

GENERAL INFORMATION FOR CONTRIBUTORS

(Revised January 1997)

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Manuscripts may be **submitted** by a variety of electronic modes (including via e-print servers, direct Web upload, and email), or by conventional mail, but not by fax. Interactive submission forms, available on our Web server, are an integral part of the submission process for the e-print and Web modes, and are strongly recommended for email and conventional-mail submission. These forms aid authors in supplying all the information needed in a structured format which furthers efficient processing; they also provide a location for additional “free form” information. [For authors without Web browsers which support forms, noninteractive versions of the submission forms are available via ftp to aps.org in the `/pub/jrnls` directory as the `sub_prd` files (include filename suffix `.asc`, `.tex`, or `.ps`), or by request to the Editorial Office.]

Please specify the author to whom correspondence should be addressed, and give all available communications information for this individual (postal and email addresses, phone and fax numbers), since in various circumstances they may all be useful. Please specify journal and section to which the paper is submitted, and give PACS (Physics and Astronomy Classification Scheme) index categories if possible. (The scheme is available via ftp to aps.org as the file `pacs_96.asc` in the `/pub/pacs` directory; the alphabetical index to PACS is available as the file `index_96.asc` in the `/pub/pacs` directory. Printed copies of PACS are available on request from the Editorial Office.) If an important subject of your paper cannot be appropriately classified in the PACS scheme, please give an appropriate keyword or phrase, and indicate approximately where in the scheme this topic would be best placed.

A signed APS **copyright-transfer** form should be included with the submission, and will be required before publication. While the transfer of copyright takes effect only upon acceptance of the paper for publication in an APS journal, supplying the form initially can prevent unnecessary delays. The form appears at the end of the 18 November 1996 issue of

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Manuscripts and figures are *not routinely returned* to authors. Authors should indicate (preferably on initial submission) if they want the manuscript and/or figures returned when correspondence is sent during the editorial process, and/or after a final decision has been made.

Manuscripts sent by **conventional mail** should be submitted in triplicate to the Editors, Physical Review, 1 Research Road, Box 9000, Ridge, NY 11961-9000. The manuscript, including the abstract, references, and captions, should be neatly printed in English, on good letter-size (e.g., $8\frac{1}{2} \times 11$ in. or A4) white paper with ample margins. (The first copy, used for production purposes if the paper is accepted for publication, must be printed on one side of the paper only; additional copies, used for review purposes, may be printed on both sides of the paper.) The type size and line spacing should be sufficient to accommodate editorial markings and should be legible to our keyboarders (no more than three lines per inch and no more than 88 characters per 6 inches). It should be carefully proofread by the author. Poor reproductions are unacceptable, as are unclear or excessive handwritten insertions. For general format and style consult recent issues of this journal and the *Physical Review Style and Notation Guide*, available via ftp to aps.org in the `/pub/jrnls` directory as the `style_guide` files (include filename suffix `.pdf`, `.ps`, or `.tex`). Additional style guidelines can be found in the Fourth Edition of the *AIP Style Manual*, which may be obtained for \$10.00 (prepaid) from the American Institute of Physics, c/o AIDC, 64 Depot Road, Colchester, VT 05546, telephone: 800-488-2665.

Electronic submissions may be formatted in REVTeX (preferred), LaTeX, Harvmac, or Plain TeX. The file must be in ASCII containing no control codes, with line lengths of 80 characters or less. All textual material of the paper (including tables, captions, etc.) should be in electronic form, as a single file. The file should produce double-spaced output.

For information about submission via **e-print** servers or direct **Web upload**, see our Web server.

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the initial submission, use as the subject “submit” followed by the three-letter abbreviation for the name of the journal (prd) and the last name of the first author; for example, “submit prd jones” or “submit PRD Jones.” Include the filled-out submission form (or the equivalent information, including journal, section, postal address, etc.) in the first part of the electronic-mail message. Receipt of an electronic-mail submission will be acknowledged within 24 hours. Copies of the manuscript should not be sent by regular mail (only original figures) unless the electronic transmission has not been successful.

Editorial processing of an electronic-mail submission cannot begin until at least review-quality copies of the figures are received. Electronic-mail transmission (one figure per file) of PostScript-formatted figures will normally meet this need. Use as the subject “submit” followed by the three-letter abbreviation for the name of the journal (prd), the last name of the first author, and the figure number; for example, “submit prd jones fig 1” or “submit PRD Jones Fig 1.” Alternatively, you could send scanner-reproducible journal-quality “originals” immediately by overnight mail to the Editorial Office. A third possibility is to send review-quality figures by fax (516-591-4141), while the “originals” are sent by conventional or overnight mail as soon as possible; please mark the fax transmission as being part of an electronic-mail submission.

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An information and instruction booklet regarding electronic submissions and compuscripts is available via ftp to aps.org in the /pub/jrnls/directory as the compu_inform_pr files (include filename suffix .asc, .ps, or .tex).

When a manuscript is **resubmitted**, please include a summary of changes made and a brief response to all recommen-

dations and criticisms. (Submission forms are not yet available for resubmissions; nor are the e-print and Web upload submission methods.) If the resubmission is by conventional mail, please send three copies of a complete modified manuscript; if changes are few, you may alternatively send three copies of those pages on which changes have been made (no more than three or four pages), but make sure that the page breaks are the same as in the initial manuscript. If the resubmission is by electronic mail, please send the complete file for the text if there have been any changes. (The response to the referee should be included as the first part of an electronic-mail message which contains the modified manuscript. Use as the subject of the message “resub” followed by the manuscript code number and the last name of the first author; for example, “resub DE1234 Smith” or “resub de1234 smith.”) For any resubmission, please state whether or not the figures have been modified, and supply new scanner-reproducible figures if there have been such changes.

The **title** should be concise but informative enough to facilitate information retrieval. The **abstract** should be self-contained (contain no footnotes). It should be adequate as an index (giving all subjects, major and minor, about which new information is given) and as a summary (giving the conclusions and all results of general interest in the article). It should be about 5% of the length of the article, but less than 500 words.

Notation should be clear, compact, and consistent with standard usage. Each symbol must be individually legible. **Equations** should be neatly typed or written in ink, punctuated and aligned to bring out their structure, and numbered on the right. (a) Diacritical marks (tildes, etc.) can be put over any symbol, including indices, but not over groups of symbols. (b) Three-vectors will be set in roman boldface type and should be marked in the manuscript with either a black wiggly underline or an arrow over the character. More general vectors, matrices, etc., are usually set in lightface italic type, although boldface may alternatively be used. (c) Any numerical fraction can be put on one line, e.g., $\frac{1}{2}a$. Use that form rather than $a/2$, and never use $1/2a$, unless you mean $1/(2a)$. The solidus should be used instead of built-up fractions in running text.

Marking of mathematical material: All unusual and handwritten symbols whose identity is not obvious should be identified in the margin the first time they appear, and thereafter only if any ambiguity is still possible. For example, when necessary, identify Greek letters (not including sum and product signs) and script letters; underline italic in black; underline in black three times for capital. Identify nonalphabetic symbols by their number in the *AIP Style Manual*. Superscripts are normally set directly over subscripts; authors should note where readability or the meaning requires a special order by specifically marking such cases (enclose super-

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References and footnotes to text material are usually combined in a single list, numbered consecutively in their order of first appearance in the paper, and placed in a double-spaced list at the end of the text material. They should be designated and cited in text by on-line Arabic numerals in square brackets. As an option, footnotes may appear separately from references and be placed at the bottom of the page on which they are cited. They should be designated by superscript numbers and numbered consecutively throughout the paper. Footnotes within tables should be designated by lower-case letter superscripts and given at the end of the table. For the proper form for references, see the *Physical Review Style and Notation Guide* and recent issues of this journal. The names of all authors of works cited should be given in the references, unless the number of authors is greater than three; in this case, the first author's name followed by *et al.* is allowed. When reference is made to internal reports or other items not available in the open literature, it is the responsibility of the author to provide sufficient information to enable the reader to obtain a copy of the referenced material. References to classified reports or other documents with restricted circulation should be avoided. It is important to confirm the accuracy of bibliographic information in references. This becomes more important when the journal is online; establishing hyperlinks from reference lists to bibliographic and document databases depends on the accuracy of the data contained in the anchor references. Footnotes to an author's name or address should be limited to those necessary for location of the author. Electronic addresses (e.g., Internet, fax) can be listed as footnotes. All information concerning research support should appear in the acknowledgments.

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The decision on whether results should be published in long tables depends on the precision of the data, i.e., whether they can be read accurately enough from a figure, and on how many readers are likely to use the numbers relative to the space needed in the journal. If additional numerical data can be obtained from a data center, from the author, or from another source either as tables or on tape, indicate how and in what format they can be obtained.

Figures should be planned for the column width of the *Physical Review* (approximately 8.6 cm, or $3\frac{3}{8}$ in.). In some cases where the figures contain a great deal of detail, $1\frac{1}{2}$ or 2

columns may be used. Wasted space at the top and bottom should be avoided. Carefully prepared figures, suitable for digital scanning, are required (original India-ink drawings or glossy prints; computer-generated figures, if of sufficient quality, are acceptable). Figures must have a clear background and unbroken lines with as much black-white contrast as possible. *Final-journal-size* originals or prints are preferable to oversized originals. Avoid small open symbols which tend to fill in upon reduction, small dots and decimal points, and shading or cross-hatching that is not coarse enough to withstand reproduction. The lettering and plotted points on the figures should be large and clear enough that they will be legible on the journal pages (final journal size of lettering should be at least 2 mm). Inconsistently large or too heavy lettering should be avoided. Line weights should be consistent throughout a figure, with a final line weight of at least 0.18 mm (0.5 point). Figures reproduced directly from an automatic plotter or computer printer must have lettering of the correct size and style (e.g., MeV instead of MEV, unslashed zeros) and curves that are smooth and of sufficient line weight to allow suitable reproduction. The resolution of the drawing software and the output device should be set as high as possible (preferably 600 dpi or higher). Very fine lines in laser-generated illustrations will disappear under scanning. Photographs of apparatus are unacceptable and should be replaced by good schematic diagrams.

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labeled axes with correctly abbreviated units. Use the form R ($10^3 \Omega$), not $R \times 10^3$ ohms. For complete instructions see the *Physical Review Style and Notation Guide* and the *AIP Style Manual*.

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