Template for manuscripts submitted in Microsoft Word to Physical Review journals

Instructions for template

* Please consult the [APS Journals Style Guide](https://res.cloudinary.com/apsphysics/image/upload/v1715884920/aps-journals-style-guide_tnoyln.pdf) for a comprehensive reference for style and format requirements.
* Use this template as a guide for preparing Microsoft Word manuscripts for submission.
* We accept manuscripts prepared using Word 2007 or later in .docx format.
* Use standard Windows fonts (we suggest Times New Roman). If you use an unusual font, we may be unable to convert your Word document to PDF for viewing.
* Include figures in your Word document as pictures. Include equations by using Design Science's Math Type, and tables by using the Table Editor. Do not embed any of these items as objects since this will cause a problem with conversion of your file to PDF.
* We prefer that separate PostScript or encapsulated PostScript figure files be provided for each figure in addition to the figures already included in your Word document.
* Insert figures where they are relevant in the text; submit individual files for each figure upon submission of revised manuscript
* Ensure that page numbers appear on each page
* Final formatting will be completed during the editorial production process
* Refer to journal website (Information for Authors) for specific guidelines (length, required sections, etc.) for the manuscript that you are writing

**TITLE (Times New Roman) The title should simply and concisely convey the main findings. Avoid nonstandard abbreviations and acronyms.**

AUTHOR NAME(S). It is preferable to use only one form of your name as an author in all your publications. Professional titles are not included. ORCID identifiers are strongly encouraged. Footnotes giving email addresses of one or more contact authors (who wish to receive reader correspondence) are strongly encouraged. If more than one contact author email is provided, place each footnote on a separate line.

AUTHOR AFFILIATION(S). Include all institutions where the work was conducted: department or division, institution, city, state (if relevant), and country, in this order. Street addresses, post office boxes, ZIP or postal codes, etc., are not necessary but may be included. Institutions can be anglicized or appear in the language of the respective country (Latin characters only).

Affiliations can be presented in two ways. (a) The institution name can be listed directly below the relevant author(s). (b) Use superscripted numbers to link author names and addresses (shown below).

Li Na,1 Peter A. Martin,2,\* and Mary M. Moe3,†

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**ABSTRACT**. An abstract must accompany each manuscript. The abstract consists of one paragraph and is completely self-contained. It briefly states the purpose of the research, specifies the experimental and/or theoretical methods, and summarizes key findings and conclusions. It cannot contain numbered references, instead, incorporate source listings directly into the abstract text itself, for example, “We achieve this by generalizing a prescription by Lee [Phys. Rev. A 44, R2775 (1991)].” Displayed equations and tabular material are not permitted. All nonstandard symbols and abbreviations should be defined.

The body of the paper should be divided into sections with the use of section headings and subheadings. However, headings are not always required; for short papers headings may not be necessary.

Each major heading (except for the Introduction) can be further divided by subheadings, which indicate more specific topics. Subheading titles can be decided by the author.

**I. INTRODUCTION**.

The Introduction must be labeled as such. It should briefly and clearly explain the foundation and justification for the work. The last paragraph should be a concise overview of the key results and conclusions. It should not have subheadings.

Equations, figures, tables, and references should be cited consecutively in numerical order. References should be numbered on line in square brackets [1].

Equations that are important, long, complex, or referenced later in the paper are set off from the text and may be numbered consecutively with Arabic numbers within parentheses [(1), (2), (3), etc.]. These numbers are placed to the extreme right of the equation.

E=hν (1)

**II. METHODS**

Sufficient detail for the work to be reproduced should be provided. Details can be supplemented by discussions in the Supplemental Material and/or Appendices.

**A. First subheading**

Heading is centered, the first word is capitalized, and it is preceded by a roman capital letter and a period.

***1. Second subheading***

The heading is centered, the first word is capitalized, all italic, preceded by an Arabic number a period.

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*a. Third subheading****.***The heading follows a paragraph indentation, first word capitalized, all italic, regular weight, preceded by a lowercase letter and period. Text immediately follows.

Letter or number preceding any subheading is not required if there is only one subheading at that level.

**III. RESULTS**

The Results section contains key data that support the conclusions and may be divided with subheadings (with the same formatting as subheadings listed in the Methods section).

Further data not crucial to a reader’s understanding of the associated paper can be presented in Supplemental Material and/or Appendices.

Figures should be numbered with Arabic numerals (1, 2, 3, etc.) and parts labeled with lowercase letters (a), (b), (c), etc. Each figure should be mentioned and discussed in the text. Parts of figures can be cited in the text, e.g., Fig. 1(a). Upon submission, figures can be placed where they are relevant within the text. Individual files for each figure should also be uploaded with the submission.



FIG 1. Figure caption should be brief and descriptive and should define each panel. (a) All abbreviations, symbols, colors, and scale and error bars should be defined. (b) Figures should be readable when sized for the journal page. Make the height of the smallest capital letters and numerals at least 2 mm, the diameter of each data point at least 1 mm, and a curve’s linewidth at least 0.18 mm (0.5 point). Maximum width of 8.6 cm or 17.2 cm for single-column or double column figures, respectively.

Tables should be numbered with roman numerals (I, II, III, etc.).

TABLE I. Caption should be concise and descriptive. It should be self-contained and should not carry any footnote indicators. References can be cited in captions [1].

|  | Header X | Header Ya | Header Z |
| --- | --- | --- | --- |
| Row 1 | entry | entry | entry |
| Row 2 | entry | entry | entry |
| Row 3 | entry | entry | b |
| Abbreviations should be defined.Footnotes may cite a reference and should be superscript when they refer to an entry or heading, and they should be placed on line when they replace an entry.aReference [1]. bReference [2].  |

**IV. DISCUSSION**

The Discussion section may be divided into subheadings and may be combined with the Results section.

**V. CONCLUSIONS**

The Conclusions section should be concise and should not be divided into subheadings.

**ACKNOWLEDGMENTS**

One paragraph provides acknowledgement to financial support.

**APPENDIX**

(single appendix, no subtitles) Appendixes are optional. All Appendixes must have a heading. Examples of permitted styles are below. Appendixes may be divided into subheadings numbered 1, 2, etc. Next level: a, b, etc.

If you chose to include a **Supplemental Material** file, please ensure that all references in the Supplemental Material also appear in the Reference section of the main paper. A reference for the Supplemental Material should be cited in the text. For example: see simulations based on parameters from the literature in the Supplemental Material [20].

**APPENDIX A**

(more than one appendix, no subtitles)

**APPENDIX: SURVEY OF RESULTS**

(single appendix, with subtitle)

**APPENDIX A: SURVEY OF RESULTS**

(more than one appendix with subtitle; all must be subtitled).

Further examples of formats for other reference types can be found in the [APS Journals Style Guide](https://res.cloudinary.com/apsphysics/image/upload/v1715884920/aps-journals-style-guide_tnoyln.pdf)

[1] (journal article, one author) J. M. Smith, Phys. Rev. B 107, 1 (2023).

[2] (journal article, two authors) J. M. Smith and R. Brown, Phys. Rev. B 107, 1 (2023).

[3] (journal article, ten or fewer authors) J. M. Smith, R. Brown, C. Green, D. Jones, and A. Lee, Phys. Rev. B 107, 1 (2023).

[4] (journal article, length is constrained by four or more authors) J. M. Smith et al., Phys. Rev. B 107, 1 (2023).

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[20] See Supplemental Material [url] for [brief description], which includes Refs. [21-24].

[21] [first reference in Supplemental Material not already in paper] ...

[24] [last reference in Supplemental Material not already in paper]