



Department of Electrical and Computer Engineering
COMPSYS 701 – Advanced Digital Systems Design
Final Report

Heterogeneous Multiprocessor System on Network-on-Chip Design

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Preparation of Papers for IEEE TRANSACTIONS and JOURNALS

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Abstract—These instructions give you guidelines for preparing papers for IEEE Transactions and Journals. Use this document as a template if you are using Microsoft Word 6.0 or later. Otherwise, use this document as an instruction set. Paper titles should be written in uppercase and lowercase letters, not all uppercase. Avoid writing long formulas with subscripts in the title; short formulas that identify the elements are fine (e.g., "Nd-Fe-B"). Full names of authors are preferred in the author field, but are not required. Put a space between authors' initials. The abstract must be a concise yet comprehensive reflection of what is in your article. In particular, the abstract must be self-contained, without abbreviations, footnotes, or references. It should be a microcosm of the full article. The abstract must be between 150–250 words. Be sure that you adhere to these limits. The abstract must be written as one paragraph, and should not contain displayed mathematical equations or tabular material. Ensure that your abstract reads well and is grammatically correct.

I. INTRODUCTION

THIS document is a template for Microsoft Word versions 6.0 or later and is based IEEE journal paper template. The original electronic file, trans_jour.docx, from the IEEE Web site at www.ieee.org/authortools. If you would prefer to use LaTeX, download IEEE's [LaTeX style and sample files](#) from the same Web page and modify accordingly. You can also explore using the [Overleaf](#).

II. GUIDELINES FOR MANUSCRIPT PREPARATION

Styles required to format this document can be found in the pull-down style menu found in 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, 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.

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). Please observe the page limit.

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).

B. 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 ".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 "don't." 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 ..."). However, it's preferable if it's written as "It was observed that ...". Remember to check spelling.

III. MATH

If you are using Word, use Microsoft Equation Editor for equations in your paper (Insert | Object | Create New | Microsoft Equation). "Float over text" should *not* be selected.

A. Equations

Number equations consecutively with equation numbers in parentheses flush with the right margin, as in (1). To help formatting, add equation in a table (no borders) as shown below. Use the equation editor to create equations. Use "display" style and not the "inline" style. This can be changed using the drop down menu and selecting "change to display". To make your equations more compact, you may use the solidus (/), the exp function, or appropriate exponents. Use parentheses to avoid ambiguities in denominators.

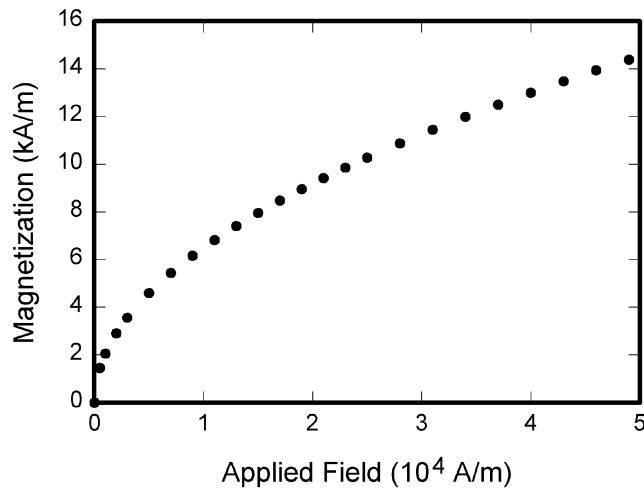


Fig. 1. Magnetization as a function of applied field. Note that “Fig.” is abbreviated. There is a period after the figure number, followed by two spaces.

$$P_{out} = \frac{1}{T_s} \int_0^{T_s} V_{out} I_{out} dt \quad (1)$$

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

IV. 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 “3½-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 $\mu_0 H$. Use the center dot to separate compound units, e.g., “A·m².”

V. SOME COMMON MISTAKES

The word “data” is plural, not singular. The subscript for the permeability of vacuum μ_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

TABLE I
UNITS FOR MAGNETIC PROPERTIES

Symbol	Quantity	Conversion from Gaussian and CGS EMU to SI ^a
Φ	magnetic flux	1 Mx $\rightarrow 10^{-8}$ Wb = 10^{-8} V·s
B	magnetic flux density, magnetic induction	1 G $\rightarrow 10^{-4}$ T = 10^{-4} Wb/m ²
H	magnetic field strength	1 Oe $\rightarrow 10^3/(4\pi)$ A/m
m	magnetic moment	1 erg/G = 1 emu $\rightarrow 10^{-3}$ A·m ² = 10^{-3} J/T
M	magnetization	1 erg/(G·cm ³) = 1 emu/cm ³ $\rightarrow 10^3$ A/m
$4\pi M$	magnetization	1 G $\rightarrow 10^3/(4\pi)$ A/m
σ	specific magnetization	1 erg/(G·g) = 1 emu/g $\rightarrow 1$ A·m ² /kg
j	magnetic dipole moment	1 erg/G = 1 emu $\rightarrow 4\pi \times 10^{-10}$ Wb·m
J	magnetic polarization	1 erg/(G·cm ³) = 1 emu/cm ³ $\rightarrow 4\pi \times 10^{-4}$ T
χ, κ	susceptibility	1 $\rightarrow 4\pi$
χ_p	mass susceptibility	1 cm ³ /g $\rightarrow 4\pi \times 10^{-3}$ m ³ /kg
μ	permeability	1 $\rightarrow 4\pi \times 10^{-7}$ H/m = $4\pi \times 10^{-7}$ Wb/(A·m)
μ_r	relative permeability	$\mu \rightarrow \mu_r$
w, W	energy density	1 erg/cm ³ $\rightarrow 10^{-1}$ J/m ³
N, D	demagnetizing factor	1 $\rightarrow 1/(4\pi)$

Vertical lines are optional in tables. Statements that serve as captions for the entire table do not need footnote letters.

^aGaussian units are the same as cg emu for magnetostatics; Mx = maxwell, G = gauss, Oe = oersted; Wb = weber, V = volt, s = second, T = tesla, m = meter, A = ampere, J = joule, kg = kilogram, H = henry.

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 Ni_{0.5}Mn_{0.5} whereas “Ni–Mn” indicates an alloy of some composition Ni_xMn_{1-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).

VI. 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) *Author photos*

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

4) *Tables*

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

B. *Multipart figures*

Figures compiled of more than one sub-figure presented side-by-side, or stacked.

C. *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), Enhanced MetaFile (EMF), Tagged Image File Format (.TIFF), Portable Document Format (.PDF), or Portable Network Graphics (.PNG) size them, and adjusts the resolution settings.

D. *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.

E. *Resolution*

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

F. *Vector Art*

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

G. *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 using EPS, PS, or PDF files all fonts should 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.

H. *Using Labels Within Figures*

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 ($A \cdot m^{-1}$),” not just “A/m.” Do not label axes with a ratio of quantities and units. For example, write “Temperature (K),” not “Temperature/K.”

Multipliers can be especially confusing. Write “Magnetization (kA/m)” or “Magnetization (10^3 A/m).” Do not write “Magnetization (A/m) $\times 1000$ ” 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.

2) *Subfigure Labels in Multipart Figures and Tables*

Multipart figures should be combined and labeled. 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 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.

VII. CONCLUSION

The conclusion should review the main points of the paper. For example a conclusion might elaborate on the importance of the work. Do not replicate the abstract as the conclusion.

APPENDIX

Appendices, if needed, appear before the acknowledgment.

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 “I would like to thank” Instead, write “F. A. Author thanks” You may also include sponsor and financial support acknowledgments (if applicable) here.

REFERENCES

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” You may use the “References” style.