

Journal of Astrophysics and Astronomy

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Journal of Astrophysics and Astronomy publishes papers on all aspects of astrophysics and astronomy, including new instrumentation, laboratory astrophysics and cosmology. Papers should contain results of original research not previously published nor under consideration for publication elsewhere. Papers presented at conferences which are only abstracted in the Conference Proceedings are also acceptable. Submission of a paper further implies that its publication has been approved by all authors and that, if accepted, it will not be published elsewhere in the same form without the consent of the copyright holders. All papers are refereed. There are no page charges.

The journal is quarterly and appears in the calendar months March, June, September and December. Once a manuscript is accepted for publication, authors will receive proofs.

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Manuscript Preparation

Each manuscript (complete with tables, graphs and photographs) should be neatly typed, double-spaced, on one side of the paper only with sufficient margin on all four sides. The pages of the typescript including the title page should be numbered consecutively and placed in the following order: title page, abstract and key words, text followed by acknowledgements, appendices, references, figure captions and tables.

Title page: The first page of the manuscript should contain (a) the title, concise but informative, (b) the initials and the name(s) of the author(s), (c) full institutional affiliation of all authors followed by the postal address(es). A new address or a permanent address may be given as a footnote. (d) The address to which the proofs may be sent. (e) A running title may also be provided. The author should also state the number of pages, tables and figures on the first page. All matter may be left-aligned.

Abstract: The abstract precedes the main text and describes what is dealt within the text. It should be informative about the purpose, methodology and results of the investigations described. Appropriate *key words* should also be provided to help in indexing. When possible it is advisable to choose the key words from the Thesaurus published in *Astronomy and Astrophysics* 208, 1989. References in the abstract are best avoided.

Text: The text is divided into sections and subsections with sectional headings. The main divisions or the first-level divisions are always centred, in bold upper and lower cases and numbered consecutively beginning with the Arabic numeral 1 (one). The second-level divisions or subdivisions are also numbered consecutively, starting within each first-level division (1.1, 1.2 *etc.*). these are also centred but are always in italics. Third-level divisions or subsections are in italics but left aligned.

Appendices: Certain parts of the material to be presented in a paper, *e.g.*, mathematical proofs, details of statistical methods or of observational data and analysis are more conveniently placed at the end of the paper in the form of one or more appendices marked by capital letters *e.g.*, Appendix A, Appendix B. Appendices should always be placed before the reference section.

References in text: The name and the year system also known as the Harvard System is followed. Examples are: single author (Ferne 1974), two authors (David & Reeves 1980), three authors (Batten, Fletcher & McCarthy 1989) more than three authors (Zeilik *et al.* 1982), multiple references (Paczynski 1976; Radhakrishnan & Srinivasan 1982; Readhead *et al.* 1978). When the author's name is part of the sentence then only the year is placed in parentheses:

“Sandage, Freeman & Stokes (1970) and Freeman (1970) have discussed the role of : : : .”

If in any one year, more than one paper is published by the same author, or by the same team of authors, or by more than three authors but the same first author, then the references should be distinguished by the letters a, b, c. The order of these letters is dictated by the (alphabetical) order in which the references appear in the “reference” section, and not necessarily chronological within the year.

Examples

Same author:	Iben (1967a), Iben (1967b), Iben (1967c)
Same team of authors:	Kapahi & Schilizzi (1979a) Kapahi & Schilizzi (1979b)
More than three authors but with the same first author:	Krishnaswamy <i>et al.</i> (1982a) Krishnaswamy <i>et al.</i> (1982b)

Papers with more than three authors are always referred to in the text with the name of the first author followed by an *et al.* Any unpublished correspondence is referred to as “personal communication”, and should appear only in the text and should include the initials of the authors.

References to unpublished work may be done variously depending on the current state of the work. A completed work which is not in the process of publication may be referred to as “unpublished”; a work that is almost complete, but not yet finalised for publication is “in preparation”. When a paper is submitted to a journal, it may still be referred to as “preprint” since it is in this form that the readers may be able to procure it. When it is accepted for publication, one may list the name of the journal followed by “(in press)”.

Reference section: The references listed at the end of the text should be in alphabetical order and arranged as follows in the case of journals.

Names of author(s) followed by initials, year of publication, abbreviated titles of journals as given in *Astronomer's Handbook* published by the IAU, volume number followed by the starting page number of the article.

In the case of a book, names of author(s), year of publication, the title, the edition, name and place of the publisher and pagination should be given. If the book is edited, name(s) of the editor(s) follow the title of the book.

If an *et al.* consists of less than ten authors then the list of references appearing at the end of the text should include all authors.

Index: Apart from the Author Index, we are now publishing a classified Subject Index in place of an Index of Papers. A consolidated five year index was published in volume 6, no. 4, 1985.

Symbols, notations and abbreviations

Algebraic symbols: These symbols need to be differentiated from the text. *Italic* letters are used for scalars (straight underlines) and bold letters (wavy underlines) are used for vectors. Letters and symbols liable to confusion or any new character or ambiguous symbols *when they first appear* may be marked in the text. Letters used in formulae are automatically set in italics unless otherwise indicated, *e.g.*, Roman, boldface, script, Greek or gothic. Symbols which can cause confusion *e.g.*, I, l and 1, letter O and 0 should also be marginally indicated.

Regarding *Equations and formulae* the following usage is preferred:

1. 'exp' for the exponential function.
2. fractional exponents like $a=b/1=2$ instead of the root sign;
3. the solidus (/) when an equation or fraction appears in the text: $\exp.y=x/1=2$.

The functions like log; exp; sin; cos; and the differential symbols d, D are always in roman so that they can be distinguished from symbols amenable to algebraic operations.

Units and other abbreviations: Following abbreviations of units are preferred: centimetre (cm), metre (m), kilometre (km), second (s), year (yr), magnitude (mag), minutes (min), seconds of arc (arcsec), minutes of arc (arcmin), gramme (g), kilogramme (kg), erg (erg), Watt (W), Volt (V), Gauss (G), Hertz (Hz), Jansky (Jy).

These unit symbols should appear in roman letters; should remain unaltered in the plural; should not be followed by a full stop (unless they form the end of a sentence); should be separated by a space from the numerical value that they qualify; should be written in lower case letters, except when the name of the unit is derived from a proper name in which case the first letter is written in upper case. Symbols of units are to be used in conjunction with numbers. Otherwise the name of the unit should be spelt out: 1.0 cm² but a few square centimetres.

Abbreviations may be convenient for naming instruments, projects or mathematical models, a phrase or a reference. Even when they are fairly well-accepted, it is necessary to define them when they appear for the first time in the text. Examples are

- Lausten & West (1980: hereinafter referred to as LW),
- initial mass function (IMF)
- star formation rate (SFR)
- prime-focus universal extragalactic instrument (PFUEI).

No such definition is necessary for the nearly universally known and accepted abbreviations. Examples are IUE for the International Ultraviolet Explorer, HST for the Hubble Space Telescope and MIDAS for the Munich Image Data Analysis System.

Miscellaneous: Following the recommendations of the IAU, the dates of observations, or of astronomical events, should be written in the order of year, month, day, so that in principle it can be appended by the decimal fraction of a day. *e.g.*, a meeting was held in Delhi in January 1981 to discuss the results of the solar eclipse of 1980 February 16.

Tables and illustrations

Tables and illustrations should appear on a separate page and should be numbered consecutively using Arabic numerals in the order in which it is cited in the text. Marginal indicators by the authors giving the location of the first reference to each table or figure will be very useful. Every table or figure should be accompanied by a self-contained caption. Line drawings should not exceed twice the final size. Authors are requested to pay adequate attention to thickness of lines, sizes of points and adequate spacing of shaded and dotted areas. The words on a drawing should be in upper and lower case characters. Photographs for preparation of half-tone plates should be glossy prints of high contrast. These should be unmounted and trimmed precisely at right angles.

Colour artwork: JAA has facilities for reproducing colour figures free of charge.

IAU specifications regarding astronomical radiation sources

Origin, sequence, (specifier): All authors of papers are requested to adhere to the following IAU specifications regarding unambiguous nomenclature for all astronomical sources of radiation. When existing designations are used in listings, they should never be altered. All object listings should always contain next to the acronym a second designation, or positional information.

The designation of an astronomical source shall consist of the following parts:

Origin Δ Sequence Δ (Specifier)

Origin and sequence are essential, *specifier* is optional; the parentheses are required if a specifier is included. Note that the (Δ) is used here to denote a blank space.

The following *examples* illustrate the recommended form of astronomical designations:

NGC(Δ)205

PKS(Δ)1817 – 43

CO(Δ)J0326.0 C 3041.0

H20(Δ)G123.4 C 57.6(Δ)(VLSR = –185

3CR(Δ)196

The *origin* is a word or acronym to specify the catalogue or collection of objects, denoting catalogue names (*e.g.*, NGC, BD), the names of authors (RCW), types of objects (PSR, PN), types of sources (13CO, HCN), instruments or observatories used (VLA, IRAS) *etc.*

In the case of constructing new origins too long acronyms should be avoided but should consist of at least two character, letters or numerals only; special characters should be avoided, as well as indices and exponents. Origins should be unique and should be checked for duplication with existing catalogue designations, constellation names, abbreviations of object types *etc.*

The *sequence* is normally a numerical field determining the object within a catalogue or collection (*e.g.*, HD224801) or it may be based on coordinates.

If coordinates in any form are used to encode an object, then they should be preceded by J for Julian 2000 equatorial coordinates, G for galactic coordinates, B for Besselian 1950 equatorial coordinates. The absence of the code will be interpreted, by default, as a missing B.

Coordinates shall be specified as LLL:11 ± BB.bb for galactic coordinates, and for equatorial coordinates as HHMMSS.ss ± DDMMSS.s, without spaces; fewer digits may be used as appropriate.

Coordinates shall be truncated (not rounded) thus defining a unique (small) field on the sky in which the object is located.

Coordinates shall contain leading zeros, and the plus or minus sign: ±BB.bb or ±DDMMSS.s

Coordinates used in designations shall be considered as names; therefore will remain the same even if the positions change or become more accurately known (*e.g.*, BD −25765 stays, even though its declination is now −26°).

Subcomponents or multiplicity of objects are best designated with letters or numerals, which are added to *sequence* with a colon, *e.g.*, NGC 1818:B12.

The *specifier* is optional and allows one to indicate association with larger radiating bodies (*e.g.*, M131;W13) or to indicate other object parameters and are enclosed in parentheses.

Examples of complete designations are:

Designation	Position	
Origin Δ Sequence Δ (Specifier)	RA(2000)	DEC(2000)
BD −35750	00 02 02.4	−02 45 59
H20 J0446.6 + 7253:7	04 46 37.3	+72 53 47
AC 211 (= 1E2127 + 119; M15)	21 30 15.54	+11 43 39.0
PN G001.2−00.3	17 49 36.9	−28 03 59
R 136:a3 (30 Dor)	05 38 42.4	−69 06 03

Improper designations are:

BD 4°14	use of “°”, declination sign missing
N221	no space, unclear source: NGC or N in LMC
DLB J204 + 2	leading zero missing; poor position
P 43578	one letter origin is ambiguous
MG 0400 C 3645	missing prefix J for Julian 2000 equatorial coordinates

General rules and information on how to generate designations can be found in the following references:

Fernandez, A., Lortet, M.-C., Spite, F. 1983, *The First Dictionary of the Nomenclature of Celestial objects*, *Astr. Astrophys. Suppl.*, **52**, N°4.

Lortet, M.-C., Spite, F. 1986, *First Supplement to the First Dictionary of the Nomenclature of Celestial Objects*, *Astr. Astrophys. Suppl.*, **64**, 329.

Dickel, H. R., Lortet M.-C., de Boer, K. S. 1987, *Designation and Nomenclature for Diffuse Radiating Sources*, *Astr. Astrophys. Suppl.*, **68**, 75.

Jaschek, C. 1988, *Data in Astronomy*, Cambridge Univ. Press.

Proofs and reprints

Authors are requested to exercise utmost care in preparation of the manuscripts so that there is little need to incorporate alterations at the proofreading stage. Proofs should be returned within three days of receipt. For each article 100 reprints are supplied free of charge to the first author. Additional copies are charged for which the order form is sent along with the page proofs.

