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(Revised July 2001)

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Papers should be written in scientific **English**, in a style consistent with that of the journal. The total length of a Letter should not exceed 4 journal pages; a Comment, 1 page. [Guidelines for estimating the length of manuscripts appear at the end of some issues of the journal, e.g., 13 November 2000, and via ftp to aps.org (`length_est_prl.asc`, etc., in the `/pub/jrnls` directory).] Submission is a representation that the work is not now being considered for publication elsewhere. Proper text reference must be made to portions previously published or scheduled for publication, including conference proceedings. See “Prior Disclosure,” *Phys. Rev. Lett.* **52**, 2101 (1984).

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The following are general guidelines for preparation of a conventional manuscript or a compuscript. In addition, memos regarding production requirements appear at the end of some issues of the journal. For more detailed style information, consult the *Physical Review Style and Notation Guide*, available via ftp to aps.org in the /pub/jrnls directory as the style_guide files (including filename suffix, .pdf, .ps, or .tex). Additional style guidelines may be found in the *AIP Style Manual*, 4th ed., 1990 (ISBN 0-88318-642-X, \$10.00 prepaid) available from Springer-Verlag, P.O. Box 2485, Secaucus, NJ 07096-2485. Also consult recent issues of the journal.

A **manuscript**, comprising all material which is to be set in type, must be typewritten (except possibly for mathematical expressions and Greek letters; see below), double spaced (3 lines per inch, at least 6 mm of white space between lines) in type size such that there are ≤ 90 characters/6 in., on one side only of good quality, white, approximately 8.5×11 -in. (or A4) paper, with margins of at least 1 in. along four edges. A clear, sharp, nonerasable, black-on-white reproduction on hard-surfaced paper is acceptable as the "original." Number all pages (including the title page). Include copies of any figures at the end of the manuscript.

Mathematical expressions should be typed, or neatly written in ink. The prime requisite is that the copy shall be clear to the production keyboarder, who is neither a physicist nor a mathematician. Unusual or ambiguous symbols (see table on page 21 of the *Style Manual*) should be identified by marginal notes at first appearance and subsequently when confusion might arise; for nonalphabetic symbols, give the number found on pages 44 and 45 of the *Style Manual*. Mark superscripts with an inverted caret below, and subscripts with a caret above, if necessary. Three-vectors and dyadics are set in boldface type (mark with a black-pencil, wiggly underline).

Editorial marking by authors, except for the resolution of ambiguities as discussed above, is rarely of sufficient value to warrant the effort.

The author must carefully **proofread** the paper to eliminate grammatical errors, misspellings, and omission of symbols. The text should be directed at a **general readership**, not specialists. Avoid acronyms and jargon, even if they seem of common usage. If unavoidable, define them in the text. **Notation** should be unambiguous, concise, and consistent with standard usage. Introduce new terminology or notation only when clearly needed. Indent all paragraphs. Use the solidus (slash) only to denote division of mathematical quantities, to denote (optionally) an interface between materials [e.g., Ag/Cu(001)], and in "and/or." Its meaning when used between words is usually imprecise; use the proper conjunction or punctuation.

The **length** of the paper is crucial. Avoid excess white space in figures; unneeded numbering of displayed equations may add length; references which are incomplete may lead to an underestimate of the length; and note that right-adjusted text or text with very nonuniform line length is subject to greater error in its estimated length. Also note that equations in text (undisplayed) must be simple; some equations which are presented in text may require display for printing and thus add to the length.

Ideally, figures are planned for reduction to final journal size on the basis of their content and detail. The size of lettering should be chosen with this in mind. If the lettering is drafted too small, full reduction will not be possible; the length will have been underestimated. At final reduction, the size of the smallest capital letters and numerals is to be at least 2 mm.

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The **names of authors** may be listed in any order in the byline between the title and abstract. If the number of authors

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Byline addresses are set directly under the author names. They are intended to indicate the institution where the research was done. These addresses usually consist of department or division, institution, city, state or country. Street addresses, post office boxes, etc., may be included; zip and postal codes are proper.

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Three-vectors and dyadics are commonly set in boldface type. Four-vectors are set in italic type for Latin letters, and in ordinary type for Greek letters. Vectors in more than four dimensions may be set in either boldface or lightface (italic for Latin letters) type. More general quantities, such as matrices, operators, etc., should generally not be distinguished from scalars typographically unless essential to avoid confusion; in that case, either boldface or some sort of "decoration," such as a caret, is satisfactory. Do not use the center dot to indicate multiplication of scalars.

A final **acknowledgments** paragraph may be used to recognize named individuals who contributed scientifically to the specific research of the paper, to cite the funding agencies that provided financial support for the work, and to note the affiliation of institutions in the byline with a larger system. The statement of thanks for help should be simple and may not be a dedication or memorial. References to memberships, positions, titles, and awards are inappropriate, as are dates associated with funding. It is unnecessary to give the exact form, e.g., fellowship, scholarship, program name, in which funding was granted.

Footnotes, both references *and remarks*, must be numbered consecutively in order of citation, and be given in a double-spaced list at the end of the main text. The journal does not use the bottom-of-page footnotes. Footnotes to the byline (superscript *, †, ‡, etc., or a, b, c, etc.) will lead the list. (Order a reference cited in a figure or table caption as if cited when the figure or table is *first* mentioned in the text.) Cite footnotes in text, captions, or other footnotes in the form "Smith, Doe, and Jones [2]," "recent experiments [1,4-6]," or "(see Ref. [8])." Almost all references should cite each author in the form "F. Jones." Consider the form "F. Jones *et al.*" (no comma before *et*) only when there are four or more authors. References to papers published in peer-reviewed journals are considered primary references. References to e-print archives should not be used in place of primary references. The reference should cite: journal name, volume number, page, and year (in the case of translation journals, give information for original *and* translation); conference name (or topic), place, year, editor(s), publisher, and year of publication; book title, editor(s), publisher, and year of publication; report issuing institution in full and identification number of the report (give title if number not available). Some examples of proper form follow (also consult recent issues of the journal).

J. M. Smith, R. Brown, and C. Green, Phys. Rev. B **26**, 1 (1982); Nucl. Phys. **A195**, 1 (1982).

J. M. Smith, Phys. Rev. D (to be published); R. Brown, Phys. Rev. B **26**, 706(E) (1982).

J. M. Smith, *Molecular Dynamics* (Academic, New York, 1980), Vol. 20, p. 20.

R. Brown, in *Charge Density Waves in Solids*, edited by C. Green, Modern Problems in Condensed Matter Sciences Vol. 25 (North-Holland, Amsterdam, 1989).

C. Green, University of Wisconsin, Madison, Report No. MAD/PH/650, 1991.

J. M. Smith *et al.*, in Proceedings of the Topical Meeting on CP Violation, Calcutta, June 1990 (unpublished).

It is important to confirm the accuracy of bibliographic information in references. This has become more important now that the journal is online. Hyperlinks will be programmed to enable readers to “click” on references and jump directly to the material cited. If your reference citations are incorrect or incomplete (e.g., missing author name, or an incorrect volume number or page), the associated hyperlinks may fail, and the usefulness of your paper in the online environment may be diminished. Since at the present time such links work only from the reference section, work cited anywhere in the paper, including in figure and table captions and in “Note(s) added,” should be included in the reference section.

Separate **tables**, numbered in the order in which they are referred to in text, should be used for all but the simplest tabular material. Include them after the reference and footnotes. Each table *must* have a caption (double spaced) that makes the table intelligible without reference to the text. Column headings should be simple and contain all units; symbols should be explained in the caption. Use a single horizontal rule to separate headings and entries. Use horizontally running space to distinguish broad groups among entries, and extra vertically running space for columnar groups. Vertical rules should not be used. Denote footnotes in a table by superscript lower-case roman letters, and list at the end of the table.

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