing primary data can be archived at the CDS. For details about archival at the CDS, please refer to Sect. 3.5.1

Table columns should be set flush left. Vertical lines are normally not necessary and should be inserted only in exceptional cases for the sake of clarity. The height of each table, including the caption, usually must not exceed 23.5 cm, and the caption should always be placed above the table.

Detailed examples of TeX code for tables are provided in the appendix: see appendix B.3.2 for simple A&A tables and appendix B.3.3 for tables longer than one page.

See section 2.4 for details about table caption style.

A&A LaTeX macro package provides some special commands to format notes in the tables, see appendix B.3.4.

3.5.1. Publishing data at the CDS

By contract with the Journal, the CDS archives the primary data that are published in A&A and puts them at the disposal of the global community. The data are also linked to the general purpose data-mining tools developed at the CDS. These archived data can be primary observational material, catalogs, theoretical tables of lasting values, etc.

The CDS requires the data tables to be in ascii format. Each table is accompanied by a readme.txt file that describes the table's content. The readme file format defines a standard that is used by all major astronomy journals. Again by contract with the Journal, the CDS provides help to A&A authors for preparing the files. Primary data can also be archived at the CDS as graphics files in FITS format. This is of particular interest for spectrograms.

Tables made available in electronic form at the CDS should be prepared according to the conventions explained below and should be sent to the CDS upon acceptance of the paper, preferably using the `submission form` proposed on the CDS web site. Alternatively, the tabular material can be sent by e-mail to `cats@cdsarc.u-strasbg.fr`, or by ftp to `cdsarc.u-strasbg.fr`.

The electronic versions of the tables are systematically checked for consistency at the CDS, and the author may have to communicate with the CDS about missing descriptions or detected inconsistencies.

Preparation of the electronic tables

Tables to be published in electronic form at the CDS should preferably be prepared as plain ASCII files, one file per table; the description of all table layouts and contents should be gathered into a file named ReadMe, a template of which can be copied from ftp://cdsarc.u-strasbg.fr/pub/J/A+A/ReadMe.txt. In addition to the description of the tabular material, the role of the ReadMe file is to supply a minimum number of details about the context and the history of the data.

Detailed instructions for the preparation and the submission of the tabular data can be found at `http://cdsweb.u-strasbg.fr/submit/`; specific questions can be addressed to `cats@simbad.u-strasbg.fr`.

Reference to the material published electronically should appear in the text, including a description of the column headings of tabular material. The following text is an example of such a description:

> "Table 1, available at the CDS, contains the following information. Column 1 lists the name of the source, Column 2 gives the bolometric luminosity...".

Alternatively, an excerpt from the table (a few lines) can be inserted in the article.

Retrieving electronic tables

For all papers, including old papers that do not have an electronic version, the online tables can be obtained from the CDS:

– by ftp:

```
ftp cdsarc.u-strasbg.fr (or 130.79.128.5) username: anonymous
password: (type your electronic address) cd pub/A+A/<volume>/<page>
mget * (to get all files)
```

– by web access from:

```
http://cdsweb.u-strasbg.fr/A+A.htx
http://cdsweb.u-strasbg.fr/A+AS.htx
```

3.6. References

3.6.1. The reference list

The reference list should contain all the references cited in the text, ordered alphabetically by surname (with initials following). If there are several references to the same first author, they should be entered according to the following scheme:

1. One author: chronologically
2. Author, one co-author: alphabetically by co-author, then chronologically
3. Author, two or more co-authors: chronologically.

Please note that for papers that have more than five authors, only the first three should be given, followed by "et al."

The A&A format for references is as follows:

– Bohr, N., Einstein, A., & Fermi, E. 1992, MNRAS, 301, 257 (BEF)
– Curie, M., & Curie, P. 1991, A&A, 248, 612
– de Gaulle, C. 1996, Solar Phys. (Oxford Univ. Press, Oxford)
– Heisenberg, W., & West, C. N. 1993, Australian J. Phys., 537, 36 (Paper III)
– Laurel, S., & Hardy, O. 1994, Active Galactic Nuclei, in The Evolution and Distribution of Galaxies, ed. W. Churchill, F. D. Roosevelt, & J. Stalin (Wiley, New York), 210

To set the reference list in the proper A&A format, we encourage you to use BIBTEX and the `natbib` package instead of the standard `thebibliography` environment.

How to use BIBTEX for A&A

For extensive description of the general use of BIBTEX, please see for example The LATEX Companion p.757 (Franck Mittelbach and Michel Goosens, second edition).

To use BIBTEX, you must:

1. **Create a database (`.bib`) file that describes the articles or books you want to reference.** The NASA Astrophysics Data System (ADS) provides automatic tools for retrieving a `.bib` file including entries for a selection of articles. An example of a typical `.bib` file is also provided in the A&A LATEX macro package.
2. **Specify the style and location of the bibliography in your TEX document.** The A&A package includes a style file `aa.bst` that will format your reference list in the proper A&A format. Before running BIBTEX you must ensure that the requested files (i.e. `bib`, `bst` and `sty` files) are in the same directory as your TEX files.
3. **Run BIBTEX then run LATEX.** Remember you must run LATEX twice to update the citations.

In the TEX file, the references list is enclosed as follows:

```
\documentclass{aa}
...
\bibpunct{(}{)}{;}{a}{}{,} % to follow the A&A style
...
% for the bibliography, at the end
\bibliographystyle{aa} % style aa.bst
\bibliography{Yourfile} % your references Yourfile.bib
\end{document}
```

3.6.2. Citations in the text

References are normally cited in the text by placing the name(s) and the year in parentheses, without any comma between them. If there are two authors for one citation, both names should be given, separated by an ampersand (&). If there are more than two authors, only the first name should be given, followed by "et al.". Commas should be used only to separate two or more years linked with one author (author group). If two or more citations are made in one set of parentheses, they should be separated by a semi-colon. If more than one citation for a particular author (author group) is made for the same year, "a", "b", "c", etc. should be added to the year. If citations are made within the normal running text, only the year(s) should be placed in parentheses. The following examples illustrate the required style:

> (Copernicus 1986)
> (Copernicus & Galilei 1988)
> (Hubble et al. 1985; Newton et al. 1987; Ptolemaus & Copernicus 1988a, 1988b, 1992)
> Recently Galilei et al. (1991, 1992) showed that . . .

Authors' initials are permitted only in exceptional cases, for example, to distinguish between two authors with the same surname. Each literature citation made in the text should have a corresponding entry in the *References* at the end of the paper. For frequently cited papers, an abbreviated form of citation is recommended, e.g., Paper I, Paper II (if appropriate) or by the initial letters of the authors' surnames.

The `Natbib` package provides citation commands that automatically format the citations in the proper format. The command `\citet` is to be used for textual citations, while the command `\citep` is to be used for parenthetical citations. Some examples are given below.

`\citet{jon90}`	⇒	Jones et al. (1990)
`\citep{jon90}`	⇒	(Jones et al. 1990)
`\citep[see][]{jon90}`	⇒	(see Jones et al. 1990)
`\citep[see][chap.~2]{jon90}`	⇒	(see Jones et al. 1990, chap. 2)

Multiple citations can be made as usual, by including more than one citation key in the `\cite` command argument.

`\citet{jon90,jam91}`	⇒	Jones et al. (1990); James et al. (1991)
`\citep{jon90,jam91}`	⇒	(Jones et al., 1990; James et al. 1991)
`\citep{jon90,jon91}`	⇒	(Jones et al. 1990, 1991)
`\citep{jon90a,jon90b}`	⇒	(Jones et al. 1990a,b)

3.7. Appendices

N.B.: From July 2021, Appendices are published as camera-ready material, please check this guide to prepare your Appendices for publication.

The appendices are included at the end of the article, after the reference list (or after the long list of affiliations, if any in the PDF file): they must begin on the next page.

Appendices must be prepared carefully, because this part of the article will be published as a camera ready copy, i.e., they will not be typeset by the Publisher. No correction, no copyediting, nor change of the layout in the appendices pages will be made in the LaTeX file after the receipt of the accepted version by the Publisher. Please use labels for each Figure/Table/Section/Reference, and for their citations, in the whole article so that the hyperlinks will be functional in the final version (labels will not be added in the appendices, during the production).

In the LaTeX file, appendix sections should appear as follows:

```
\begin{appendix}
\section{Title of the first
appendix}
...
\section{Title of the second
\end{appendix}
```

Put all the appendix sections into a single environment appendix. Then all sections that follow will be numbered with capital letters. Please do not use the \appendix command instead of the environment appendix for a better management of the counters of Figure/Table which can be placed at the end of the article.

Please note that, on the PDF file, each Figure/Table should be placed inside its own Appendix, not before the title of its Appendix, nor after the title of the next Appendix. Reduction of the size of tables and figures can be applied for that, and also to avoid empty page before the illustration page. There is a way that may also help you to manage this better: in case you have a lot of floating objects for little text and LaTeX engine moves the floats away from their context, the command "\FloatBarrier" of the "placeins" package may allow you to empty the buffer of floats which are currently stored there, and therefore to place all the floats, already indicated before, in the continuity of the document.

For large tables or figures (longer than one page) belonging to an appendix: the next parts of the illustration must keep the same numbering as the first part. The text of the caption on the next pages must be "continued." (e.g.: "Table A.1. continued." or "Fig. B.1. continued."). Please, write "continued." with the letter 'c' in lower-case, not "Continued.".

3.8. Astronomical objects: linking to databases

SIMBAD, the astronomical database, and ALADIN, the interactive deep sky mapping facility at the CDS Strasbourg, create anchors for astronomical objects cited in A&A. Object names that are tagged with the \object macro and verified will appear linked to the object information. As the one better placed to start the process and in order to help in the indexing, you should surround any astronomical object in your text, as well as in small tables with the command:

```
\object{<objectname>}
```

This command simply prints out its argument and adds the thus-marked element to the list of hyper-linked astronomical objects, so it should be repeated for each object.

In the referee version of your article, the list of your objects will automatically appear at the end (after the references). LaTeX will write an auxiliary file with the extension obj to prepare that list.

```
\listofobjects
```

For the final (two-column) version you could use this command directly before the end of your document to get the list of known objects printed.

Astronomical designations (also called Object Identifiers) are often confusing. We encourage you to test the stellar objects (in the *.tex file or in the *.obj file), using the sites and easy tools available at the CDS.

> TeX files: `http://vizier.u-strasbg.fr/viz-bin/Object`
> Obj files: `http://vizier.u-strasbg.fr/viz-bin/Sesame`

The Object Identifiers have been also collected and published by Lortet and collaborators in Dictionaries of Nomenclature of Celestial Objects outside the solar system (1994A&AS..107..193L). The information service available at http://vizier.u-strasbg.fr/cgi-bin/Dic is the electronic look-up version of the Dictionary,

which is updated on a regular basis; it provides full references and usages about for 13211 different acronyms.

Links to object databases (Simbad or Ned, with the directive) should be viewed as a means of referencing the most important astronomical objects studied in the article. The number of such links should therefore not exceed some 10-20 occurrences to remain pertinent. In particular, using the object directive in the tabular material should be avoided, which includes not tagging each and every occurrence of all the object names in the text of the article.

4. How to submit a manuscript

Any submission of Letters or regular articles should be made via the web site devoted to the authors: `https://mms-aanda.obspm.fr/`. Errata should be sent as a PDF file by e-mail to the A&A Editorial Office (`aanda.paris@obspm.fr`).

The Editor-in-Chief is:

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Department of Astrophysics
Türkenschanzstraße 17
1180 Vienna - Austria
e-mail: `aanda.paris@obspm.fr`

The submission process consists of two steps:

1. Register your new submission on the A&A Manuscript Management System (MMS) at the following address
   `https://mms-aanda.obspm.fr/`
2. Upload your manuscript directly to the MMS or to the A&A FTP site.

1. Registering your manuscript on the MMS

In order to register your new submission, you need to enter your author identifier. This is a unique and confidential number that is attributed to you upon your first submission to A&A. If you have submitted a paper to A&A before, you already have an author identifier. If you publish regularly with us, it is a good idea to note your author number for future reference.

If you are a new A&A author, you will be asked to fill out a registration form and an identifier will be attributed to you.

If you have forgotten your author identifier, go to `https://mms-aanda.obspm.fr/`. Click on `Submit a paper` (on the left side of the page) and follow the link for retrieving your number. You will be asked to enter your e-mail address and your identifier will be mailed to the given address if MMS finds a correspondence between the e-mail address you entered and an A&A author.

If you have recently changed your e-mail address, do NOT fill out a new registration form, but instead contact the Editorial Office at `aanda.paris@obspm.fr` and your author identifier will be communicated to you.

2. Uploading your manuscript file

You will first need to prepare your manuscript as a single PDF (preferred) or PostScript file.

- Your manuscript file size is less than or equal to 50 Mbytes. Upload your file directly to the MMS at address `https://mms-aanda.obspm.fr/`.

- Your manuscript file size is larger than 50 Mbytes. You must upload your file to our FTP site at `ftp mms-aanda.obspm.fr`
  A typical sequence of commands for sending your file is as follows:

```
ftp mms-aanda.obspm.fr
login: anonymous
password: your e-mail address
cd incoming
mkdir your name
cd your name
bin
put your\_file.pdf
bye
```

This is a typical sequence of commands for sending your file.
When loading a PDF file, always use the BINARY option otherwise we will not be able to read your file.

Note that the incoming folder is not read-enabled for obvious security reasons; therefore, you will not be able to check that your file has been transferred.

There have been rare reports of access problems to the server that are apparently attributed to some combinations of FTP clients and operating systems. In case of a problem, you might want to try using a different computer or FTP client to load your paper before contacting us.

5. The acceptance stage

5.1. Acceptance proposal from the Associate Editor and official acceptance by the Chief Editor

The Associate Editor in charge of a given paper proposes the paper's acceptance to the Editor-in-Chief, who then sends the author -sometimes with a delay of more than one week- the formal acceptance letter.

There are several reasons to this double acceptance process. First, the Editor-in-Chief needs to the make sure that the peer-review process is consistent, i.e., that the Associate Editors all have comparable acceptance criteria. The second reason is that formal acceptance requires several decisions from the Editor-in-Chief. The section of publication and keywords must be chosen and/or corrected; likewise, one must decide what level of language editing is needed, whether part of article should be published as an Appendix, and whether the paper is subject to page charges.

Note that the official date of acceptance of the paper is the day when the paper is accepted by the Associate Editor in charge of the scientific peer-review process. Time spent after this decision to improve the manuscript and to make the final publishing decisions is editing time for which the author should not be penalized since the scientific content of the paper has already been deemed publishable.

The editorial decisions at acceptance time are the following. The first two, choice of section of publication and of keywords, should be self-explanatory. Since the author can enter these data in MMS using pull-down menus at the time the submission is sent to the Journal, the Editors should not even have to deal with them. In practice, however, many authors still do not indicate the Journal's section for which the paper is submitted, and the keywords must still be modified in many cases. Contributors are therefore encouraged to pay attention to these important details to save time between acceptance and publication.

5.2. Language editing

Papers are sent to language editors after acceptance, at the recommendation of either the referee or one of the Journal's editors. It is also important to know that, unlike at some journals, not all papers are looked at by a language editor, which can explain some differences in usage between the articles actually published, as well as some minor differences between suggestions made by each of the language editors.

Additional information are available in the A&A English guide or on the A&A web site.

6. The production stage

6.1. Sending your files to the publisher

After the paper has been accepted and **on the request of the Editor-in-Chief**, you should send your paper files to the publisher. You need to prepare:

– The final manuscript *.tex file by removing the referee option.
– The figure files.
– Any additional stylefiles needed.
– The PDF of the final version.

You will receive by e-mail your access codes, which allow you to send these files to the publisher by uploading them at the production online system SAGA `http://saga.edpsciences.org/?lang=en`. Once you are connected, you should follow the instructions given.

Tables made available in electronic form at the CDS should be prepared according to the conventions indicated above and detailed at `http://cdsweb.u-strasbg.fr/submit/`; they should be sent to the CDS upon acceptance of the paper, preferably using the submission form proposed on the CDS web site. Alternatively the tabular material can be sent by e-mail to `cats@cdsarc.u-strasbg.fr`, or by ftp to `cdsarc.u-strasbg.fr`.

The electronic versions of the tables are systematically checked for their consistency at the CDS, and the author may have to communicate with the CDS about missing descriptions or detected inconsistencies.

6.2. PDF files of forthcoming papers

A&A now gives online access to unedited preprint versions of accepted papers several weeks ahead of publication, with the authors' consent. This service is free of charge for authors.

The authors' permission is requested by MMS at the time of submission. This version does not take into account corrections made during copy-editing and production processes.

Online access to PDF versions of forthcoming papers is granted to all A&A subscribers.

6.3. Page proofs

For all papers, except Letters, page proofs will be sent to the authors by e-mail (PDF file). Please note that corrections should be restricted to typographical errors; fees for extensive additional changes will be charged to the author. Where absolutely essential, the addition of a "Note added in proof" will be considered and, if accepted, will appear at the end of the paper, following the reference list.

6.4. Electronic offprints

The corresponding authors will receive the PDF file of their article at no charge as soon as it is published.

Appendix A: Key words

The list is common to the major astronomical and astrophysical journals. In order to ease the search, the keywords are subdivided into broad categories.

The parts of the keywords in italics are for reference only and should be omitted when the key are entered on the manuscript.

General

Editorials notices
Errata, addenda
Extraterrestrial intelligence
History and philosophy of astronomy
Miscellaneous
Obituaries, biographies
Publications, bibliography
Sociology of Astronomy
Standards

Physical data and processes

Asteroseismology
Astrobiology
Astrochemistry
Acceleration of particles
Accretion, accretion disks
Astroparticle physics
Atomic data
Atomic processes
Black hole physics
Chaos
Conduction
Convection
Dense matter
Diffusion
Dynamo
Elementary particles
Equation of state
Gravitation
Gravitational lensing: strong
Gravitational lensing: weak
Gravitational lensing: micro
Gravitational waves
Hydrodynamics
Instabilities
Line: formation
Line: identification
Line: profiles
Magnetic fields
Magnetic reconnection
Magnetohydrodynamics (MHD)
Masers
Molecular data
Molecular processes
Neutrinos
Nuclear reactions, nucleosynthesis, abundances
Opacity
Plasmas
Polarization
Radiation mechanisms: general
Radiation mechanisms: non-thermal
Radiation mechanisms: thermal
Radiative transfer
Relativistic processes
Scattering
Shock waves
Turbulence
Waves

Astronomical instrumentation, methods and techniques

Atmospheric effects
Balloons
Instrumentation: adaptive optics
Instrumentation: detectors
Instrumentation: high angular resolution
Instrumentation: interferometers
Instrumentation: miscellaneous
Instrumentation: photometers
Instrumentation: polarimeters
Instrumentation: spectrographs
Light pollution
Methods: analytical
Methods: data analysis
Methods: laboratory
Methods: miscellaneous
Methods: numerical
Methods: observational
Methods: statistical
Site testing
Space vehicles
Space vehicles: instruments
Techniques: high angular resolution
Techniques: image processing
Techniques: imaging spectroscopy
Techniques: interferometric
Techniques: miscellaneous
Techniques: photometric
Techniques: polarimetric
Techniques: radar astronomy
Techniques: radial velocities

Techniques: spectroscopic
Telescopes

Astronomical databases

Astronomical databases: miscellaneous
Atlases
Catalogs
Surveys
Virtual observatory tools

Astrometry and celestial mechanics

Astrometry
Celestial mechanics
Eclipses
Ephemerides
Occultations
Parallaxes
Proper motions
Reference systems
Time

The Sun

Sun: abundances
Sun: activity
Sun: atmosphere
Sun: chromosphere
Sun: corona
Sun: coronal mass ejections (CMEs)
Sun: dynamo
Sun: evolution
Sun: faculae, plages
Sun: filaments, prominences
Sun: flares
Sun: fundamental parameters
Sun: general
Sun: granulation
Sun: helioseismology
Sun: heliosphere
Sun: infrared
Sun: interior
Sun: magnetic topology
Sun: oscillations
Sun: particle emission
Sun: photosphere
Sun: radio radiation
Sun: rotation
(*Sun:*) solar-terrestrial relations
(*Sun:*) solar wind
(*Sun:*) sunspots
Sun: surface magnetism
Sun: transition region
Sun: UV radiation
Sun: X-rays, gamma rays

Planetary systems

Comets: general
Comets: individual: ...
Earth
Interplanetary medium
Kuiper belt: general
Kuiper belt objects: individual: ...
Meteorites, meteors, meteoroids
Minor planets, asteroids: general
Minor planets, asteroids: individual: ...
Moon
Oort Cloud
Planets and satellites: atmospheres
Planets and satellites: aurorae
Planets and satellites: composition

Planets and satellites: detection
Planets and satellites: dynamical evolution and stability
Planets and satellites: formation
Planets and satellites: fundamental parameters
Planets and satellites: general
Planets and satellites: individual: ...
Planets and satellites: interiors
Planets and satellites: magnetic fields
Planets and satellites: physical evolution
Planets and satellites: rings
Planets and satellites: surfaces
Planets and satellites: tectonics
Protoplanetary disks
Planet-disk interactions
Planet-star interactions
Zodiacal dust

Stars

Stars: abundances
Stars: activity
Stars: AGB and post-AGB
Stars: atmospheres
(*Stars:*) binaries (*including multiple*): close
(*Stars:*) binaries: eclipsing
(*Stars:*) binaries: general
(*Stars:*) binaries: spectroscopic
(*Stars:*) binaries: symbiotic
(*Stars:*) binaries: visual
(*Stars:*) blue stragglers
(*Stars:*) brown dwarfs
Stars: carbon
Stars: chemically peculiar
Stars: chromospheres
(*Stars:*) circumstellar matter
Stars: coronae
Stars: distances
Stars: dwarf novae
Stars: early-type
Stars: emission-line, Be
Stars: evolution
Stars: flare
Stars: formation
Stars: fundamental parameters
Stars: general
(*Stars:*) Gamma-ray burst: general
(*Stars:*) Gamma-ray burst: individual: ...
(*Stars:*) Hertzsprung-Russell and C-M diagrams
Stars: horizontal-branch
Stars: imaging
Stars: individual: ...
Stars: interiors
Stars: kinematics and dynamics
Stars: late-type
Stars: low-mass
Stars: luminosity function, mass function
Stars: magnetars
Stars: magnetic field
Stars: massive
Stars: mass-loss
Stars: neutron
(*Stars:*) novae, cataclysmic variables
Stars: oscillations (including pulsations)
Stars: peculiar (*except chemically peculiar*)
(*Stars*): planetary systems
Stars: Population II
Stars: Population III
Stars: pre-main sequence
Stars: protostars
(*Stars:*) pulsars: general
(*Stars:*) pulsars: individual ...
Stars: rotation
Stars: solar-type
(*Stars:*) starspots
Stars: statistics
(*Stars:*) subdwarfs
(*Stars:*) supergiants
(*Stars:*) supernovae: general
(*Stars:*) supernovae: individual: ...
Stars: variables: Cepheids

Stars: variables: delta Scuti
Stars: variables: general
Stars: variables: RR Lyrae
Stars: variables: S Doradus
Stars: variables: T Tauri, Herbig Ae/Be
(*Stars:*) white dwarfs
Stars: winds, outflows
Stars: Wolf-Rayet

Interstellar medium (ISM), nebulae

ISM: abundances
ISM: atoms
ISM: bubbles
ISM: clouds
(*ISM:*) cosmic rays
(*ISM:*) dust, extinction
(*ISM:*) evolution
ISM: general
(*ISM:*) HII regions
(*ISM:*) Herbig-Haro objects
ISM: individual objects: ...
(*except planetary nebulae*)
ISM: jets and outflows
ISM: kinematics and dynamics
ISM: lines and bands
ISM: magnetic fields
ISM: molecules
(*ISM:*) planetary nebulae: general
(*ISM:*) planetary nebulae: individual: ...
(*ISM:*) photon-dominated region (PDR)
ISM: structure
ISM: supernova remnants

The Galaxy

Galaxy: abundances
Galaxy: bulge
Galaxy: center
Galaxy: disk
Galaxy: evolution
Galaxy: formation
Galaxy: fundamental parameters
Galaxy: general
(*Galaxy:*) globular clusters: general
(*Galaxy:*) globular clusters: individual: ...
Galaxy: halo
(*Galaxy:*) local insterstellar matter
Galaxy: kinematics and dynamics
Galaxy: nucleus
(*Galaxy:*) open clusters and associations: general
(*Galaxy:*) open clusters and associations: individual: ...
(*Galaxy:*) solar neighborhood
Galaxy: stellar content
Galaxy: structure

Galaxies

Galaxies: abundances
Galaxies: active
(*Galaxies:*) BL Lacertae objects: general
(*Galaxies:*) BL Lacertae objects: individual: ...
Galaxies: bulges
Galaxies: clusters: general
Galaxies: clusters: individual: ...
Galaxies: clusters: intracluster medium
Galaxies: distances and redshifts
Galaxies: dwarf
Galaxies: elliptical and lenticular, cD
Galaxies: evolution
Galaxies: formation
Galaxies: fundamental parameters
Galaxies: general

Galaxies: groups: general
Galaxies: groups: individual: ...
Galaxies: halos
Galaxies: high-redshift
Galaxies: individual: ...
Galaxies: interactions
(*Galaxies:*) intergalactic medium
Galaxies: irregular
Galaxies: ISM
Galaxies: jets
Galaxies: kinematics and dynamics
(*Galaxies:*) Local Group
Galaxies: luminosity function, mass function
(*Galaxies:*) Magellanic Clouds
Galaxies: magnetic fields
Galaxies: nuclei
Galaxies: peculiar
Galaxies: photometry
(*Galaxies:*) quasars: absorption lines
(*Galaxies:*) quasars: emission lines
(*Galaxies:*) quasars: general
(*Galaxies:*) quasars: individual: ...
Galaxies: Seyfert
Galaxies: spiral
Galaxies: starburst
Galaxies: star clusters: general
Galaxies: star clusters: individual: ...
Galaxies: star formation
Galaxies: statistics
Galaxies: stellar content
Galaxies: structure

Cosmology

(*Cosmology:*) cosmic background radiation
(*Cosmology:*) cosmological parameters
Cosmology: miscellaneous
Cosmology: observations
Cosmology: theory
(*Cosmology:*) dark matter
(*Cosmology:*) dark energy
(*Cosmology:*) diffuse radiation
(*Cosmology:*) distance scale
(*Cosmology:*) early Universe
(*Cosmology:*) large-scale structure of Universe
(*Cosmology:*) inflation
(*Cosmology:*) dark ages, reionization, first stars
(*Cosmology:*) primordial nucleosynthesis

Resolved and unresolved sources as a function of wavelength

Gamma rays: diffuse background
Gamma rays: galaxies
Gamma rays: galaxies: clusters
Gamma rays: general
Gamma rays: ISM
Gamma rays: stars
Infrared: diffuse background
Infrared: galaxies
Infrared: general

Infrared: ISM
Infrared: planetary systems
Infrared: stars
Radio continuum: galaxies
Radio continuum: general
Radio continuum: ISM
Radio continuum: planetary systems
Radio continuum: stars
Radio lines: galaxies
Radio lines: general
Radio lines: ISM
Radio lines: planetary systems
Radio lines: stars
Submillimeter: diffuse background
Submillimeter: galaxies
Submillimeter: general
Submillimeter: ISM
Submillimeter: planetary systems
Submillimeter: stars
Ultraviolet: galaxies
Ultraviolet: general
Ultraviolet: ISM
Ultraviolet: planetary systems
Ultraviolet: stars
X-rays: binaries
X-rays: bursts
X-rays: diffuse background
X-rays: galaxies
X-rays: galaxies: clusters
X-rays: general
X-rays: individuals: ...
X-rays: ISM
X-rays: stars

Appendix B: How to prepare your TEX file: examples

B.1. Example of a manuscript header with structured abstract

```
\documentclass{aa}
\usepackage[varg]{txfonts}

\begin{document}


\title{Optimality relationships for $p$-cyclic SOR p
  \thanks{Research supported in part by the US Air Force
    under grant no. AFOSR-88-0285 and
    the National Science Foundation under grant
    no. DMS-85-21154}\fnmsep
  \thanks{This is a second footnote}\\
  resulting in asymptotically faster convergence\\
  for the same amount of work per iteration}

\subtitle{II. An example text with infinitesimal
  scientific value\\
  whose title and subtitle may also be split}

\author{Daniel J. Pierce\inst{1}
  \and Apostolos Hadjidimios\inst{2}
  \thanks{\emph{Present address:}
    Department of Computer Science, Purdue University,
    West Lafayette, IN 47907, USA}
     \and Robert J. Plemmons\inst{3}}

\institute{Boeing Computer Service, P.O. Box 24346,
  MS 7L-21, Seattle, WA 98124-0346, USA
  \and Department of Mathematics, University of Ioannina,
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\date{Received 2 November 1992 / Accepted 7 January 1993}

\abstract {} {We look for characteristics typical of water-megamaser galaxies
in SO 103-G035, TXS 2226-184, and IC 1481.} {We obtained long-slit optical
emission-line spectra.} {We present rotation curves, line ratios, electron
densities, temperatures. IC 1481 reveals a spectrum suggestive of a vigorous
starburst in the central kiloparsec 108 years ago.} {We do not find any hints
for outflows nor special features which could give clues to the unknown
megamaser excitation mechanism.}

\keywords{interstellar medium: jets and outflows --
  interstellar medium: molecules -- stars: pre-main-sequence}}
\maketitle
```

B.2. Example of a manuscript header with traditional abstract

```
\documentclass{aa}
\usepackage[varg]{txfonts}

\begin{document}


title{Optimality relationships for $p$-cyclic SOR p
  \thanks{Research supported in part by the US Air Force
    under grant no. AFOSR-88-0285 and
    the National Science Foundation under grant
    no. DMS-85-21154}\fnmsep
  \thanks{This is a second footnote}\\
  resulting in asymptotically faster convergence\\
  for the same amount of work per iteration}

\subtitle{II. An example text with infinitesimal
  scientific value\\
  whose title and subtitle may also be split}

\author{Daniel J. Pierce\inst{1}
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 North Carolina State University, Raleigh, NC 27695-8205, USA}

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\abstract{We look for characteristics typical of water-megamaser galaxies in SO
103-G035, TXS 2226-184, and IC 1481. We obtained long-slit optical
emission-line spectra. We present rotation curves, line ratios, electron
densities, temperatures. IC 1481 reveals a spectrum suggestive of a vigorous
starburst in the central kiloparsec 108 years ago. We do not find any hints for
outflows nor special features which could give clues to the unknown megamaser
excitation mechanism.}

\keywords{interstellar medium: jets and outflows --
  interstellar medium: molecules -- stars: pre-main-sequence}}
\maketitle
```

B.3. Examples of tables and figures

B.3.1. Figures

Include the package in the preamble of your document as follows:

```
\usepackage{graphicx}
```

To fill the whole column width, the figure has to be resized with the `resizebox` command.

```
\begin{figure}
  \resizebox{\hsize}{!}{\includegraphics{<yourfilename.eps>}}
  \caption{<Your caption text...>.}
  \label{<Your label>}
\end{figure}
```

For a two-column-wide plot, substitute `figure` by `figure*`.

```
\begin{figure*}
\centering
  \includegraphics[width=17cm]{<yourfilename.eps>}
    \caption{<Your caption text...>.}
    \label{<Your label>}
\end{figure*}
```

A&A also uses a third width, 12 cm; that is, with the figure caption at its lower right-hand side. To achieve this format, use

```
\begin{figure*}
\sidecaption
  \includegraphics[width=12cm]{<yourfilename.eps>}
    \caption{<Your caption text...>.}
    \label{<Your label>}
\end{figure*}
```

B.3.2. Simple tables

Simple tables must be prepared as in the example below.

Table B.1. Nonlinear Model Results

HJD	E	Method#2	Method#3
1	50	-837	970
2	47	877	230
3	31	25	415
4	35	144	2356
5	45	300	556

The corresponding TEX code is as follows

```
\begin{table}
\caption{Nonlinear Model Results}          % title of Table
\label{table:1}      % is used to refer this table in the text
\centering                        % used for centering table
\begin{tabular}{c c c c}        % centered columns (4 columns)
\hline\hline                    % inserts double horizontal lines
HJD & $E$ & Method\#2 & Method\#3 \\    % table heading
\hline                          % inserts single horizontal line
   1 & 50 & $-837$ & 970 \\        % inserting body of the table
   2 & 47 & 877    & 230 \\
   3 & 31 & 25     & 415 \\
```

```
   4 & 35 & 144    & 2356 \\
   5 & 45 & 300    & 556 \\
\hline                                    %inserts single line
\end{tabular}
\end{table}
```

To produce two columns width tables, use the `table*` environment.

If a horizontal line is required in the table, the `\cline{n-m}` command is used to draw a horizontal line from the left side of the column *n* to the right side of the column *m*.

The `\multicolumn{num}{col}{text}` command is used to combine the following `num` columns into a single column with their total width:

```
\hline\hline                  % inserts double horizontal lines
HJD & \multicolumn{3}{c}{Methods}\\
\hline                        % inserts single horizontal line
```

The output is:

HJD		Methods	
1	50	−837	970
2	47	877	230
3	31	25	415
4	35	144	2356
5	45	300	556

Some examples of a table with footnotes or a rotated table in landscape are given in the `aa.dem` file.

B.3.3. Large tables (longer than one page)

To place the large tables automatically at the end of your article, use these commands:

```
\longtab{
\begin{longtable}{lllrrr}
\caption{\label{kstars} Sample stars with absolute magnitude}\\
\hline\hline
Catalogue& $M_{V}$ & Spectral & Distance & Mode & Count Rate \\
\hline
\endfirsthead
\caption{continued.}\\
\hline\hline
Catalogue& $M_{V}$ & Spectral & Distance & Mode & Count Rate \\
\hline
\endhead
\hline
\endfoot
%%
Gl 33    & 6.37 & K2 V & 7.46 & S & 0.043170\\
Gl 66AB  & 6.26 & K2 V & 8.15 & S & 0.260478\\
Gl 68    & 5.87 & K1 V & 7.47 & P & 0.026610\\
         &      &      &      & H & 0.008686\\
Gl 86 \footnote{Source not included in the HRI catalog. See Sect.~5.4.2 for
details.}
         & 5.92 & K0 V & 10.91& S & 0.058230\\
\end{longtable}
}
```

B.3.4. Notes to tables

New commands allow you to format the table notes in the proper A&A layout, as illustrated in the examples given below.

Table B.2. List of nearby SNe used in this work.

SN name	Epoch (with respect to B maximum)	Bands	References
1981B	0	*UBV*	1
1986G	$-3, -1, 0, 1, 2$	*BV*	2
1989B	$-5, -1, 0, 3, 5$	*UBVRI*	3, 4
1990N	2, 7	*UBVRI*	5
1991M	3	*VRI*	6
SNe 91bg-like			
1991bg	1, 2	*BVRI*	7
1999by	$-5, -4, -3, 3, 4, 5$	*UBVRI*	8
SNe 91T-like			
1991T	$-3, 0$	*UBVRI*	9, 10
2000cx	$-3, -2, 0, 1, 5$	*UBVRI*	11

References. (1) Branch et al. (1983); (2) Philipps et al. (1987); (3) Barbon et al. (1990); (4) Wells et al. (1994); (5) Mazzali et al. (1993); (6) Gomez et lopez (1998); (7) Kirshner et al. (1993); (8) Patat et al. (1996); (9) Salvo et al. (2001); (10) Branch et al. (2003); (11) Jha et al. (1999).

- **References below the table:** They are introduced in the TEX file using the command \tablebib, as in the example below.
  The corresponding TEX code is the following:

```
\begin{table*}
\caption ...
\begin{tabular}
... Content of the table
...
\hline
\end{tabular}
\tablebib{
(1)~\citet{branch83}; (2) \citet{phillips87}; (3) \citet{barbon90}; (4) \citet{wells94};
(5) \citet{mazzali93}; (6) \citet{gomez98}; (7) \citet{kirshner93}; (8) \citet{patat96};
(9) \citet{salvo01}; (10) \citet{branch03}; (11) \citet{jha99}.
}
\end{table*}
```

- **Notes below the table:** Notes can refer to special portions of the table and be introduced with superscripts. In this case, the author should use the command \tablefootmark and \tablefoottext. Notes can also include general remarks on the whole table. In this case, the note is not preceded with a superscript and is introduced with the command \tablefoot. A detailed example is given below, followed by the related TEX code.

```
\begin{table}
\caption{\label{t7}Spectral types and photometry for stars in the
  region.}
\centering
\begin{tabular}{lccc}
\hline\hline
Star&Spectral type&RA(J2000)&Dec(J2000)\\
\hline
69            &B1\,V      &09 15 54.046 & $-$50 00 26.67\\
49            &B0.7\,V    &*09 15 54.570& $-$50 00 03.90\\
LS~1267~(86) &O8\,V      &09 15 52.787&11.07\tablefootmark{a}\\
24.6          &7.58\tablefootmark{1}&1.37\tablefootmark{a}   &0.20\tablefootmark{a}\\
\hline
LS~1262       &B0\,V      &09 15 05.17&11.17\tablefootmark{b}\\
```

Table B.3. Spectral types and photometry for stars in the region.

Star	Spectral type	RA(J2000)	Dec(J2000)
69	B1 V	09 15 54.046	−50 00 26.67
49	B0.7 V	*09 15 54.570	−50 00 03.90
LS 1267 (86)	O8 V	09 15 52.787	11.07^a
24.6	7.58^a	1.37^a	0.20^a
LS 1262	B0 V	09 15 05.17	11.17^b
MO 2-119	B0.5 V	09 15 33.7	11.74^c
LS 1269	O8.5 V	09 15 56.60	10.85^d

Notes. The top panel shows likely members of Pismis 11. The second panel contains likely members of Alicante 5. The bottom panel displays stars outside the clusters.
[a] Photometry for MF13, LS 1267 and HD 80077 from Dupont et al. [b] Photometry for LS 1262, LS 1269 from Durand et al. [c] Photometry for MO2-119 from Mathieu et al.

```
MO 2-119    &B0.5\,V  &09 15 33.7 &11.74\tablefootmark{c}\\
LS~1269     &O8.5\,V   &09 15 56.60&10.85\tablefootmark{d}\\
\hline
\end{tabular}
\tablefoot{
The top panel shows likely members of Pismis~11. The second panel contains likely
members of Alicante~5. The bottom panel displays stars outside the clusters.\\
\tablefoottext{a}{Photometry for MF13, LS~1267 and HD~80077 from Dupont et al.}
\tablefoottext{b}{Photometry for LS~1262, LS~1269 from Durand et al.}
\tablefoottext{c}{Photometry for MO2-119 from Mathieu et al.}
}
\end{table}
```

Some other examples of large, online tables are also given in the `aa.dem` file.

Appendix C: Typography: General typing rules

C.1. Fine tuning of the text

The following should be used to improve the readability of the text:

\\,	a thin space, e.g. between thousands in numbers with more than 4 digits; a line division will not be made following this space,
--	en-dash; two hyphens, without a space at either end,
␣--␣	Please note: in TEX, --- gives an em-dash "—"; we do not use this, but rather the shorter en-dash *with* spaces, i.e. space, two hyphens, for an en-dash, space, to give an "em-dash".
-	hyphen; no space at either end,
$-$	minus, in the text <u>only</u>,
~	fixed space, e.g. between parts of names.

Their use is best explained in the following example.
Sample input:

```
20\,000 km, 1\,000\,000 s, HD 174\,638 1950--1985, p.~11--21 this -- written on
a computer -- is now printed signal-to-noise ratio, early-type, metal-poor,
non-relativistic $-30$~K, $-5\ ^{\circ}$C Dr.~h.c.~Rockefeller-Smith and
Prof.~Dr.~Mallory
```

Sample output:

20 000 km, 1 000 000 s, NGC 468 324 1950–1985, p. 11–21 this – written on a computer – is now printed signal-to-noise ratio, early-type, metal-poor, non-relativistic -30 K, -5 °C Dr. h.c. Rockefeller-Smith and Prof. Dr. Mallory

C.2. Units, symbols, and nomenclature

Authors can considerably help the publisher by observing the following rules:

a) The text should make clear distinctions between physical variables, mathematical symbols, units of measurement, abbreviations, chemical formulae, etc.

b) Italics and boldface should be used appropriately to identify physical or mathematical variables. In general, variables are set in regular italics, vectors in boldface italics. Physical constants such as the speed of light, the Boltzmann constant, the Hubble constant and the solar mass are also set in regular italics.

c) Italics should never be used for units of measurement e.g. km, erg cm^{-2}, s^{-1} or for chemical formulae unless, of course, these items fall within a passage that is entirely in italics.

d) As far as possible, italics should be avoided for the following: mathematical signs such as "d" (total differential), "e" (base of natural logarithm), "i" (imaginary unit), "pi" (3.14159...), and abbreviations used as subscripts or superscripts to variables, but serving merely as labels, e.g. Q_d (d = dust), m_e (e = electron). However, in conformity with the rest of the text, italics should be used if the subscripts or superscripts are variables themselves.

e) For common units of measurement (SI and non-SI), standard abbreviations should be used. Unusual units may, at the authors' discretion, be written in full, at least at the first mention. Some traditional, non-SI units persist in astronomy literature. Some are acceptable (e.g. erg, angström/Å) but others are obsolescent and should be avoided (e.g. micron/μ). Compound units in which the meaning "per" is implied can be written using either a slash or a negative index: A&A prefers the latter style, e.g. km s^{-1} instead of km/s.

f) For the correct naming of astronomical objects outside the solar system, it is suggested that authors refer to the recommendations on nomenclature given by the International Astronomical Union at `http://cdsweb.u-strasbg.fr/Dic/how.htx`

C.3. Special typefaces

Emphasize: (`\emph{Emphasize}`) should be used for emphasis in the text.
Vectors: `\vec{Symbol}`, vectors may only appear in math mode.
Examples:
Input: `$\vec{A} \times \vec{B} \cdot \vec{C}$`
Output: $\boldsymbol{A} \times \boldsymbol{B} \cdot \boldsymbol{C}$
Input: `$\vec{A\/}^{\rm T} \otimes \vec{B} \otimes \vec{\hat D}$`
Output: $\boldsymbol{A}^{\rm T} \otimes \boldsymbol{B} \otimes \boldsymbol{\hat{D}}$

Tensors \tens{Symbol}], tensors may only appear in math mode.

Example:

Input: \tens{ABC}

Output: ABC

Ions \ion{<element symbol>}{<degree of ionization>}, the degree of ionization in the \ion command has to be given as lower case roman numerals (e.g. \ion{H}{ii} which yields H II).

Examples:

Input: \ion{H}{II}

Output: H II

Input: \element[][13]{C}

Output: ^{13}C

Elements \element[<electrical charge>][<number of nucleons>] [<number of protons>] [<number of neutrons>]{<element symbol>}

Note, that if you want to have for example ^{13}C, the last two optional arguments may be omitted: \element[][13]{C}.

C.4. Signs and characters

You may need to use special signs. The available ones are listed in different books (*LaTeX User's Guide & Reference Manual, The LaTeX Companion, etc.*). We have created further common astronomy symbols:

In	Explanation	Out	In	Explanation	Out
\sun	sun symbol	⊙	\fs	fraction of second	ˢ
\degr	degree	°	\fdg	fraction of degree	°
\diameter	diameter	⌀	\fp	fraction of period	ᵖ
\farcs	fraction of arcsecond	″			
\fd	fraction of day	ᵈ	\farcm	fraction of arcmin	′
\arcsec	arcsecond	″	\fh	fraction of hour	ʰ
\arcmin	arcminute	′	\fm	fraction of minute	ᵐ

In	Out	In	Out
\la	≲	\ga	≳
\cor	≘	\sol	⪷
\sog	⪴	\lse	≦
\gse	⪆	\grole	⪸
\leogr	⋚	\loa	⪅
\goa	⪈	\getsto	⇆
\lid	≦	\gid	≧

C.5. Mathematical formulae

All equations that you are referring to with \ref must have the corresponding \label – please use this mechanism only. Punctuate a displayed equation in the same way as ordinary text.

```
\left(   \left[
\right)  \right]
```

Note that the sizes of the parentheses or other delimiter symbols used in equations should ideally match the height of the formulas being enclosed. This is automatically taken care of by these LaTeX commands.

Italic and roman type in the math mode

In math mode LaTeX treats all letters as though they were mathematical or physical variables; hence they are typeset in italics. However, any textual elements within formulas should be set in roman. Roman should also be used for subscripts and superscripts *in formulas* where these are merely labels and not in themselves variables, e.g.

```
$T_\mathrm{eff} =
  5\times 10^{9}\ \mathrm{K}$      produces    $T_{\mathrm{eff}} = 5 \times 10^9$ K
$T_\mathrm{K}$                     produces    $T_{\mathrm{K}}$ (K = Kelvin)
$m_\mathrm{e}$                     produces    $m_{\mathrm{e}}$ (e = electron)
```

However, do not use roman if the subscripts or superscripts represent variables, e.g. $\sum_{i=1}^{n} a_i$.

Please ensure that *physical units* (e.g. pc, erg s^{-1} K, cm^{-3}, W m^{-2} Hz^{-1}, m kg s^{-2} A^{-2}) and *abbreviations* such as Ord, Var, GL, SL, sgn, const. are always set in roman type with an appropriate inter-word spacing. To

ensure this, use the \mbox command: \mbox{Hz}. On p. 44 of the *LaTeX User's Guide & Reference Manual* (2nd ed.) by Leslie Lamport, you will find the names of common mathematical functions, such as log, sin, exp, max, and sup. These should be coded as \log, \sin, \exp, \max, \sup and will then automatically appear in roman.

In order to distinguish "d" used as the "differential sign" and "e" used as the "exponential function" from normal variables, set these letters in roman.

Chemical symbols and formulas should be set in roman, e.g. Fe not *Fe*, H_2O not H_2O, $H\alpha$ not $H\alpha$.

Appendix D: Simplified abbreviations of frequently used journals

AJ	Astronomical Journal (the)
ARA&A	Annual Review of Astronomy and Astrophysics
AZh	Astronomiceskij Zhurnal
A&A	Astronomy and Astrophysics
	(Letters indicated by number)
A&AR	Astronomy and Astrophysics Review (the)
A&AS	Astronomy and Astrophysics Supplement Series
Acta Astron.	Acta Astronomica
Acta Astron. Sin.	Acta Astronomica Sinica
Afz	Astrofizica
ApJ	Astrophysical Journal (the)
	(Letters indicated by number)
ApJS	Astrophysical Journal Supplement Series (the)
Ap&SS	Astrophysics and Space Science
Ark. Astron.	Arkiv for Astronomi
Astron. Nachr.	Astronomische Nachrichten
Aust. J. Phys.	Australian Journal of Physics
Aust. J. Phys.	Australian Journal of Physics
Astrophys. Suppl.	Astrophysics Supplement
BAAS	Bulletin of the American Astronomical Society
Bull. astr. Inst. Czechosl.	Bulletin of the Astronomical Institutes of Czechoslovakia
C. R. Acad. Sci. Paris	Comptes Rendus de l'Académie des Science
Chin. Astron.	Chinese Astronomy
IAU Circ.	International Astronomical Union, Circular
Icarus	Icarus
Ir. Astron. J.	Irish Astronomical Journal
J. R. Astron. Soc. Can.	Journal of the Royal Astronomical Society of Canada
JA&A	Journal of Astronomy and Astrophysics
MNRAS	Monthly Notices of the Royal Astronomical Society
Mem. R. Astron. Soc.	Memoirs of the Royal Astronomical Society
Mem. Soc. Astron. Ital.	Memorie della Societa Astronomica Italiana
Mitt. Astron. Ges.	Mitteilungen der Astronomischen Gesellschaft
Mon. Notes	Monthly Notes of the Astronomical Society
Astron. Soc. S. Afr.	of Southern Africa
Nat	Nature
Observatory	Observatory (the)
PASJ	Publications of the Astronomical Society of Japan
PASP	Publications of the Astronomical Society of the Pacific
PASPC	Ditto, Conference Proceedings
Phil. Trans. R. Soc. London,	Philosophical Transactions of the
Ser. A	Royal Society of London, Series A
Proc. Astron. Soc. Aust.	Proceedings of the Astronomical Society of Australia
QJRAS	Quarterly Journal of the Royal Astronomical Society
Rev. Mex. Astron. Astrofis.	Revista Mexicana de Astronomia y Astrofisica
Ric. Astron. Specola Vaticana	Ricerche Astronomiche. Specola Vaticana
Sci	Science
Sci. Am.	Scientific American
Sky Telesc.	Sky and Telescope
Space Sci. Rev.	Space Science Reviews
SvA	Soviet Astronomy

There are commands for many of the most frequently-referenced journals so that authors may use the markup rather than having to look up a particular journal's abbreviation.

\actaa	Acta Astronomica
\aj	Astronomical Journal
\araa	Annual Review of Astron and Astrophys
\apj	Astrophysical Journal
\apjl	Astrophysical Journal, Letters
\apjs	Astrophysical Journal, Supplement
\ao	Applied Optics
\aplett	Astrophysics Letters
\apspr	Astrophysics Space Physics Research
\apss	Astrophysics and Space Science
\aap	Astronomy and Astrophysics
\aapr	Astronomy and Astrophysics Reviews
\aaps	Astronomy and Astrophysics, Supplement
\azh	Astronomicheskii Zhurnal
\baas	Bulletin of the AAS
\bac	Bulletin of the Astronomical Institutes of Czechoslovakia
\bain	Bulletin Astronomical Institute of the Netherlands
\caa	Chinese Astronomy and Astrophysics
\cjaa	Chinese Journal of Astronomy and Astrophysics
\fcp	Fundamental Cosmic Physics
\gca	Geochimica Cosmochimica Acta
\grl	Geophysics Research Letters
\iaucirc	IAU Cirulars
\icarus	Icarus
\jcap	Journal of Cosmology and Astroparticle Physics
\jcp	Journal of Chemical Physics
\jgr	Journal of Geophysics Research
\jqsrt	Journal of Quantitiative Spectroscopy and Radiative Trasfer
\jrasc	Journal of the RAS of Canada
\memras	Memoirs of the RAS
\mnras	Monthly Notices of the RAS
\memsai	Mem. Societa Astronomica Italiana
\na	New Astronomy
\nat	Nature
\nar	New Astronomy Review
\nphysa	Nuclear Physics A
\pra	Physical Review A: General Physics
\prb	Physical Review B: Solid State
\prc	Physical Review C
\prd	Physical Review D
\pre	Physical Review E
\prl	Physical Review Letters
\pasp	Publications of the ASP
\pasj	Publications of the ASJ
\pasa	Publications of the ASA
\physrep	Physics Reports
\physscr	Physica Scripta
\planss	Planetary Space Science
\procspie	Proceedings of the SPIE
\qjras	Quarterly Journal of the RAS
\rmxaa	Revista Mexicana de Astronomia y Astrofisica
\skytel	Sky and Telescope
\solphys	Solar Physics
\sovast	Soviet Astronomy
\ssr	Space Science Reviews
\zap	Zeitschrift fuer Astrophysik