Astronomische Nachrichten – Instructions for authors using LATEX 2ε markup [⋆]

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This article gives instructions for authors of *Astronomische Nachrichten* (AN) how to prepare an article according to the current LATEX class. The source code of this paper may be used by the authors of AN as a template. For further information about the journal, its publisher, its editorial and advisory boards, please look at the World Wide Web (URL http://www.aip.de/AN/) where this text and accompanying class files can be obtained from.

1 Introduction

In order to ensure that papers received for publication from different authors are consistent in format, style, and quality, authors are required to type their manuscripts according to the following instructions. The editors will modify the electronic manuscripts if necessary to ensure that they conform to these standards.

2 LATEX markup commands

Authors using LATEX are requested to use the `an` document class. It was derived from the `article.cls` class based on TEX version 3.14159 and LATEX 2ε. Hence formulae and text are typed using the standard LATEX commands.

A copy of the class file, the LATEX source of this template file as well as its PostScript-version are available via the web-pages of the editorial office of AN at the Astrophysical Institute Potsdam (www.aip.de/AN) or on request via e-mail from the editor (*AN@aip.de*).

2.1 Preamble

The first piece of markup in the manuscript must declare the class of the document.

```
\documentclass{an}
```

The `\documentclass` command must appear first in any LATEX file, and this one specifies the document class to be the `an` class which uses ten point fonts. The font used by AN will be the `txfonts` font. It is defined by the

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

command following the `\documentclass` command. If the corresponding font-package is not available to authors, paper submission is also possible using the "times" or "roman" font, which is not too different from the tx font as far as page layout etc. is concerned.

The body of the text is embraced by the usual

```
\begin{document}
```
body of text
```
\end{document}
```

commands which identify the beginning and end of the main portion of the manuscript.

2.2 Layout of the heading section (Title, Author(s), Abstract, etc.)

The following sequence of LATEX commands defines completely the heading section of the paper

```
\Pagespan{first}{last}
\Yearpublication{Year of publication}
\Yearsubmission{Year of submission}
\Month{Month of publication}
\Volume{Volume}
\Issue{Issue}
\DOI{DOI}
\title{The title}
\author{A.N. Author}
\institute{The Author's Institute}
\received{R-date} \accepted{A-date}
\publonline{P-date}
\keywords{list of keywords}
\abstract{Text of abstract}
\maketitle
```

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The first seven commands of these are intended for editorial usage and should be ignored by the author(s). They set publishing data for the headline of the first page. \Pagespan takes two numerical parameters indicating the article's first and last page number. If the second parameter is empty, the number of the last page will be calculated automatically. The names of the next five commands \Yearpublication, \Yearsubmission, \Month, \Volume, and \Issue are pretty self-explaining and fall back to place holder values if omitted. \DOI will set the DOI number or, if left empty, remind to "please set DOI!".

Title and author identification are generated with the standard LaTeX commands \title and \author. The authors name will be type-set using the **boldface** font. Next the author's affiliation is given using the \institute command. Some of the authors may have alternate affiliations. Both affiliations can be defined in the \institute command separated by an

\and

command and are referenced using the

\inst

command following the corresponding author(s). In addition, the use of the

\thanks

command is possible in order to acknowledge use of an observatory or similar.

The commands \received, \accepted, and \publonline typeset the document's publishing date(s). If some data is unknown, the corresponding command is supposed to be omitted.

Should the paper have more than one author, include the co-author(s) name(s) in the \author and \institute commands. Use only the \and command as separator. The present address or the current e-mail address of the corresponding author(s) are defined also via the the \thanks command.

A total of up to five keywords characterizing the main topics of the paper can be specified. These shall be selected from the list of keywords which is accessible via the WWW-page of AN. Keywords are defined using the \keywords command.

Next the abstract of your paper is to be be given. Abstracts are required for all papers. Your abstract must be given using the \abstract command. Empty lines are not allowed within the summary. If you wish to break lines, use double backslashes \\ instead.

The heading section is closed with the \maketitle command.

2.3 Table of contents

Presumably for long articles, a table of contents can be included automatically giving the command

\tableofcontents

immediately following \begin{document}.

2.4 Sectioning

The an class supports three levels of sectioning, sections, subsections and subsubsections. If you wish to open a new chapter, type

\section{*title of section*}.

The

\subsection   and
\subsubsection

commands open subsections of different levels. These commands delimit sections by marking their *beginnings*, respectively; there are no separate commands to identify the *ends*.

There is no capitalization in the titles of sections and subsections except for proper names.

If one wishes to have an acknowledgements section, the

\acknowledgements

command will do. The text of the acknowledgement shall be typed thereafter. There is no separate command to identify the end of the acknowledgements.

Appendices can be defined using the appendix environment. Individual parts of an appendix can be separated with the \section command. They will be "numbered" with capital letters A, B, C . . . .

2.5 Figures

Authors are welcome to include their figures and graphics as PostScript-files using the graphicx package. The name of the corresponding package must be defined immediately following the \documentclass command using e.g. \usepackage{graphicx}.

The standard width of a figure in AN is equal to the width of one column. The figure caption is set below the figure. Please note, that the height of characters and digits in the finally printed manuscript must not be smaller than 2 mm. The standard way for inclusion of a PostScript file then looks like this:

\begin{figure}
{\includegraphics[option]{*file*}
\caption{Caption text ...}
\label{label_for_figure}
\end{figure}

where *file* is the name (without extension, e.g., .eps) of the file to be included. A number of options defined in square brackets help to correctly position and size your figure. These include parameters specifying e.g. the height, the width, the angle or the BoundingBox bb. For details on that see the *Guide to using graphics in LaTeX* by David Carlisle, provided for example by the Comprehensive TeX Archive Network (CTAN) at ftp://ftp.dante.de/tex-archive/macros/latex/required/graphics/grfguide.pdf. Note that all Figures and Tables should be identified by
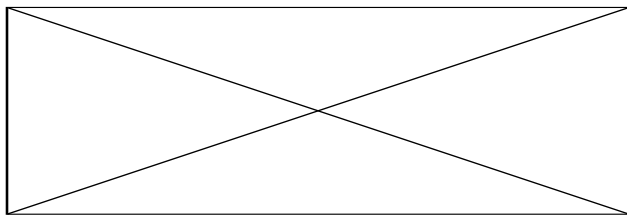
Fig. 1 The caption of a figure shall describe the content of the figure. An exception is granted only to the Editor and its ghost-writer, who demonstrate the usage of this command.

the `\label{...}` definition, placed within or after the `\caption{...}` macro.

A large figure spanning significantly more than one column shall be embraced by the `\begin{figure*}` and `\end{figure*}` commands.

If you cannot provide your figure as encapsulated Post-Script file (but have glossy prints or photos instead), leave appropriate space at the desired location in the text using the `\vspace` command in the `figure` environment. Place your `\caption` as shown in the above example inside the environment.

Reproduction of color images on paper carries an extra charge. Costs are subject to changes and depend on how much color art is present in a particular issue; an estimate will be given upon request. It should be noted that a certain level of color shift during the reproduction process will have to be accepted by the author. There is no limit for publication of color images in the electronic version of the paper via Wiley Interscience (www.interscience.wiley.com). We encourage the authors to make intensive use of this feature.

2.6 Movies

As a novel feature AN offers the opportunity to publish movies in a refereed journal. Publication of the movies happens together with the electronic version of the paper via Wiley Interscience (www.interscience.wiley.com). Submission of the movie requires upload to the Web-pages of AN (see www.aip.de/AN for further instructions). The movies will be reviewed by our referees.

2.7 Tables

All tables shall be typeset with horizontal rules only. Vertical rules shall be used only in exceptional cases for the sake of clarity. Tables should be accompanied by preceding captions. Secondary information can be given as a footnote to the table. Column headings label the entries in the column and should consist of one or two words, with the first letter of each word capitalized. Units of table entries should be placed in parentheses immediately below the column headings. It is strongly suggested to assign LaTeX-labels to the table and to refer to individual tables in the text using the `\ref{label_for_table}` command in order not to lose the correct numbering if changes of the text occur. Note

Table 1 Example of a well organized table.

Quantity 1 (unit1)	Quantity 2 (unit2)
1	2
3	4

that the `\longtable` macro is not supported. Table 1 shows an example.

2.8 Mathematics

Formulae shall preferentially typeset using the `equation` environment, which guarantees automatic numbering of the formulae. The use of the `\ref`-`\label`-scheme within the environment is strongly recommended, see the following Eq. (1), which is complete nonsense:

$$\int_{-\infty}^{\infty} \det x \, \mathrm{d}x = \sum_{n=-a}^{a} \log(x \star \sqrt[\sin x]{a}) \,. \tag{1}$$

Punctuate a displayed equation in the same way as ordinary text. Extensive mathematical calculations shall be put into an appendix (see below). To optimize typesetting long formulae in narrow columns, the `an` class supports an option `mathleft`; using that, displayed math will start at the leftmost position in the column. The same effect is done for single formulae by setting `\mathindent` locally to zero length:

$$\prod_{n=-\zeta}^{\zeta} \zeta^{\exp n} = \bigsqcup_{m=-z}^{z} \sin a^z \cos b^z \tan c^z \sec d^z \dots \,. \tag{2}$$

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 formulae should be set in roman by using the

`\mathrm {text in roman}`

feature. Roman should also be used for subscripts and superscripts *in formulae* where these are merely labels and not in themselves variables, e.g.

`$T_{\mathrm{eff}} = 5\times 10^{9}$$\,K`

produces $T_{\mathrm{eff}} = 5 \times 10^9$ K. 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. Names of common mathematical functions, such as log, sin, exp, max and sup shall 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 if used in this context.

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

A minus-sign in the normal text shall nevertheless be set between $-signs and not just as a dash, otherwise it will not be recognized as mathematical symbol.

Special A&A macros like, e.g., \la, \ga, \farcs, are supported (see Table C.4 in the A&A author's guide for further explanation and additional useful definitions).

2.9 References

The system to be followed for literature citations in the text is the standard one of the main astronomical journals. Hence, references should be cited by giving the last name of the author and the date of publication, e.g., (Author 2001). Note that there is no comma before the date. Papers by two authors should be cited by giving the last names of both authors, joined by an ampersand, and the date, e.g., (Author1 & Author2 2001). Again there is no comma before the date. Papers by three or more authors should always be cited by giving the last name of the first author followed by et al. and the year of publication (Author1 et al. 2001).

Text references are placed in parentheses unless the author's name is part of the sentence, e.g., (Author et al. 2001) but *as Author1 et al. (2001) have shown*. If two or more papers are cited within a single set of parentheses, the citations should be separated by a semicolon: (Author1 & Author2 2001; Author3 1997). If two or more papers by the same author(s) are cited within a single set of parentheses, the dates of the papers should be separated by a comma: (Author1 1997, 2001). Papers by the same author(s) published in the same year should be distinguished by appending a, b, c, etc., to the date: e.g., AnAuthor (1997a, 1997b). Parentheses are omitted around the date if the reference appears in a table or in a note to a table.

All sources cited in the text (including work in progress) must appear in the reference section at the end of the paper and vice versa all entries in the reference section should be cited in the text. Reference entries should be ordered alphabetically, starting with the last name of the first author, followed by the first author's initial(s), and similarly for each additional author. For papers with more than five authors, the last name and initials of the first three authors should be listed, with the names of subsequent authors replaced by a comma and et al., but the paper should be alphabetically positioned as it would be if the names of the all authors appeared. Multiple entries for one author or one group of authors should be ordered chronologically. There are commas between name(s) and initials, no comma before and a comma after the year of publication, and a comma between the name of a journal and the volume number. Journal names shall be abbreviated following the recommendations collected at http://adsdoc.harvard.edu/abs_doc/refereed.html. The following macros can be used for journal names:

```
\mnras for {MNRAS}
\aas for {A\&AS}
\aj for {AJ}
```

```
\apj for {ApJ}
\apjl for {ApJ}
\apjs for {ApJS}
\baas for {BAAS}
\pasp for {PASP}
\pasj for {PASJ}
\araa for {ARA\&A}
\an for {AN}
\apss for {Ap\&SS}
\aap for {A\&A}
\aaps for {A\&AS}
\aapr for {A\&A~Rev.}
\actaa for {Acta Astron.}
\ao for {Appl.~Opt.}
\aplett for {Astrophys.~Lett.}
\apspr for {Astrophys.~Space~Phys.~Res.}
\azh for {AZh}
\bac for {Bull. astr. Inst. Czechosl.}
\bain for {Bull.~Astron.~Inst.~Netherlands}
\caa for {Chinese Astron. Astrophys.}
\cjaa for {Chinese J. Astron. Astrophys.}
\fcp for {Fund.~Cosmic~Phys.}
\gca for {Geochim.~Cosmochim.~Acta}
\grl for {Geophys.~Res.~Lett.}
\iaucirc for {IAU~Circ.}
\icarus for {Icarus}
\jcap for {J. Cosmology Astropart. Phys.}
\jcp for {J.~Chem.~Phys.}
\jgr for {J.~Geophys.~Res.}
\jqsrt for {J.~Quant.~Spec.~Radiat.~Transf.}
\jrasc for {JRASC}
\memras for {MmRAS}
\memsai for {Mem.~Soc.~Astron.~Italiana}
\na for {New A}
\nar for {New A Rev.}
\nat for {Nature}
\nphysa for {Nucl.~Phys.~A}
\pasa for {PASA}
\physrep for {Phys.~Rep.}
\physscr for {Phys.~Scr}
\planss for {Planet.~Space~Sci.}
\pra for {Phys.~Rev.~A}
\prb for {Phys.~Rev.~B}
\prc for {Phys.~Rev.~C}
\prd for {Phys.~Rev.~D}
\pre for {Phys.~Rev.~E}
\prl for {Phys.~Rev.~Lett.}
\procspie for {Proc.~SPIE}
\qjras for {QJRAS}
\rmxaa for {Rev. Mexicana Astron. Astrofis.}
\skytel for {S\&T}
\solphys for {Sol.~Phys.}
\sovast for {Soviet~Ast.}
\ssr for {Space~Sci.~Rev.}
\zap for {ZAp}
```

For creation of a reference list code as in the following example, for a sample output see below:

```
\begin{thebibliography}{}
\bibitem{} Author1, A.B. \&
    Author2, C.D. 2001, \an, 322, 1
\bibitem{} Author3, E.F., Author4, G.H.,
    \& Author5, I. 2001, \aap, 322, 10
\bibitem{} Author5, I. 2001,
    \mnras, 322, 20
\bibitem{} Author6, J. 2001,
    \apj, 322, 30
\end{thebibliography}
```

Making bibliographies using BibTeX and an.bst

Optionally, you may generate your bibliography using BibTeX, with the bib-style-file an.bst from the template package in your LaTeX search path. To this end, replace the example database-file `an-demo.bib` with your own existing one, or alternatively use it as a template for generating your new database. The following code in your manuscript source file enables BibTeX-functionality:

```
\bibliographystyle{an}
\bibliography{<database-filename>}
```

You then need to run your manuscript source file through BibTeX using the command

```
bibtex <filename>
```

(most TeX frontends have a shortcut for this) and afterwards through LaTeX twice, in order to get the correct label numbering.

Important: Before sending your manuscript source file to the publisher, remember to transfer the actual, fully formatted bibliography contained in the BibTeX-generated file *<filename>*`.bbl` to your manuscript source file.

3 General recommendations

We recommend to pay attention to the following general hints in order to avoid some common errors or inconsistencies:

– Acronyms and abbreviations should be spelled out the first time they are used unless they are common throughout the discipline. Terms defined in the abstract should be defined independently in the main text.
– Standard abbreviations for SI units (e.g., m, km, mm) or natural units (e.g., A.U., parsec, cm) should be used. If English units such as inches or pounds per square inch are used, metric equivalents should be given in parentheses.
– Dates should be written in the order: year, month, and day; e.g., 2001 January 1; the month being written in full, except in tables, where the standard three-letter abbreviations are used without a period.

– In text, a sentence should not begin with a symbol or number. If that can't be avoided, reference tags have to be preceded by the word "Reference".
– In a series of three or more items, a comma should be used to separate each item, and a comma is used before the last two items in the series, e.g., *space, time, and matter*.
– The word *data* is plural and therefore takes a plural verb.

3.1 Change marks

Please use for changes requested by the referee the following colour change option: This is a text snippet marked as *changed*. This is done by enclosing it in an environment called `changed`. Please note that in certain circumstances there might be small side effects such as make up deviations or additional blanks.

References

Author1, A.B. & Author2, C.D. 2001, AN, 322, 1
Author3, E.F., Author4, G.H., & Author5, I. 2001, A&A, 322, 10
Author5, I. 2001, MNRAS, 322, 20
Author6, J. 2001, ApJ, 322, 30

A This is the title of the first appendix

Larger tables, collections of images, spectra or similar kind of data shall be presented in the appendix section rather than in the main body of the text. Several appendices can be separated by the `\section{`*title of appendix*`}` command. They are enclosed in the `appendix` environment.