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## AAS Ethics Policy

The journals of the American Astronomical Society subscribe to basic standards of **professional ethics and conduct** that are common across all areas of scholarly publishing. Authors submitting manuscripts to these journals are expected to be familiar with, and to follow, the guidelines set out in the policy.

## What We Look for in Your Manuscript

Papers published in the journals of the American Astronomical Society (**AAS**) present the results of significant original research that have not been published previously. Manuscripts submitted to the journals should meet this criterion and must not be under consideration for publication elsewhere.

These guidelines cover both *The Astronomical Journal* (AJ) and *The Astrophysical Journal* (ApJ) (the main journal (Part 1), *Letters* (Part 2), and the *Supplement Series*). Authors are advised to examine carefully current issues of the appropriate journal to familiarize themselves with the journal's conventions and to note any changes in style before preparing a new manuscript for submission. In general, AAS style conforms to *Merriam–Webster's Collegiate Dictionary* (11th ed.) and *The Chicago Manual of Style* (15th ed.).

## *The Astronomical Journal*

*The Astronomical Journal* was founded in 1849 by Benjamin A. Gould and was acquired by the AAS in 1941. As a premier journal for original astronomical research, the AJ serves an international community that includes authors, scientists, and students who rely on the AJ's efficient and accessible communication of the science of astronomy and its associated techniques. The AJ takes a broad view of astronomy that extends from the solar system to observational cosmology, with an emphasis on significant scientific results derived from observations. Building on its strong tradition of papers discussing dynamical processes, the AJ welcomes descriptions of data capture, surveys, data analysis techniques, and astrophysical interpretation, and to this end makes use of modern technologies to present information.

## Topical Papers and Special Issues

*The Astronomical Journal* supports the complete presentation of astronomical observations, analysis techniques, and modeling efforts in the refereed literature. To this end, we are pleased to consider papers that describe instruments, techniques, or software that has been or can reasonably be expected to be associated with scientific research published in the AJ. Examining AJ papers from the past few years can serve as a useful guide. Because the AJ is not currently equipped to review treatments of instrumentation or techniques as research topics in their own right, we ask authors of technical papers to explain the connection to the science and discuss their plans informally with the Editors in advance of submission.

In addition, the AJ is pleased to consider special sets of papers such as those derived from a single program or large survey. A larger number of papers can be published as a separate issue or for fewer (e.g., 4–8) papers as a subsection of a regular issue. Please contact the Editors if you are interested in exploring this option.

## ***The Astrophysical Journal***

*The Astrophysical Journal* began publication in 1895 under the initiation of George E. Hale and James E. Keeler. The ApJ is the foremost research journal in the world devoted to recent developments, discoveries, and theories in astronomy and astrophysics. Many of the most important astronomical and astrophysical discoveries of the twentieth century were first reported in the ApJ, which has also presented much of the important recent work on quasars, pulsars, neutron stars, black holes, solar and stellar magnetic fields, X-rays, and interstellar matter. The winners of the 2006 Nobel Prize in Physics published their prize-winning work in the ApJ. For more information on the history of the ApJ see D. Osterbrock 1995, *ApJ*, 438, 1.

## ***The Astrophysical Journal Letters (Part 2)***

The *Letters* section was created as Part 2 of *The Astrophysical Journal* in 1967 by S. Chandrasekhar. He cited the need for a separate publishing schedule that allowed astrophysicists to rapidly publish short notices of their "spectacular developments in astronomy," (S. Chandrasekhar, 1967, *ApJ*, 148, 1). In 1971, *Letters* obtained its first editor separate from Part 1.

The *Letters* is a peer-reviewed express scientific journal. Manuscripts must meet the same criteria for all papers published in *The Astrophysical Journal* with the additional criteria of timeliness and brevity.

- **Timeliness:** a Letter should have a significant immediate impact on the research of a number of other investigators, or be of special current interest in astrophysics. Permanent, long-range value is less essential. A Letter can be more speculative and less rigorous than a manuscript for Part 1, but should meet the same high standard of quality.
- **Brevity:** a Letter must be concise and to the point. Manuscripts must fit the following parameters:
  - Abstract – no more than 250 words
  - Main text – no more than 3500 words
  - Figures and tables – no more than five in any combination, e.g., three figures and two tables. Tables longer than 50 rows will automatically be converted to machine-readable table format and published online only. Information about machine-readable tables is available [here](#). Note that there is a limit of one machine-readable table per manuscript. Multi-panel figures are limited to nine panels per figure
  - References – no more than 50 references
- New manuscripts that substantially exceed this limit will be returned to the authors. Within this space limitation, sufficient introductory background material should be included, and the content of the paper should be such that it can be generally understood by scientists who are not specialists in the particular field.
- The ApJL Manuscript Length Calculator may be accessed [here](#).

## ***The Astrophysical Journal Supplement Series***

Very long papers (>> 20 pages), papers containing extensive amounts of data or calculations with relatively little analysis or interpretations, or papers of very specialized interest intended for *The Astrophysical Journal* (Part 1) should be submitted to the *Supplement Series*. This was created specifically for these types of papers because of the high demand for the limited amount of space in Part 1. Note that a Scientific Editor or referee may also recommend that a paper be published in the *Supplement Series*. Surveys have shown that papers appearing in the *Supplement Series* are referenced in the astronomical literature twice as frequently on average as papers in Part 1.

## **Specialized Interest Papers**

*The Astrophysical Journal* has a long history of publishing papers on data and instruments that support astronomical observations and theory. Examples of these include papers presenting fundamental data on atomic, molecular, and nuclear astrophysics (theoretical calculations and laboratory experiments), papers on astronomical instrumentation and facilities, papers presenting novel approaches to data analysis and statistical treatment of astronomical data, or papers on relativity, hydrodynamics, plasma theory, particle theory, etc., as applied in astrophysical contexts.

The criteria for publishing these papers are similar to those applied generally: the results presented must constitute significant new research that is directly relevant to astrophysical applications. This relevance is best demonstrated if the papers contain examples of astrophysical applications (or in the case of new instruments, example observations). If this is not practical, the relevance of the work to astrophysical problems must be clearly explained and justified. Papers that consist solely of experimental or theoretical results in physics, chemistry, fluid mechanics, relativity, etc., should be submitted to journals that specialize in those subjects.

## How to Prepare Your Manuscript

### General

Authors are strongly encouraged to prepare their manuscripts using the most recent version of the AASTeX macro package, and to submit them electronically. The AJ also accepts papers submitted using Microsoft Word or Rich Text Format (RTF) while the ApJ (Part 1, Part 2, and the *Supplement Series*) will accept Microsoft Word.

Detailed guidelines on the preparation of papers using **AASTeX** and **Word** are available.

The preferred format for graphics is vector Encapsulated PostScript (EPS); **further information on figures** and detailed **guidelines** are available.

### Style

Papers must be written in English. Authors who are unfamiliar with English should obtain help from colleagues proficient in that language. While a polished literary style is not demanded of scientific papers, they should conform to the elementary rules of grammar, syntax, punctuation, and clarity. Slang and jargon should be avoided.

Observance of the following guidelines will prevent some common errors:

1. All tables and figures must be mentioned explicitly by number and appear in correct numerical order in the body of the text. That is, Tables 1, 2, 3, and 4 must each be mentioned in the text at least once, and the first mention of Table 3 should not precede the first mention of Table 2.
2. The reference list and text citations should agree and be accurate. All references cited in the text must appear in the reference list, and all references listed in the reference list must be cited in the text.
3. 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.
4. Symbols for chemical elements are in normal type, not italics. The mass number precedes the symbol, e.g.,  $^{12}\text{C}$ . Roman numeral designations for spectra of ions are given in small capitals and preceded by a space, e.g., H II.
5. Standard three-letter abbreviations are preferred for constellation names (e.g., Cep, UMa; for a full list, see the [IAU website](#)). Object names and acronyms are spelled out in full in titles.
6. Use standard abbreviations for SI (e.g., m, km, mm) and natural units (e.g., AU, pc, cm). If English units such as inches or pounds per square inch are used, metric equivalents should follow in parentheses.
7. Expressions of rate, such as kilometers per second, ergs per meter, etc., are set as, e.g.,  $\text{km s}^{-1}$ ,  $\text{erg m}^{-1}$ , not km/s, erg/m. In tables, units should be specified in column or row heads, or explained in a footnote to the table, not given with each individual value in the table body (see [sample table](#)).
8. Right ascension and declination in text and equations are given in the form:  $3^{\text{h}}25^{\text{m}}8^{\text{s}}.15$ ,  $90^{\circ}26'14''5$ .
9. Dates are written in the order: year, month, and day; e.g., 1996 January 1. In tables, use three-letter abbreviations for months, without a period. Universal time designations are written 22:37:48–22:37:52.5 UT (for hours, minutes, seconds).
10. Avoid beginning sentences with a symbol, number, or lower-case letter.
11. The word "data" is plural and takes a plural verb.
12. Closing quotation marks follow periods and commas but precede colons and semicolons.
13. In a series of three or more items, include a comma before the final item, e.g., "space, time, and matter."
14. The AJ and the ApJ follow American usage of "that" to introduce restrictive clauses, "which" for non-restrictive clauses, and observe generally conservative grammar conventions throughout.

### Nomenclature

If your paper lists objects that are newly discovered, the IAU Commission 5, through its Task Group on Designations, requests that such objects be designated according to the [IAU Recommendations for Nomenclature](#). The proper procedure is to design a name according to IAU rules and then to register it with the Commission before the paper is published. Please be sure that any object that might have been named in the past is not now given a new, redundant, name.

### Structure of a Manuscript

Your manuscript should consist of the following elements:

- Title page
- Abstract and subject key words
- Text
- Acknowledgments
- Appendices (if any)
- References
- Figures with figure legends (if any)
- Tables (if any)

## Title Page

This should include the following items:

1. The title of the paper.
2. A short title (not more than 44 characters) to be used as the running head.
3. Name(s) of the author(s), with correct capitalization and diacritical marks. The consistent use of first and middle names and/or initials from paper to paper is recommended.
4. One complete postal address for each author, including zip or country code. A current e-mail address, if available, should be provided for the corresponding author. Affiliations should be listed under authors' names.
5. Footnotes to the title and to authors' names.

## Abstract

The abstract should summarize concisely the content and conclusions of the paper. The abstract should be a single paragraph of generally not more than 250 words (**note there is an absolute limit of 250 words for the ApJL**), and should not contain reference citations.

## Subject Key Words

A maximum of six subject key words – see **list** – should be listed, in alphabetical order, after the abstract.

## Text

### Section Headings

Sections should be numbered with Arabic numerals. Subsections (second-level headings) should be numbered 1.1., 1.2., 1.3., etc. Third- and fourth-level headings should be numbered, e.g., 1.2.1. and 1.2.1.1., respectively. First-level titles (e.g., Section 1) and Appendix titles should all be in capital letters; second-, third-, and fourth-level (e.g., Section 1.1, Section 1.1.1., Section 1.1.1.1.) titles should capitalize only the first letter of each word, except for articles, conjunctions, and prepositions.

### Footnotes

Extensive use of footnotes is discouraged. Footnotes should be confined to providing URLs, affiliations, or other truly peripheral information, and should not be used for discussions of or expansions on the text.

Text footnotes should be numbered consecutively, starting with those on the title page.

Footnotes to tables should be designated by lower-case letters, in alphabetical order, starting with "a" in each table (see **sample table**). Each table should have its own complete set of footnotes, even if some or all of the footnotes are repeated in later tables.

### Acknowledgments

At the end of the paper individuals, institutions, or funding agencies may be acknowledged. Authors may also acknowledge the referee(s) if they wish. However, it is not appropriate to acknowledge journal staff.

## Mathematics

### Numbering

For convenience of citation of equations, authors are encouraged to number all displayed equations. Plain sequential numbering through the manuscript is preferred, with Appendix equations numbered as, e.g., (A79), or starting a new sequence with (A1).

Equations should not be referred to by their numbers alone; e.g., say "substituting in equation (45)" rather than "substituting in (45)."

## Notation

Authors should ensure that mathematical notation is clear, distinct, and consistent throughout the manuscript. Care should be taken to distinguish between l (el) and 1 (one); O (capital oh), o (lower-case oh), and 0 (zero); € (epsilon), ε (curly epsilon), and ∈ (the symbol for set membership); *v* (italic vee) and ν (Greek nu); *k* (italic kay) and κ (Greek kappa); and φ (Greek phi) and ∅ (the symbol for the empty set).

## Multiplication

Explicit multiplication signs (dots or crosses), except for scientific notation, grids, vector operators, and when a multiplication wraps to a following line, are omitted.

## Vectors

Vectors are normally distinguished by bold italic type (e.g., ***B***); arrows over symbols are not used to denote vectors. Vector operations and operators (e.g.,  $\times$ ,  $\cdot$ ,  $\nabla$ ) are also set bold. Multi-dimensional vectors (*n*-vectors) are generally set italic (not bold). Tensors may be set bold non-italic if it is necessary to distinguish them from vectors. If you have certain mathematical conventions that you wish to be observed in the typesetting of your paper (such as distinct fonts to distinguish 3- and 4-vectors, tensors, vector components, etc.), please alert the copyeditor to these in an accompanying note or comment.

## Symbol Fonts

If other fonts are needed to distinguish functions or other operators from italic (*R*), script (calligraphic) characters ( $\mathcal{R}$ ) are preferred; blackboard ( $\mathbb{R}$ ), sans serif ( $\mathcal{R}$ ), and Fraktur ( $\mathfrak{R}$ ) should be avoided if possible. Named functions or numbers are preferably designated by two-letter abbreviations, e.g., Ra for Raleigh number.

## Scientific Notation

Values given in scientific notation should be expressed with a multiplication sign preceding the power of 10 (e.g.,  $3.4 \times 10^{-18}$ ); in tables only, to conserve space, the form 3.4E-18 may be used.

## Subscripts and Superscripts

These will be set aligned unless an order of subscripts and superscripts is explicitly requested by the author in a note accompanying the manuscript. If a specific sequence of subscripts and superscripts is required, e.g.,  $R_{hi}^{jk}$  or  $R^{jk}_{hi}$ , authors should indicate the correct sequence by a comment in the electronic file at the first occurrence.

Single-letter subscripts and indexes referring to variables are conventionally set in italic, but subscripts standing for proper names (E for Einstein), chemical elements (H), or abbreviations of words with two or more letters (eff) are set in roman.

## Fractions

Stacked fractions are not permitted in the body of the text or in superscripts: e.g., inline and superscript fractions should be set as  $dt/ds$ , not

$\frac{dt}{ds}$ . Authors should take care that numerators and denominators of inline fractions are delimited clearly to avoid any possible ambiguity (i.e., write  $[(\log T_s q)]/r$  or  $\log[(T_s)q/r]$ , not  $\log T_s q/r$ ). In displayed equations, fractions are limited to two levels, i.e.,

$$\frac{\log[T_s(q/r)]^{2\beta}}{Q}$$

is correct, not

$$\frac{\log T_s \frac{q}{r}^{\frac{2}{3}}}{Q}$$

## Punctuation

Equations are read as part of the flow of a sentence and are punctuated as such.

## References

## Citations in Text

References should be cited in text by the last name of the author(s) and the date of publication (Hale 1929). There is no comma before the date. For papers with two authors, join author names with an ampersand (Press & Rybicki 1992). Papers by three or more authors are cited by the first author followed by "et al." and the date (Goodman et al. 2003).

References are given in parentheses unless the author's name is part of the sentence, e.g., "the  $\sigma$ -model (Smoot et al. 1992)" but "according to Smoot et al. (1992)." If a parenthetical citation cites two or more papers, separate them by a semicolon: (Vittorio & Turner 1987; Peebles 1993). If two or more papers by the same author(s) are cited together, the author(s) is/are listed just once, with the dates of the papers following, separated by commas: (Peebles 1982, 1993, 1995). To distinguish papers by the same author(s) published in the same year, append a, b, c, etc., to the date: e.g., Paczynski (1995a, 1995b).

## Reference List

### Format

All sources cited in the text and tables must appear in the reference list at the end of the paper, and all entries in the reference list must 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 so on for each additional author. For papers with more than eight authors, the last name and initials of the first author only should be listed, followed by a comma and "et al." References listed as "et al." are grouped together and last, as if the second author started with "z"; they are not alphabetized by the name of the actual second author. Multiple entries for one author or one group of authors should be ordered chronologically, and multiple entries for the same year should be distinguished by appending sequential lower-case letters to the year, even if the author groups are not identical: e.g., Smith, E., Rowe, T., & Jones, A. B. 1999a; Smith, A. B., Thomas, J. R., & Peebles, P. J. E. 1999b; Smith et al. 1999c (because all will appear as "Smith et al. 1999" in the text).

### Citation of Electronic Sources

Electronic catalogs, databases, observers' guides, instrument documentation, electronic conference proceedings, electronic journals, and other stable (non-changing) documents available online should be listed in the reference list in the same manner as other references. These should give the author(s) or authoring agency, title of the document, location and name of the hosting organization (e.g., Pasadena, CA: JPL), version consulted if any, page or document number if any, and the URL (see examples below). References in this class include databases, manuals, conference proceedings, and similar documents, but not general informational sites for instruments or projects, sites for downloading computer code, or papers posted on personal web pages. Citations of electronic journals should follow normal journal format, omitting page number if none are used, followed by the URL. See below for examples.

Note that URLs for all other electronic resources, such as personal web pages, general informational sites for organizations, telescopes, surveys, projects, proposals, sites for uploading computer or mathematical code, and other sites whose content regularly changes, should be given in a footnote at first mention in the text, but not listed in the reference list.

### Unpublished Material

References to papers in preparation, preprints, or other sources generally not available to readers should be avoided if possible. If no published form is available, preprints may be listed in the reference list. Private communications, unpublished works, and papers in preparation should be cited only in the run of text, giving authors' initials and the year if completion is imminent, e.g., F. Carlon et al. (2009, in preparation).

### Examples

Examples are given here of some of the most common citation formats.

#### Journal Paper

Martín, E. L., Rebolo, R., & Zapatero Osorio, M. R. 1996, *ApJ*, 469, 706

#### Book

Donat, W., III, & Boksenberg, A. J. 1993, *The Astronomical Almanac for the Year 1994*, Vol. 2 (2nd ed.; Washington, DC: GPO)

Where specific pages of a book are cited, these should be given at the text citation, not in the reference list.

#### Paper or Chapter in an Edited Collection

Huchra, J. P. 1986, in *Inner Space/Outer Space*, ed. E. W. Kolb et al. (Chicago, IL: Univ. Chicago Press), 65

## Conference Proceedings

Salpeter, E. E., & Wasserman, I. M. 1993, in ASP Conf. Ser. 36, Planets around Pulsars, ed. J. A. Phillips, S. E. Thorsett, & S. R. Kulkarni (San Francisco, CA: ASP), 345

### Electronic Conference Proceedings (published only online)

Gomez, M. 2000, in Cosmology 2000, ed. M.C. Bento, O. Bertolami, & L. Teodoro (Lisbon: Inst. Superio Tecnico), 57, <http://alfa.ist.utl.pt/~bento/cosmo2000/proc/proceedings.html>

## Star Catalogs

Hoffleit, D. 1982, The Bright Star Catalogue (New Haven, CT: Yale Univ. Obs.)

### Electronic Newsletters (published only online)

Hermoso, D. 1996, ESA IUE Electron. Newsl. 46, [http://www.vilspa.esa.es/iue/nl/news1\\_46.html](http://www.vilspa.esa.es/iue/nl/news1_46.html)

Bersier, D., et al. 2004, GCN Circ. 2544, <http://gcn.gsfc.nasa.gov/gcn/gcn3/2544.gcn3>

## Instrument Documentation

Gussenhoven, M. S., Mullen, E. G., & Sagalyn, R. C. 1985, CRRES/SPACERAD Instrument Description, Document AFGL-TR-85-0017 (Hanscom, MA: Air Force Geophys. Lab.)

*Spitzer* Science Center. 2004, *Spitzer* Observers' Manual (Pasadena, CA: SSC), <http://sirtf.caltech.edu/SSC/obs/>

## Preprints

Smith, A. B. 1999, arXiv:astro-ph/9812345 (style for preprints before April 2007)

Smith, A. B. 2007, arXiv:0702.1234 (style for preprints after April 2007)

Lockwood, G. W., & Skiff, B. A. 1988, Air Force Geophys. Lab. preprint (AFGL-TR-88-0221)

References to preprints are acceptable only for papers not yet in print. For papers that have been accepted but are not yet in print, the preprint number may be given at the end of a reference submitted or in press (i.e., Smith, A. B. 1999, AJ, in press (arXiv:astro-ph/9912345)).

## Papers Submitted or In Press

Wolk, S. J., & Walter, F. M. 1999, AJ, submitted

Wolk, S. J., & Walter, F. M. 1999, AJ, in press

"Submitted" should be used for manuscripts not yet accepted for publication, and "in press" for manuscripts accepted but not yet published.

## Journal Abbreviations

Acronyms for some frequently cited journals are given below:

- A&A – *Astronomy and Astrophysics*
- A&AR – *The Astronomy and Astrophysics Review*
- A&AS – *Astronomy and Astrophysics Supplement Series*
- Afz – *Astrofizika*
- AJ – *The Astronomical Journal*
- ApJ – *The Astrophysical Journal*
- ApJL – *The Astrophysical Journal Letters*
- ApJS – *The Astrophysical Journal Supplement Series*
- Ap&SS – *Astrophysics and Space Science*
- ARA&A – *Annual Review of Astronomy and Astrophysics*
- AZh – *Astronomicheskij Zhurnal*
- BAAS – *Bulletin of the American Astronomical Society (AAS Meetings)*
- JA&A – *Journal of Astrophysics and Astronomy*
- MNRAS – *Monthly Notices of the Royal Astronomical Society*
- PASJ – *Publications of the Astronomical Society of Japan*
- PASP – *Publications of the Astronomical Society of the Pacific*
- QJRAS – *Quarterly Journal of the Royal Astronomical Society*
- RevMexAA – *Revista Mexicana de Astronomia y Astrofisica*  
*Soviet Astronomy*

## General

Authors will be queried for missing, incomplete, or incorrect information in the reference list. It is especially important that authors recheck reference lists after each revision of the text, to be certain that all references cited in the text are in the reference list, and all references given in the reference list are cited.

## Tables

### Numbering

Tables should be numbered consecutively with Arabic numerals and should be cited in the text by number, e.g., "see Table 1." Each table must be mentioned at least once in the text, and in proper numerical order. In the printed paper, the placement of tables will be determined by their first mention in the text. Tables should not be divided into parts, e.g., related tables should be numbered separately, not given as Tables 3A and 3B. Tables in an appendix may be numbered in the same sequence as the text tables, or may begin a new sequence, e.g., Table 9 or Table A1.

### Format

Every table should have a concise title (less than a sentence); more extensive descriptions or secondary information should be incorporated in a note to the table. All tables are typeset with horizontal rules only; no vertical rules are used. Tables should not contain empty rows. 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.

## References

References cited in a table may be listed in full in a reference column or listed by number, either in the order in which they are listed in the column or following an alphabetical ordering of the references, with the full citation by name(s) and year in a note below the table. Alphanumeric abbreviations (e.g., SR86) 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) Smith & Roe 1986; (2) Peebles 1993." (see [sample table](#)). All references cited in tables must also have a complete entry in the reference list.

**Table 1**  
ORFEUS-I Program Stars

Identifier	Observation date	$l$ (deg)	$v \sin i$ (km s <sup>-1</sup> )	Reference
HD 200172 <sup>a</sup>	1995 Jul 5	68.1	27	1
HD 149881	1996 Aug 14	31.4	85	1, 2

**Notes.** Program stars at  $|z| > 300$  pc.

<sup>a</sup> Poor observing conditions.

**References.** (1) Danly 1989; (2) Jenkins 1978a, 1978b.

## Extended Online-only and Machine-readable Tables

For very lengthy tables, authors have the option of publishing a truncated version of the table in the print version of the journal, with the entire table appearing in the online version. Such tables are charged at the [single-page rate](#), regardless of total length. **(For the ApJL only, there is a limit of one machine-readable table per Letter, and no additional charge.)**

In addition to the option of displaying only a truncated version of a table in the print version with the complete table in ASCII format online, authors also have the option of posting standard format, machine-readable versions of long tables. The machine-readable format supplements and will appear in addition to the ASCII format; a note will appear with the print version of the table alerting the reader that a machine-readable form can be accessed online. ASCII tables contain the raw, tab-delimited data, whereas machine-readable tables are formatted and include a metadata header that documents the format, units, and a short description of each column.

Authors who require machine-readable tables should request this at the time of submission, and must include the data with the submission so



that it can be evaluated during the review process. The data should be either raw ASCII (formatted or delimited) or in the form of a LaTeX table. Word/RTF users should save the table as a tab-delimited ASCII file. It is desirable to include information regarding the format, units, and a short description of each column when an ASCII table is submitted. Authors may also attempt to create their own machine-readable tables using a [web-based converter](#). When submitting, authors should name the ASCII tables tab#.txt, where # is the table number.

For each machine-readable table the author must consider how its corresponding version will appear in print. In the majority of cases, a short "stub" version of the table is printed. The stub table is the same as the full table except that only the first 5 to 15 lines of data are printed to indicate the content of the table to the reader. The author is responsible for creating the stub version of the table, and it should be included in the manuscript.

Any stub table should be cited and numbered as if it were a full table.

In the rare cases in which the tabular data are so complex that a printed example is not possible, authors have the option to show an empty table in the print version. The empty table contains only the table number, title, and a note directing the reader to the electronic version for the full data.

Machine-readable tables will be sent to the paper's corresponding author for "proofing". Since this is the only opportunity that an author will have to verify the accuracy of the machine-readable tables before publication in the electronic version, authors should check the tables carefully, in particular the metadata headers.

For further information, authors are urged to contact the AAS Journals' Staff Scientist, [Dr. Greg Schwarz](#).

## Figures

Authors are encouraged to submit all figures electronically as vector Encapsulated PostScript (EPS) files; detailed [guidelines](#) are available. Spelling and use of numbers and units in figures should conform to usage in the body of the text and figure legends.

A readme file detailing any special requests for sizing or arranging figures should accompany submission of the manuscript. Production staff will do their best to accommodate these requests.

**For the ApJL only, multi-panel figures are limited to 9 panels per figure. Multi-panel figures must also be legible on a printed page. Figures that are not legible must be broken into multiple figures.**

## Figure Numbering

Figures should be numbered consecutively with Arabic numerals and should be cited in the text by number, e.g., "see Figure 1." Each figure must be mentioned at least once in the text, and in proper numerical order. In the printed paper, the placement of figures will be determined by their first mention in the text. This includes online-only figures.

## Figure Legends

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