Template For the 47th IEEE Photovoltaic Specialist Conference (PVSC) (Title in 24-point Times New Roman font)\*

\*Note: Sub-titles are not captured in Xplore and should not be used

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line 3: *name of organization (of Affiliation)*line 4: City, Country
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*Abstract*—This electronic document is a “live” template and already defines the components of your paper [title, text, heads, etc.] in its style sheet. Use 9 point Times New Roman Bold font for the abstract. Indent the first line by 0.19 inches and type the word "Abstract" in 9 point Times New Roman Bold Italic. This should be followed by a long dash (option / shift / minus) and then the first word of your abstract (as shown above) without any spaces in between. Please try to keep the length of your abstract to 100 words or less. *\*CRITICAL: Do Not Use Symbols, Special Characters, Footnotes, or Math in Paper Title or Abstract*. (*Abstract*)

Keywords—component, formatting, style, styling, insert (key words)

# Introduction (*Heading 1*)

Identify applicable funding agency here. If none, delete this text box.

This template, provides authors with most of the formatting specifications needed for preparing electronic versions of the final version of their papers. All standard paper components have been specified for three reasons: (1) ease of use when formatting individual papers, (2) automatic compliance to electronic requirements that facilitate the concurrent or later production of electronic products, and (3) conformity of style throughout a conference proceedings. Margins, column widths, line spacing, and type styles are built-in; examples of the type styles are provided throughout this document and are identified in italic type, within parentheses, following the example.

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# Manuscript or Summary Guidelines

## General requirements (Heading 2)

A contributor should remember the following points:

* Deadline to submit your manuscript is: June 9, 2020!
* Manuscripts must be submitted electronically to the conference website. Manuscripts must be submitted in PDF format. Should you have any difficulty with the electronic submission process, please contact us at help@ieee-pvsc.org.
* Manuscripts are limited to eight (8) pages (including all figures) and 2 MB file size. Note that it is helpful to compress all figures and graphics to reduce the file size. This can be done by converting all graphics to jpg image file format. If using Word, use the Compress function under Format Picture.
* The manuscript or summary could include:
	+ Full title of the paper (*required*)
	+ Full author list and affiliation (*required*)
	+ Introduction or background of the paper topic
	+ Main experimental and/or theoretical results
	+ Analysis of the results, clear exposition of the main findings
	+ Discussion of the significance of the work for the field
	+ Summary of the work (*required*)
	+ References

## Formatting requirements

It is mandatory to use this template for both the evaluation abstract and the conference proceedings. Please do not include page numbers, headers or footers. Company logos should not be inserted into a header or footer.

# Prepare Your Paper Before Styling

Before you begin to format your paper, first write and save the content as a separate text file. Complete all content and organizational editing before formatting. Please note sections A-D below for more information on proofreading, spelling and grammar.

Keep your text and graphic files separate until after the text has been formatted and styled. Do not use hard tabs, and limit use of hard returns to only one return at the end of a paragraph. Do not add any kind of pagination anywhere in the paper. Do not number text heads-the template will do that for you.

## Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, sc, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

## Units

* Use either SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as “3.5-inch disk drive”.
* Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity that you use in an equation.
* Do not mix complete spellings and abbreviations of units: “Wb/m2” or “webers per square meter”, not “webers/m2”. Spell out units when they appear in text: “. . . a few henries”, not “. . . a few H”.
* Use a zero before decimal points: “0.25”, not “.25”. Use “cm3”, not “cc”. (*bullet list*)

## Equations

The equations are an exception to the prescribed specifications of this template. You will need to determine whether or not your equation should be typed using either the Times New Roman or the Symbol font (please no other font). To create multileveled equations, it may be necessary to treat the equation as a graphic and insert it into the text after your paper is styled.

Number equations consecutively. Equation numbers, within parentheses, are to position flush right, as in (1), using a right tab stop. To make your equations more compact, you may use the solidus ( / ), the exp function, or appropriate exponents. Make sure that any subscripts in your equations are legible and are not too small to read! Italicize Roman symbols for quantities and variables, but not Greek symbols. Use a long dash rather than a hyphen for a minus sign. Punctuate equations with commas or periods when they are part of a sentence, as in:

 *a**b* 

Note that the equation is centered using a center tab stop. The paragraph description of the line containing the equation should be set for 12 points before and 12 points after. The paragraph spacing will need to be set to "multiple" with a factor of 0.9. Be sure that the symbols in your equation have been defined before or immediately following the equation. Use “(1)”, not “Eq. (1)” or “equation (1)”, except at the beginning of a sentence: “Equation (1) is . . .”

## Some Common Mistakes

* The word “data” is plural, not singular.
* The subscript for the permeability of vacuum **0, and other common scientific constants, is zero with subscript formatting, not a lowercase letter “o”.
* In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
* A graph within a graph is an “inset”, not an “insert”. The word alternatively is preferred to the word “alternately” (unless you really mean something that alternates).
* Do not use the word “essentially” to mean “approximately” or “effectively”.
* In your paper title, if the words “that uses” can accurately replace the word “using”, capitalize the “u”; if not, keep using lower-cased.
* Be aware of the different meanings of the homophones “affect” and “effect”, “complement” and “compliment”, “discreet” and “discrete”, “principal” and “principle”.
* Do not confuse “imply” and “infer”.
* The prefix “non” is not a word; it should be joined to the word it modifies, usually without a hyphen.
* There is no period after the “et” in the Latin abbreviation “et al.”.
* The abbreviation “i.e.” means “that is”, and the abbreviation “e.g.” means “for example”.

An excellent style manual for science writers is [7].

# Using the Template

After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the abstract number followed by the first author’s last name. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper; use the scroll down window on the left of the MS Word Formatting toolbar.

## Overview text formatting

Using 8.5 x 11-inch paper, the top margin is 0.75 inch, the bottom margin is 1 inch, and the left and right margins are 0.625 inch. Except for Title, Authors and Affiliations, use a double column format. The column width is 3.5 inches and the column spacing is 0.25 inch. All paragraphs of text, including the abstract, figure captions, and references, should be justified at the left and the right edges. Use Times New Roman font throughout the document.

For the Title, use 24-point font size. The font size for the Author List and Authors' Affiliation(s) should be 9-point. Please make sure that the spaces between title, author list and affiliation and main part of the manuscript exactly match this template.

Each major section begins with a Heading in 10 point Times New Roman font centered within the column and numbered using Roman numerals (except for Acknowledgement and References), followed by a period, a single space, and the title using an initial capital letter for each word. The remaining letters are in small capitals.

The paragraph description of the section heading line should be set for 8 points before, 4 points after, and the line spacing should be set to “single”. For the body of your paper, use 10-point Times New Roman font and set your line spacing at "multiple” with a factor of 0.95" with 0 points before and 6 points after. Indent each paragraph by 0.2 inches.

Further details are provided in the remainder of this paper for specific situations.

## Authors and Affiliations

**The template is designed for, but not limited to, six authors.** A minimum of one author is required for all conference articles. Author names should be listed starting from left to right and then moving down to the next line. This is the author sequence that will be used in future citations and by indexing services. Names should not be listed in columns nor group by affiliation. Please keep your affiliations as succinct as possible (for example, do not differentiate among departments of the same organization). **To preserve the column structure and to prevent information from the next author to start in the wrong column, it might be necessary to add empty lines. Do not use the return key, but activate the “Show/Hide” button and copy and paste an empty line.**

### For papers with more than six authors: Add author names horizontally, moving to a third row if needed for more than 8 authors.

### For papers with less than six authors: To change the default, adjust the template as follows.

#### Selection: Highlight all author and affiliation lines.

#### Change number of columns: Select the Columns icon from the MS Word Standard toolbar and then select the correct number of columns from the selection palette.

#### Deletion: Delete the author and affiliation lines for the extra authors.

## Identify the Headings

Headings, or heads, are organizational devices that guide the reader through your paper. There are two types: component heads and text heads.

Component heads identify the different components of your paper and are not topically subordinate to each other. Examples include Acknowledgments and References and, for these, the correct style to use is “Heading 5”. Use “figure caption” for your Figure captions, and “table head” for your table title. Run-in heads, such as “Abstract”, will require you to apply a style (in this case, italic) in addition to the style provided by the drop down menu to differentiate the head from the text.

Text heads organize the topics on a relational, hierarchical basis. For example, the paper title is the primary text head because all subsequent material relates and elaborates on this one topic. If there are two or more sub-topics, the next level head (uppercase Roman numerals) should be used and, conversely, if there are not at least two sub-topics, then no subheads should be introduced. Styles named “Heading 1”, “Heading 2”, “Heading 3”, and “Heading 4” are prescribed.

## Figures and Tables

####  Positioning Figures and Tables: Place figures and tables at the top and bottom of columns. Avoid placing them in the middle of columns. Large figures and tables may span across both columns. The use of color in figures and photos is recommended. Please consider the use of different line styles (dashes, dots, etc.) in plots to ensure clarity. Figure captions should be below the figures; table heads should appear above the tables. Insert figures and tables after they are cited in the text. Use the abbreviation “Fig. 1”, even at the beginning of a sentence.

1. Table Type Styles

| Table Head | Table Column Head |
| --- | --- |
| Table column subhead | Subhead | Subhead |
| copy | More table copya |  |  |

1. Sample of a Table footnote. (*Table footnote*)

Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Illumination [W/m2]”, not just “W/m2”. Do not label axes with a ratio of quantities and units. For example, write “Temperature [C]”, not “Temperature/C”. Note that figure captions are always (left and right) justified, rather than centered, even if they are less than a single full line in length.

1. Example of a figure caption. (*figure caption*)
2. Example of readable plot using different colors and line styles for clarity. (*figure caption*)

##### Acknowledgment *(Heading 5)*

The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression “one of us (R. B. G.) thanks ...”. Instead, try “R. B. G. thanks...”. Put sponsor acknowledgments in the unnumbered footnote on the first page.

##### References

The template will number citations consecutively within brackets [1]. The sentence punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]—do not use “Ref. [3]” or “reference [3]” except at the beginning of a sentence: “Reference [3] was the first ...”. The reference list is the last section and references are listed in the order cited. Use 8 point Times New Roman. The paragraph description is set for a line spacing of exactly 9 points with 0 point spacing before and 2.5 points after. A 0.25 inch hanging indention should be specified.

Number footnotes separately in superscripts. Place the actual footnote at the bottom of the column in which it was cited. Do not put footnotes in the abstract or reference list. Use letters for table footnotes.

Unless there are six authors or more give all authors’ names; do not use “et al.”. List all authors by initials and last name, the title of the paper in quotations, the journal name in italics, the volume number, the issue number, the page numbers, and the date. Capitalize only the first word in a paper title, except for proper nouns and element symbols. Use the examples provided [1]–[7] as a guide. Papers that have not been published, even if they have been submitted for publication, should be cited as “unpublished” [4]. Papers that have been accepted for publication should be cited as “in press” [5]. For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [6].

1. G. Eason, B. Noble, and I. N. Sneddon, “On certain integrals of Lipschitz-Hankel type involving products of Bessel functions,” Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955. *(references)*
2. J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.
3. I. S. Jacobs and C. P. Bean, “Fine particles, thin films and exchange anisotropy,” in Magnetism, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–350.
4. K. Elissa, “Title of paper if known,” unpublished.
5. R. Nicole, “Title of paper with only first word capitalized,” J. Name Stand. Abbrev., in press.
6. Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, “Electron spectroscopy studies on magneto-optical media and plastic substrate interface,” IEEE Transl. J. Magn. Japan, vol. 2, pp. 740–741, August 1987 [Digests 9th Annual Conf. Magnetics Japan, p. 301, 1982].
7. M. Young, The Technical Writer’s Handbook. Mill Valley, CA: University Science, 1989.

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