# PREPARATION OF PAPERS FOR IEEE TRANSACTIONS AND JOURNALS (DECEMBER 2013)

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**KEY WORDS:** Delay effects, Eddy currents, Gunn devices, Schottky diodes, Virtual enterprises

# 1. INTRODUCTION

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# 2. GUIDELINES FOR MANUSCRIPT PREPARATION

When you open TRANS-JOUR.DOC, select Page Layout from the View menu in the menu bar (View — Page Layout), (these instructions assume MS 6.0. Some versions may have alternate ways to access the same functionalities noted here). Then, type over sections of TRANS-JOUR.DOC or cut and paste from another document and use markup styles. The pull-down style menu is at the left of the Formatting Toolbar at the top of your Word window (for example, the style at this point in the document is Text). Highlight a section that you want to designate with a certain style, 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.

To insert images in Word, position the cursor at the insertion point and either use Insert — Picture — From File or copy the image to the Windows clipboard and then Edit — Paste Special — Picture (with float over text unchecked).

IEEE will do the final formatting of your paper. If your paper is intended for a conference, please observe the conference page limits.

# 2.1 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).

#### 2.2 Other Recommendations

Use one space after periods and colons. Hyphenate complex modifiers: zero-field-cooled magnetization. Avoid dangling participles, such as, Using (1), the potential was calculated. [It is not clear who or what used (1).] Write instead, The potential was calculated by using (1), or Using (1), we calculated the potential.

Use a zero before decimal points: 0.25, not 0.25. Use cm3, not cc. Indicate sample dimensions as 0.1 cm 0.2 cm, not 0.1 0.2 cm2. The abbreviation for seconds is s, not sec. Use Wb/m2 or webers per square meter, not webers/m2. When expressing a range of values, write 7 to 9 or 7-9, not 7 9.

A parenthetical statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.) In American English, periods and commas are within quotation marks, like this period. Other punctuation is outside! Avoid contractions; for example, write do not instead of dont. The serial comma is preferred: A, B, and C instead of A, B and C.

If you wish, you may write in the first person singular or plural and use the active voice (I observed that ... or We observed that ... instead of It was observed that ...). Remember to check spelling. If your native language is not English, please get a native English-speaking colleague to carefully proofread your paper.

# 2.3 How to Create a PostScript File

First, download a PostScript printer driver from http://www.adobe.com/support/downloads/pdrvwin.htm (for Windows) or from http://www.adobe.com/support/downloads/ pdrvmac.htm (for Macintosh) and install the Generic PostScript Printer definition. In Word, paste your figure into a new document. Print to a file using the PostScript printer driver. File names should be of the form fig5.ps. Use Open Type fonts when creating your figures, if possible. A listing of the acceptable fonts are as follows: Open Type Fonts: Times Roman, Helvetica, Helvetica Narrow, Courier, Symbol, Palatino, Avant Garde, Bookman, Zapf Chancery, Zapf Dingbats, and New Century Schoolbook.

## 3. MATH

If you are using Word, use either the Microsoft Equation Editor or the MathType addon (http://www.mathtype.com) for equations in your paper (Insert — Object — Create New — Microsoft Equation or MathType Equation). Float over text should not be selected.

## 3.1 Equations

Number equations consecutively with equation numbers in parentheses flush with the right margin, 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

$$\int_{0}^{r_{2}} F(r, \varphi) dr d\varphi = \left[ \sigma r_{2} / (2\mu_{0}) \right] \int_{0}^{\infty} \exp(-\lambda |z_{j} - z_{i}|) \lambda^{-1} J_{1}(\lambda r_{2}) J_{0}(\lambda r_{i}) d\lambda \tag{1}$$

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). Refer to (1), not Eq. (1) or equation (1), except at the beginning of a sentence: Equation (1) is ... .

## 4. UNITS

Use either SI (MKS) or CGS as primary units. (SI units are strongly encouraged.) English units may be used as secondary units (in parentheses). This applies to papers in data storage. For example, write 15 Gb/cm2 (100 Gb/in2). An exception is when English units are used as identifiers in trade, such as 3-in 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 in an equation.

The SI unit for magnetic field strength H is A/m. However, if you wish to use units of T, either refer to magnetic flux density B or magnetic field strength symbolized as 0H. Use the center dot to separate compound units, e.g., Am2.

## 5. SOME COMMON MISTAKES

The word data is plural, not singular. The subscript for the permeability of vacuum 0 is zero, not a lowercase letter o. The term for residual magnetization is remanence; the adjective is remanent; do not write remnance or remnant. Use the word micrometer instead of micron. 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). Use the word whereas instead of while (unless you are referring to simultaneous events). Do not use the word essentially to mean approximately or effectively. Do not use the word issue as a euphemism for problem. When compositions are not specified, separate chemical symbols by en-dashes; for example, NiMn indicates the intermetallic compound Ni0.5Mn0.5 whereas NiMn indicates an alloy of some composition NixMn1-x.

Be aware of the different meanings of the homophones affect (usually a verb) and effect (usually a noun), complement and compliment, discreet and discrete, principal (e.g., principal investigator) and principle (e.g., principle of measurement). Do not confuse imply and infer.

Prefixes such as non, sub, micro, multi, and ultra are not independent words; they should be joined to the words they modify, usually without a hyphen. There is no period after the et in the Latin abbreviation et al. (it is also italicized). The abbreviation i.e., means that is, and the abbreviation e.g., means for example (these abbreviations are not italicized).

A general IEEE styleguide is available at http://www.ieee.org/web/publications/authors/transjnl/index.htm

#### 6. GUIDELINES FOR GRAPHICS PREPARATION AND SUBMISSION

## 6.1 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:

# 6.1.1 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.

## 6.1.2 Lineart 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.

## 6.1.3 Author photos

Head and shoulders shots of authors which appear at the end of our papers.

# 6.1.4 Tables

Data charts which are typically black and white, but sometimes include color.

# 6.2 Multipart figures

Figures compiled of more than one sub-figure presented side-by-side, or stacked. If a multipart figure is made up of multiple figure types (one part is lineart, and another is grayscale or color) the figure should meet the stricter guidelines.

# 6.3 File Formats For Graphics

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), or Portable Network Graphics (.PNG) sizes them, and adjusts 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 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 paper, your graphics should all be submitted individually in one of these formats along with the manuscript.

## 6.4 Sizing of Graphics

Most charts, graphs, and tables are one column wide (3.5 inches / 88 millimeters / 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 are not sized less than column width unless when necessary.

There is currently one publication with column measurements that dont coincide with those listed above. Proceedings of the IEEE has a column measurement of 3.25 inches (82.5 millimeters / 19.5 picas).

The final printed size of author photographs is exactly 1 inch wide by 1.25 inches tall (25.4 millimeters  $\times$  31.75 millimeters / 6 picas  $\times$  7.5 picas). Author photos printed in editorials measure 1.59 inches wide by 2 inches tall (40 millimeters  $\times$  50 millimeters / 9.5 picas  $\times$  12 picas).

#### 6.5 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. Lineart, including tables should be a minimum of 600dpi.

# 6.6 Vector Art

While IEEE does accept, and even recommends that authors submit artwork in vector format, it is our policy is to rasterize all figures for publication. This is done in order to preserve the figures integrity across multiple computer platforms.

# 6.7 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 is the recommended file format.

## 6.8 Accepted Fonts Within Figures

When preparing your graphics IEEE suggests that you use of one of the following Open Type fonts: Times New Roman, Helvetica, Arial, Cambria, and 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 what will appear uniformly on any screen.

# 6.9 Using Labels Within Figures

## 6.9.1 Figure Axis labels

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. As in Fig. 1, for example, write Magnetization (A/m) or Magnetization (Am1), not just A/m. Do not label axes with a ratio of quantities and units. For example, write Temperature (K), not Temperature/K.

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 in Fig. 1 meant 16000 A/m or 0.016 A/m. Figure labels should be legible, approximately 8 to 10 point type.

#### 6.9.2 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).

## 6.10 File Naming

Figures (line artwork or photographs) should be named starting with the first 5 letters of the authors last name. The next characters in the filename should be the number that represents the sequential location of this image in your article. For example, in

author Andersons paper, the first three figures would be named ander1.tif, ander2.tif, and ander3.ps.

Tables should contain only the body of the table (not the caption) and should be named similarly to figures, except that .t is inserted in-between the authors name and the table number. For example, author Andersons first three tables would be named ander.t1.tif, ander.t2.ps, ander.t3.eps.

Author photographs should be named using the first five characters of the pictured authors last name. For example, four author photographs for a paper may be named: oppen.ps, moshc.tif, chen.eps, and duran.pdf.

If two authors or more have the same last name, their first initial(s) can be substituted for the fifth, fourth, third... letters of their surname until the degree where there is differentiation. For example, two authors Michael and Monica Oppenheimers photos would be named oppmi.tif, and oppmo.eps.

# 6.11 Referencing a Figure or Table Within Your Paper

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

# 6.12 Checking Your Figures: The IEEE Graphics Checker

The IEEE Graphics Checker Tool enables authors to pre-screen their graphics for compliance with IEEE Transactions and Journals standards before submission. The online tool, located at http://graphicsqc.ieee.org/, allows authors to upload their graphics in order to check that each file is the correct file format, resolution, size and colorspace; that no fonts are missing or corrupt; that figures are not compiled in layers or have transparency, and that they are named according to the IEEE Transactions and Journals naming convention. At the end of this automated process, authors are provided with a detailed report on each graphic within the web applet, as well as by email.

For more information on using the Graphics Checker Tool or any other graphics related topic, contact the IEEE Graphics Help Desk by e-mail at graphics@ieee.org.

# 6.13 Submitting Your Graphics

Because IEEE will do the final formatting of your paper, you do not need to position figures and tables at the top and bottom of each column. In fact, all figures, figure captions, and tables can be placed at the end of your paper. In addition to, or even in lieu of submitting figures within your final manuscript, figures should be submitted individually, separate from the manuscript in one of the file formats listed above in section VI-J. Place figure captions below the figures; place table titles above the tables. Please 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.

# 6.14 Color Processing / Printing in IEEE Journals

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, include a note with your final paper indicating which figures or tables you would like to be handled that way, and stating that you are willing to pay the additional fee.

## 7. CONCLUSION

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

#### 8. APPENDIX

Appendixes, if needed, appear before the acknowledgment.

#### 9. ACKNOWLEDGMENT

The preferred spelling of the word acknowledgment in American English is without an eafter 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.

## 10. REFERENCES AND FOOTNOTES

## 10.1 References

References need not be cited in text. When they are, number citations 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. Use commas around Jr., Sr., and III in names. Abbreviate conference titles. When citing IEEE transactions, provide the issue number, page range, volume number, year, and/or month if available. 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

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#### 10.2 Footnotes

Number footnotes separately in superscripts (Insert — Footnote).[It is recommended that footnotes be avoided (except for the unnumbered footnote with the receipt date on the first page). Instead, try to integrate the footnote information into the text.] 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).

# 11. SUBMITTING YOUR PAPER FOR REVIEW

# 11.1 Review Stage Using Word 6.0 or Highertle

If you want to submit your file with one column electronically, please do the following:

- First, click on the View menu and choose Print Layout.
- Second, place your cursor in the first paragraph. Go to the Format menu, choose Columns, choose one column Layout, and choose apply to whole document from the dropdown menu.
- Third, click and drag the right margin bar to just over 4 inches in width.

The graphics will stay in the second column, but you can drag them to the first column. Make the graphic wider to push out any text that may try to fill in next to the graphic.

## 11.2 Final Stage Using Word 6.0

When you submit your final version (after your paper has been accepted), print it in two-column format, including figures and tables. You must also send your final manuscript on a disk, via e-mail, or through a Web manuscript submission system as directed by the society contact. You may use Zip for large files, or compress files using Compress, Pkzip, Stuffit, or Gzip.

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You will be asked to file an electronic copyright form immediately upon completing the submission process (authors are responsible for obtaining any security clearances). Failure to submit the electronic copyright could result in publishing delays later. You will also have the opportunity to designate your article as open access if you agree to pay the IEEE open access fee.

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In addition to this, upload a file with complete contact information for all authors. Include full mailing addresses, telephone numbers, fax numbers, and e-mail addresses. Designate the author who submitted the manuscript on ScholarOne Manuscripts as the corresponding author. This is the only author to whom proofs of the paper will be sent.

# 11.5 Copyright Form

An IEEE copyright form should accompany your final submission. You can get a .pdf, .html, or .doc version at http://www.ieee.org/copyright. Authors are responsible for obtaining any security clearances.

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Submission of a manuscript is not required for participation in a conference. Do not submit a reworked version of a paper you have submitted or published elsewhere. Do not

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The IEEE Transactions and Journals Department does not publish conference records or proceedings. The department does publish papers related to conferences that have been recommended for publication on the basis of peer review. As a matter of convenience and service to the technical community, these topical papers are typically collected and published in one special issue of most transactions publications.

At least two reviews are required for every paper submitted. For conference-related papers, the decision to accept or reject a paper is made by the conference editors and publications committee; the recommendations of the referees are advisory only. Indecipherable English is a valid reason for rejection. There is a service available that will help you improve your English for a fee, and the link to that service can be found at http://www.ieee.org/web/publications/authors/transjnl/index.html. Authors of rejected papers may revise and resubmit them as regular papers, whereupon they will be reviewed by two new referees.

#### 13. PUBLICATION PRINCIPLES

The two types of contents of that are published are; 1) peer-reviewed and 2) archival. The Transactions and Journals Department publishes scholarly articles of archival value as well as tutorial expositions and critical reviews of classical subjects and topics of current interest.

Authors should consider the following points:

- Technical papers submitted for publication must advance the state of knowledge and must cite relevant prior work.
- The length of a submitted paper should be commensurate with the importance, or appropriate to the complexity, of the work. For example, an obvious extension of previously published work might not be appropriate for publication or might be adequately treated in just a few pages.
- Authors must convince both peer reviewers and the editors of the scientific and technical merit of a paper; the standards of proof are higher when extraordinary or unexpected results are reported.
- Because replication is required for scientific progress, papers submitted for publication must provide sufficient information to allow readers to perform similar experiments or calculations and use the reported results. Although not everything need be disclosed, a paper must contain new, useable, and fully described information. For example, a specimens chemical composition need not be reported if the main purpose of a paper is to introduce a new measurement technique. Authors should expect to be challenged by reviewers if the results are not supported by adequate data and critical details.

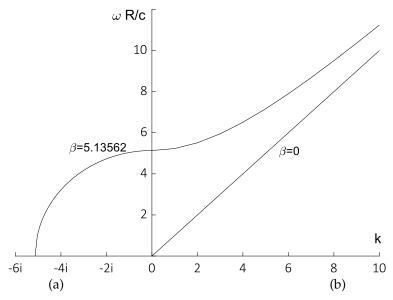


FIG. 1: Visualization setup. (a) Some description for left part. (b) Some description for right part.

 Papers that describe ongoing work or announce the latest technical achievement, which are suitable for presentation at a professional conference, may not be appropriate for publication.

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