

Paper Title in English

First A. Author¹, *Fellow, IEEE*, Second B. Author², and Third C. Author Jr.³, *Member, IEEE*,

Abstract—This electronic document is a “live” template. The various components of your paper [title, text, heads, etc.] are already defined on the style sheet, as illustrated by the portions given in this document.

Keywords - component; formatting; style; styling; headings.

Resumen—Este documento electrónico es una plantilla “en vivo”. Los estilos de los distintos componentes del artículo [título, texto, encabezados, etc.] ya están definidos como se ilustra en las distintas secciones de este documento.

Palabras Clave - componente; formato; estilo; títulos.

I. INTRODUCTION

THIS document is a template for Microsoft Word. If you would prefer to use L^AT_EX, download IEEE’s L^AT_EXstyle and sample files from <https://template-selector.ieee.org/secure/templateSelector/publicationType>.

This template is a guide to formatting; your proof and final published version may vary in layout and length to conform to IEEE policy and style. Page count is an estimate; the length of your submitted article in the template may not be the same as when the formal proof is created by IEEE [1].

The IEEE Editorial Style Manual for Authors is available at <https://journals.ieeeauthorcenter.ieee.org/create-your-ieee-journal-article/create-the-text-of-your-article/ieee-editorial-style-manual/>. This contains a formal set of editorial guidelines for IEEE Transactions, Journals, and Letters, including:

- punctuation;
- capitalization;
- abbreviations;
- section headings;
- numbers, equations;

This paragraph of the first footnote will contain the date on which you submitted your paper for review, which is populated by IEEE. It is IEEE style to display support information, including sponsor and financial support acknowledgment, here and not in an acknowledgment section at the end of the article. For example, “This work was supported in part by the U.S. Department of Commerce under Grant 123456.” The name of the corresponding author appears after the financial information, e.g. (Corresponding author: Second B. Author). Here you may also indicate if authors contributed equally or if there are co-first authors. The next few paragraphs should contain the authors’ current affiliations, including current address and e-mail. For example,

¹First A. Author is with the National Institute of Standards and Technology, Boulder, CO 80305 USA (e-mail: author@boulder.nist.gov). ORCID number xxxx xxxxx.

²Second B. Author Jr. was with Rice University, Houston, TX 77005 USA. He is now with the Department of Physics, Colorado State University, Fort Collins, CO 80523 USA (e-mail: author@lamar.colostate.edu). ORCID number xxxx xxxxx.

³Third C. Author is with the Electrical Engineering Department, University of Colorado, Boulder, CO 80309 USA, on leave from the National Research Institute for Metals, Tsukuba 305-0047, Japan (e-mail: author@nrim.go.jp). ORCID number xxxx xxxxx.

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- footnotes;
- biographies;
- some common mistakes;
- units of measurement.

Communicate your work clearly. If you are not fully proficient in English, consider using an English language editing service before submitting your article [2]. An expert editing service can help you refine the use of English in your article, so you can communicate your work more effectively [3]. The use of an editing service is paid for by the author [4]. It does not guarantee acceptance in an IEEE publication. For more information, visit the IEEE Author Center at <https://journals.ieeeauthorcenter.ieee.org/create-your-ieee-journal-article/create-the-text-of-your-article/structure-your-article/#editing-service> [5].

II. GUIDELINES FOR MANUSCRIPT PREPARATION

When you open the template, select “Page Layout” from the “View” menu in the menu bar (View | Page Layout), (these instructions assume Microsoft Word. Some versions may have alternate ways to access the same functionalities noted here). Then, type over sections of the template or cut and paste from another document and use markup styles. The pull-down style menu is in the Formatting Toolbar at the top of your Word window (e.g., the style at this point in the document is “Text”). Highlight a section that you want to designate with a certain style, and then select the appropriate name on the style menu. The style will adjust your fonts and line spacing. Do not change the font sizes or line spacing to squeeze more text into a limited number of pages. Use *italics* for emphasis; do not underline. IEEE will do the final formatting of your article. If your article is intended for a conference, please observe the conference page limits. This is intended as an

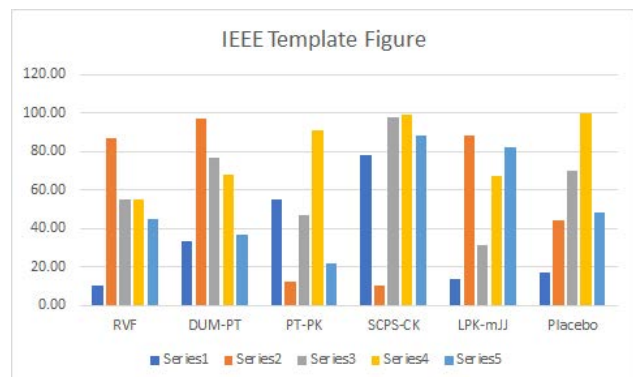


Fig. 1. This is a sample of a figure caption

TABLE I
THIS IS A SAMPLE OF A TABLE

Name	1	2	3	4	5
Data 1	One	Two	Three	Four	Five
Data 2	One	Two	Three	Four	Five
Data 3	One	Two	Three	Four	Five
Data 4	One	Two	Three	Four	Five
Data 5	One	Two	Three	Four	Five

authoring template, not a final production template. It is not intended to match the final published format. Differences in final formatting are likely in the final IEEE files. Page count in the template is an estimate. Do not adjust line and character spacing to fit your paper to a specific length.

A. Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have already been defined in the abstract. Abbreviations such as IEEE, SI, ac, and dc do not have to be defined. Abbreviations that incorporate periods should not have spaces: write “C.N.R.S.,” not “C. N. R. S.” Do not use abbreviations in the title unless they are unavoidable (for example, “IEEE” in the title of this article).

III. MATH

Use either the Microsoft Equation Editor or the MathType plugin, which can be obtained from <https://store.wiris.com/en/products/mathtype/download>. For help with formatting and placing equations, refer to the IEEE Editing Math Guide at <http://journals.ieeeauthorcenter.ieee.org/wp-content/uploads/sites/7/Editing-Mathematics.pdf> and the IEEE MathType Tutorial for Microsoft Word Users at <http://journals.ieeeauthorcenter.ieee.org/wp-content/uploads/sites/7/IEEE-Math-Typesetting-Guide-for-MS-Word-Users.pdf>.

A. Equations

Number equations consecutively with equation numbers in parentheses flush with the right margin of the column, as in (1). First use the equation editor to create the equation. Then select the “Equation” markup style. Press the tab key and write the equation number in parentheses. To make your equations more compact, you may use the solidus (/), the exp function, or appropriate exponents. Use parentheses to avoid ambiguities in denominators. Punctuate equations when they are part of a sentence, as in

$$x = \sum_{i=0}^n 2iQ. \quad (1)$$

Be sure that the symbols in your equation have been defined before the equation appears or immediately following. Italicize symbols (T might refer to temperature, but T is the unit tesla). When referring to an equation or formula, use simply “(1),” not “Eq. (1)” or “equation (1),” except at the beginning of a sentence: “Equation (1) is”

B. Algorithms

Algorithms should be numbered and include a short title. They are set off from the text with rules above and below the title and after the last line.

Algorithm 1 Weighted Tanimoto ELM.

TRAIN($\mathbf{X}\mathbf{T}$)

select randomly $W \subset \mathbf{X}$

$N_t \leftarrow |\{i : t_i = \mathbf{t}\}|$ **for** $\mathbf{t} = -1, +1$

$B_i \leftarrow \sqrt{\text{MAX}(N_{-1}, N_{+1})/N_{t_i}}$ **for** $i = 1, \dots, N$

$\hat{\mathbf{H}} \leftarrow B \cdot (\mathbf{X}^T \mathbf{W}) / (\|\mathbf{X}\| + \|\mathbf{W}\| - \mathbf{X}^T \mathbf{W})$

$\beta \leftarrow (I/C + \hat{\mathbf{H}}^T \hat{\mathbf{H}})^{-1} (\hat{\mathbf{H}}^T B \cdot \mathbf{T})$

return \mathbf{W}, β

PREDICT(\mathbf{X})

$\mathbf{H} \leftarrow (\mathbf{X}^T \mathbf{W}) / (\|\mathbf{X}\| + \|\mathbf{W}\| - \mathbf{X}^T \mathbf{W})$

return SIGN($\mathbf{H}\beta$)

IV. GUIDELINES FOR GRAPHICS PREPARATION AND SUBMISSION

A. Types of graphics

The following list outlines the different types of graphics published in IEEE journals. They are categorized based on their construction, and use of color / shades of gray:

- 1) **Color/Grayscale Figures** Figures that are meant to appear in color, or shades of black/gray. Such figures may include photographs, illustrations, multicolor graphs, and flowcharts.
- 2) **Line Art Figures** Figures that are composed of only black lines and shapes. These figures should have no shades or half-tones of gray, only black and white.
- 3) **Tables** Data charts which are typically black and white, but sometimes include color.

B. Multipart Figures

Format and save your graphics using a suitable graphics processing program that will allow you to create the images as PostScript (PS), Encapsulated PostScript (.EPS), Tagged Image File Format (.TIFF), Portable Document Format (.PDF), JPEG, or Portable Network Graphics (.PNG). These programs can re-size them and adjust the resolution settings. If you created your source files in one of the following programs you will be able to submit the graphics without converting to a PS, EPS, TIFF, PDF, or PNG file: Microsoft Word, Microsoft PowerPoint, or Microsoft Excel. Though it is not required, it is strongly recommended that these files be saved in PDF format rather than DOC, XLS, or PPT. Doing so will protect your figures from common font and arrow stroke issues that occur when working on the files across multiple platforms. When submitting your final files, your graphics should all be submitted individually in one of these formats along with the manuscript.

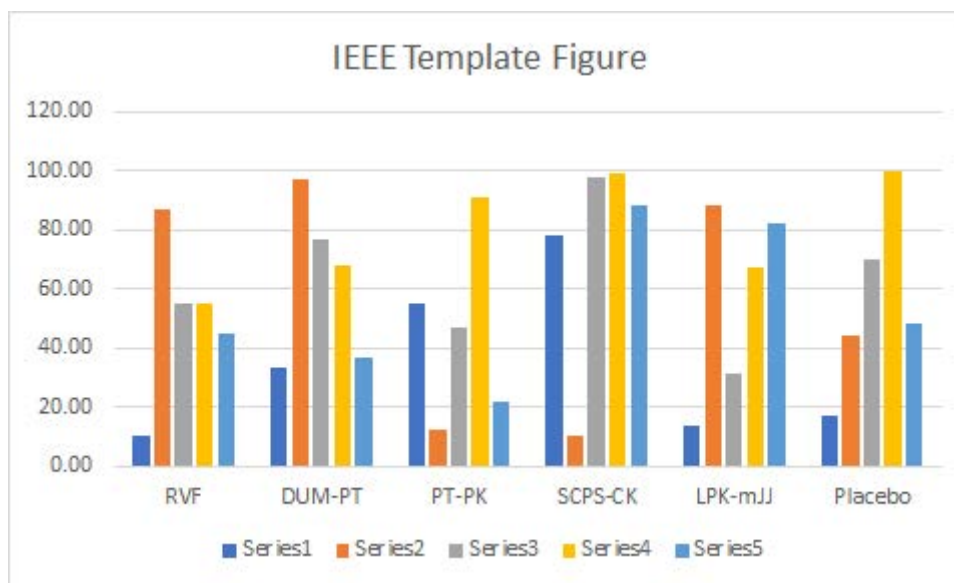


Fig. 2. This is a sample of a large figure that may be fitted in a one-column way. This is a sample of a large figure that may be fitted in a one-column way. This is a sample of a large figure that may be fitted in a one-column way.

TABLE II
THIS IS A SAMPLE OF A LARGE TABLE IN A ONE COLUMN-WAY

Name	1	2	3	4	5	6	7	8	9	10
Data 1	One	Two	Three	Four	Five	six	seven	eight	nine	ten
Data 2	One	Two	Three	Four	Five	six	seven	eight	nine	ten
Data 3	One	Two	Three	Four	Five	six	seven	eight	nine	ten
Data 4	One	Two	Three	Four	Five	six	seven	eight	nine	ten
Data 5	One	Two	Three	Four	Five	six	seven	eight	nine	ten

C. Sizing of Graphics

Most charts, graphs, and tables are one column wide (3.5 inches / 88 mm / 21 picas) or page wide (7.16 inches / 181 millimeters / 43 picas). The maximum depth a graphic can be is 8.5 inches (216 millimeters / 54 picas). When choosing the depth of a graphic, please allow space for a caption. Figures can be sized between column and page widths if the author chooses, however, it is recommended that figures not be sized less than column width unless when necessary. The final printed size of author photographs is exactly 1 in wide by 1.25 in tall (25.4 mm x 31.75 mm / 6 picas x 7.5 picas). Author photos printed in editorials measure 1.59 in wide by 2 in tall (40 mm x 50 mm / 9.5 picas x 12 picas).

D. Resolution

The proper resolution of your figures will depend on the type of figure it is as defined in the “Types of Figures” section. Author photographs, color, and grayscale figures should be at least 300dpi. Line art, including tables should be a minimum of 600dpi.

E. Vector art

In order to preserve the figures’ integrity across multiple computer platforms, we accept files in the following formats: .EPS/.PDF/.PS. All fonts must be embedded or text converted to outlines in order to achieve the best-quality results.

F. Color Space

The term “color space” refers to the entire sum of colors that can be represented within the said medium. For our purposes, the three main color spaces are grayscale, RGB (red/green/blue), and CMYK (cyan/magenta/yellow/black). RGB is generally used with on-screen graphics, whereas CMYK is used for printing purposes. All color figures should be generated in RGB or CMYK color space. Grayscale images should be submitted in grayscale color space. Line art may be provided in grayscale OR bitmap colorspace. Note that “bitmap colorspace” and “bitmap file format” are not the same thing. When bitmap color space is selected, .TIF/.TIFF/.PNG are the recommended file formats.

G. Accepted Fonts Within Figures

When preparing your graphics, IEEE suggests that you use one of the following Open Type fonts: Times New Roman, Helvetica, Arial, Cambria, or Symbol. If you are supplying EPS, PS, or PDF files, all fonts must be embedded. Some fonts may only be native to your operating system; without the fonts embedded, parts of the graphic may be distorted or missing. A safe option when finalizing your figures is to strip out the fonts before you save the files, creating “outline” type. This converts fonts to artwork which will appear uniformly on any screen.

H. Using Labels Within Figures

1) Figure Axis Labels

- a) Figure axis labels are often a source of confusion. Use words rather than symbols. As an example, write the quantity “Magnetization” or “Magnetization M,” not just “M.” Put units in parentheses. Do not label axes only with units. For example, write “Magnetization (A/m)” or “Magnetization (A m – 1),” not just “A/m.” Do not label axes with a ratio of quantities and units. For example, write “Temperature (K),” not “Temperature /K.”
- b) Multipliers can be especially confusing. Write “Magnetization (kA/m)” or “Magnetization (103 A/m).” Do not write “Magnetization (A/m) × 1000” because the reader would not know whether the top axis label means 16000 A/m or 0.016 A/m. Figure labels should be legible, approximately 8- to 10-point type.

2) Subfigure Labels in Multipart Figures and Tables

Multipart figures should be combined and labeled before final submission. Labels should appear centered below each subfigure in 8-point Times New Roman font in the format of (a) (b) (c).

I. Referencing a Figure or Table Within Your Article

When referencing your figures and tables within your article, use the abbreviation “Fig.” even at the beginning of a sentence. Do not abbreviate “Table.” Tables should be numbered with Roman numerals.

J. Submitting Your Graphics

Because IEEE will do the final formatting of your article, all figures, figure captions, and tables can be placed at the end of your article. However, if you do place your figures within the article, they should be placed at the top of the page, closest to the first mention in the text. Figures should be submitted as individual files, separate from the manuscript in one of the file formats listed above. Place figure captions below the figures; place table headings above the tables. Do not include captions as part of the figures, or put them in “text boxes” linked to the figures. Also, do not place borders around the outside of your figures.

K. Color Processing / Printing in IEEE Transactions, Journals, and Letters

All IEEE Transactions, Journals, and Letters allow an author to publish color figures on IEEE Xplore at no charge, and automatically convert them to grayscale for print versions. In most journals, figures and tables may alternatively be printed in color if an author chooses to do so. Please note that this service comes at an extra expense to the author. If you intend to have print color graphics, you will have the opportunity to indicate this in the Author Gateway and will be contacted by PubOps to confirm the charges.

V. CONSLUSSIONS

A conclusion section is not required. Although a conclusion may review the main points of the article, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions.

APPENDIX

Appendixes, if needed, appear before the acknowledgment. This space includes appendix sections and subsections

REFERENCES AND FOOTNOTES

A. References guides

References need not be cited in text. When they are, they appear on the line, in square brackets, inside the punctuation. Multiple references are each numbered with separate brackets. When citing a section in a book, please give the relevant page numbers. In text, refer simply to the reference number. Do not use “Ref.” or “reference” except at the beginning of a sentence: “Reference [3] shows” Please do not use automatic endnotes in Word, rather, type the reference list at the end of the paper using the “References” style. Reference numbers are set flush left and form a column of their own, hanging out beyond the body of the reference. The reference numbers are on the line, enclosed in square brackets. In all references, the given name of the author or editor is abbreviated to the initial only and precedes the last name. Use them all; use et al. only if names are not given or if there are more than 6 authors. Use commas around Jr., Sr., and III in names. Abbreviate conference titles. When citing IEEE Transactions, provide the issue number, page range, volume number, month if available, and year. When referencing a patent, provide the day and the month of issue, or application. References may not include all information; please obtain and include relevant information. Do not combine references. There must be only one reference with each number. If there is a URL included with the reference, it can be included at the end of the reference. Other than books, capitalize only the first word in an article title, except for proper nouns and element symbols. For articles published in translation journals, please give the English citation first, followed by the original foreign-language citation. See the end of this document for formats and examples of common references. For a complete discussion of references and their formats, see the IEEE Editorial Style Manual for Authors at <https://journals.ieeeauthorcenter.ieee.org/create-your-ieee-journal-article/create-the-text-of-your-article/ieee-editorial-style-manual/>.

B. Footnotes

Number footnotes separately in superscripts (Insert — Footnote). Place the actual footnote at the bottom of the column in which it is cited; do not put footnotes in the reference list (endnotes). Use letters for table footnotes (see Table I).

SUBMITTING YOUR ARTICLE FOR REVIEW

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ACKNOWLEDGMENT

The preferred spelling of the word "acknowledgment" in American English is without an "e" after the "g." Use the singular heading even if you have many acknowledgments. Avoid expressions such as "One of us (S.B.A.) would like to thank" Instead, write "F. A. Author thanks" In most cases, sponsor and financial support acknowledgments are placed in the unnumbered footnote on the first page, not here.

REFERENCES

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