Preparation of Papers for *IEEE Radiation Effects Data Workshop Record* (2020)

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***Abstract*--These instructions give you guidelines for preparing papers for the *IEEE Radiation Effects Data Workshop Record* using Microsoft *Word* 6.0 or later. Use this document as a template. Your paper will not be formatted further at IEEE. Define all symbols used in the abstract. Do not cite references in the abstract.**

I. Introduction

THIS document is a template for Microsoft *Word* versions 6.0 or later. This template has been tailored for output on the US letter-sized paper.

Acceptable word processor formats (in order of preference) are: *TeX*, *LaTeX*, *Word* (6.0 or higher), and *WordPerfect* (5.1 or higher) for IBM, Unix, or Mac. If you are not able to submit in these formats, contact the current REDW chairperson. To aid authors using word processors other than *LaTeX* or *Word* in determining their page layout and count, Table I gives the font sizes and formats that are used in REDWREC.DOC. Use "Times New Roman" font.

The template is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin in this template measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire proceedings, and not as an independent document. Please do not revise any of the current designations.

TABLE I
FONT SIZES AND FORMATS

Element	Font Size	Font Type	Spacing
Title	24	Normal	N/A
Authors	11	Normal	16 pt before, 1 pt after
Abstract	9	Bold	N/A
Heading 1	10	Small Caps	12 pt before, 4 pt after
Heading 2	10	Italics	6 pt before, 3 pt after
Heading 3	10	Italics	N/A
Text	10	Normal	"Multiple" at 1.05
Footnote	8	Normal	N/A
Table Title	8	Small Caps	N/A
Figure	8	Normal	N/A
References	8	Normal	N/A

When you open REDWREC.DOC, select "Page Layout" from the "View" menu (View | Page Layout), which allows you to see the footnotes. You may then type over sections of REDWREC.DOC, cut and paste into it (Edit | Paste Special | Unformatted Text), and/or 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, and then select the appropriate name on the style menu. 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.

The page limit for the papers compiled in the IEEE *Radiation Effects Data Workshop Record* is eight pages. The eight-page limit cannot be exceeded without the permission of the Data Workshop Chairperson. The burden is on the author to justify the additional length. Do not adjust the font sizes or line spacing specified in this document to squeeze more text into a limited number of pages.

II. Procedure for Paper Submission

A. Paper Submission

Before the conference, the Data Workshop Chairperson will ask you to upload an electronic version of your paper to a prescribed web site where it will be converted by the publisher to pdf. In this way, the publisher can insure the

Manuscript received May 9, 2007. (Write the date on which you submitted your paper for review.) This work was supported in part by the U.S. Department of Commerce under Grant No. BS123456 (sponsor acknowledgment goes here).

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 acceptable (e.g., "Nd-Fe-B"). Do not write "(Invited)" in the title. Do not begin a title with the word "On ... ."

Full names of authors are preferred in the author field, but are not required. Put a space between authors' initials. Do not use all uppercase for authors' surnames.

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final product will be compatible with the printing process as well as the IEEE Xplore® specifications. Acceptable word processor electronic formats for your file are *TeX*, *LaTeX*, *Word*, and *WordPerfect*. Tables and figures will be embedded as prescribed in Section II-B. To insert images in *Word*, use Insert | Picture | From File. It is preferred that electronic versions of the tables and figures should be inserted from files in PostScript (PS) or Encapsulated PostScript (EPS) formats or in Tagged Image File Format (TIFF).

B. Preparation of Electronic Figure and Table Files

The key to good figures and tables is resolution. Here are some suggestions for making quality figures. Large figures and tables may span across both columns. 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.

1) Easiest Way

If you have a scanner, the best and quickest way to prepare noncolor figure files is to print your tables and figures on paper exactly as you want them to appear, scan them, and then save them to a file in PostScript (PS) or Encapsulated PostScript (EPS) formats. Use a separate file for each image.

2) Slightly Harder Way

Using a scanner as above, save the images in TIFF format. High-contrast line figures and tables should be prepared with 600 dpi resolution and saved with no compression, 1 bit per pixel (monochrome). To obtain a 3.45 inch figure (one column width) at 600 dpi, the figure requires a horizontal size of 2070 pixels. Typical file sizes will be on the order of 0.5 MB. Photographs, color figures, and grayscale figures should be prepared with 220 dpi resolution and saved with no compression, 8 bits per pixel (256 color or grayscale). To obtain a 3.45 inch figure (one column width) at 220 dpi, the figure should have a horizontal size of 759 pixels. Make sure that the final resolution of your figures is indeed 600 dpi for black and white, or 220 dpi for photographs, color, and grayscale.

3) Somewhat Harder Way

If you do not have a scanner, you may create noncolor PostScript figures by "printing" them to files. 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. Use Adobe Type 1 fonts when creating your figures, if possible.

4) Hardest Way

Experienced computer users can convert figures and tables from their original format to TIFF. Some useful image converters are Adobe *Photoshop*, Corel *Draw*, and Microsoft *Photo Editor*, an application that is part of Microsoft *Office 97* (look for C:\Program Files\Common Files\Microsoft Shared\ PhotoEd\PHOTOED.EXE).

Here is a way to make TIFF image files of tables. First, create your table in *Word*. Use horizontal lines but no vertical lines. Hide gridlines (Table | Hide Gridlines). Spell check the table to remove any red underlines that indicate spelling errors. Adjust magnification (View | Zoom) such that you can view the entire table *at maximum area* when you select View | Full Screen. Move the cursor so that it is out of the way. Press "Print Screen" on your keyboard; this copies the screen image to the Windows clipboard. Open Microsoft *Photo Editor* and click Edit | Paste as New Image. Crop the table image (click Select button; select the part you want, then Image | Crop). Adjust the properties of the image (File | Properties) to Monochrome (1 bit) and 600 pixels per inch. Resize the image (Image | Resize) to a width of 3.45 inches. Save the file (File | Save As) in TIFF with no compression (click "More" button).

Most graphing programs allow you to save graphs in TIFF; however, you often have no control over compression or number of bits per pixel. You should open these image files in a program such as Microsoft *Photo Editor* and re-save them using no compression, either 1 or 8 bits, and either 600 or 220 dpi resolution (File | Properties; Image | Resize). See Section II.C.2 for an explanation of number of bits and resolution. If your graphing program cannot export to TIFF, you can use the same technique described for tables in the previous paragraph.

A way to convert a figure from Windows Metafile (WMF) to TIFF is to paste it into Microsoft *PowerPoint*, save it in JPG format, open it with Microsoft *Photo Editor* or similar converter, and re-save it as TIFF.

Microsoft *Excel* allows you to save spreadsheet charts in Graphics Interchange Format (GIF). To get good resolution, make the *Excel* charts *very* large. Then use the "Save as HTML" feature (see http://support.microsoft.com/support/kb/articles/q158/0/79.asp). You can then convert from GIF to TIFF using Microsoft *Photo Editor*, for example.

No matter how you convert your images, it is a good idea to print the TIFF files to make sure nothing was lost in the conversion. For more information on TIFF guidelines, please see http://www.ieee.org/organizations/pubs/authors.html.

C. Copyright Form and Contact Information

The paper is not considered fully submitted until a signed IEEE copyright form is submitted at the conference. You can download the correct form from the NSREC web site at http://www.nsrec.com/editathr.htm.

You will also need to submit a sheet of paper with the final title of your paper, the author list, and all author contact information including telephone, fax, and e-mail, so IEEE can contact you if there is any problem with your paper..

III. MATH

The equations are an exception to the prescribed specifications of this template. You will need to determine whether 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, in which case use either the Microsoft Equation Editor or the *MathType* add-on for all math objects in your paper (Insert | Object | Create New | Microsoft Equation *or* MathType Equation). "Float over text" should *not* be selected. We recommend defining a keyboard shortcut (e.g., ALT+E) to open the equation editor (Tools | Customize | Commands | Keyboard | Insert InsertEquation).

A math object is any equation or fragment containing mathematical symbols (including Greek characters, superscripts and subscripts) that appears either in-line (in the flow of normal text) or as a display equation (in its own space between lines of text).

In particular, you should avoid using *Word* fonts or symbols for in-line single variables with superscripts or subscripts. Use italics for emphasis; do not underline. Turn off "smart quotes" (Tools | AutoCorrect | AutoFormat tabs). Turn off automatic hyphenation (Tools | Language | Hyphenation).

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). An exception is when English units are used as identifiers in trade, such as "3.5 inch disk drive." Avoid combining SI and CGS units, such as mass in kilograms and volume in cubic centimeters. 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.

Table II lists commonly used units in NSREC publications. For a complete list of IEEE units, refer to "Information for IEEE Transactions, Journals, and Letters Authors" at the IEEE WEB site. The address is http://www.ieee.org/organizations/pubs/transactions/auinfo97.pdf

V. Helpful Hints

A. Figures and Tables

Large figures and tables may span both columns. Create a figure caption to go below each figure and title to go above each table. **Do not put captions in "text boxes" linked to the figures. Do not put borders around your figures.** Color printing of figures is not available.

Use the abbreviation "Fig." even at the beginning of a sentence. Do not abbreviate "Table." Tables are numbered with Roman numerals.

TABLE II
UNITS COMMONLY USED IN IEEE TNS

Symbol	Quantity	Notes
A	ampere	SI unit of electric current
u	atomic mass unit	one-twelfth of the mass of an
Bd	baud	unit of signaling speed equal
b	Bit	short form of binary digit
B	byte	a string of bits operated on as
eV	electronvolt	
Gy	gray	SI unit of absorbed dose
Kb/s	kilobit per second	
Mb/s	megabit per	
um	micrometer	use in place of micron
mil[a]	mil	0.001 inch
rd	rad	0.01 Gy, unit of absorbed dose
rad	radian	SI unit of plane angle
s	second	SI unit of time
sr	steradian	SI unit of solid angle
V	volt	SI unit of voltage

No vertical lines in table. Statements that serve as captions for the entire table do not need footnote letters. This table was originally created in *Word* using 26-point font in landscape page setup, selected, and copied to the *Windows* Clipboard. In *PowerPoint*, a new file was opened and the contents of the Clipboard were pasted as a "Picture (Enhanced Metafile)". It was then saved as a TIFF formatted file named 2TAB.TIF. The image file was then inserted into this *Word* document as a "Picture".

[a] Mil is not the preferred SI unit but its use is approved in the IEEE "Information for Authors" handbook.

Figure axis labels are often a source of confusion. Use words rather than symbols. As an example, write the quantity "Energy," or "Energy, *E*," not just "*E*." Put units in parentheses. Do not label axes only with units. As in Fig. 1, for example, write "Energy (MeV/u)" or "Energy ($\mathrm{MeV \cdot u^{-1}}$)," not just "MeV/u." 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 "Dose (krd/s)" or "Dose (10^3 rd/s)." Do not write "Dose (rd/s) $\times 1000$ " because the reader would not know whether the top axis label in Fig. 1 meant 16000 rd/s or 0.016 rd/s. Figure labels should be legible, approximately 8 to 10 point type.

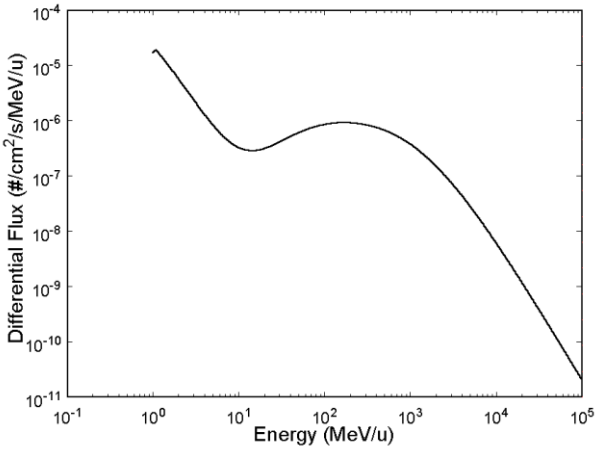

Fig. 1. Interplanetary galactic cosmic ray iron ion counts as a function of ion energy. Note that "Fig." is abbreviated. There is a period after the figure number, followed by two spaces. It is good practice to explain the significance of the figure in the caption. This figure was originally created in a graphics program, *AXUM*. The graph was copied as "Copy Graph Sheet Page" to the *Windows* Clipboard. In *PowerPoint*, a new file was opened and the contents of the Clipboard were pasted as a "Picture (Enhanced Metafile)". It was then saved as a TIFF formatted file named 1FIG.TIF. The image file was then inserted into this *Word* document as a "Picture".

B. References

Number citations consecutively in square brackets [1]. The sentence punctuation follows the brackets [2]. Multiple references [2], [3] are each numbered with separate brackets [1]-[3]. In sentences, 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 ..."

Number footnotes separately in superscripts (Insert | Footnote).[1] 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 II).

IEEE *Transactions* no longer uses a journal prefix before the volume number. For example, use "*IEEE Trans. Nucl. Sci.*, vol. 25," not "vol. TNS-25." Note that IEEE referencing style is quite different from that used by most physics journals. The most significant difference is that the title of the article, book, etc. should be included.

Give all authors' names; do not use "et al." unless there are six authors or more. Use a space after authors' initials. Papers that have not been published should be cited as "unpublished" [4]. Papers that have been submitted for publication should be cited as "submitted for publication" [5]. Papers that have been accepted for publication should be cited as "accepted for publication", giving the expected date of publication. Please give affiliations and addresses for personal communications [6].

Capitalize only the first word in a paper title, except for proper nouns and element symbols. Paper titles are helpful to your readers and are required. For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [7].

C. 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).

D. Equations

Number equations consecutively with equation numbers in parentheses flush with the right margin, as in (1). 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

$$\int_0^{r_2} F(r,\varphi)\, dr\, d\varphi = [\sigma r_2 / (2\mu_0)] \cdot \int_0^{\infty} \exp(-\lambda\,|\,z_j - z_i\,|)\,\lambda^{-1}\, J_1(\lambda r_2)\, J_0(\lambda r_i)\, d\lambda\,. \quad (1)$$

Be sure that the symbols in your equation have been defined before the equation appears or immediately following. Refer to "(1)," not "Eq. (1)" or "equation (1)," except at the beginning of a sentence: "Equation (1) is ..."

E. 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." [Did the potential use (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 "cm^3," not "cc." Indicate sample dimensions as "0.1 cm $\times$ 0.2 cm," not "$0.1 \times 0.2\ \mathrm{cm}^2$." Do not mix complete spellings and abbreviations of units: use "$\mathrm{J/cm}^2$" or "fluence per square centimeter," not "fluence/cm^2." When expressing a range of values, write "7 to 9," not "7-9" or "7~9," except for references [1]-[3].

Use the correct format for scientific notation in text, tables, and figures. Computer notation of "E" for "$\times 10$" is not permitted. For example, numbers expressed as 6.02E-3 instead of 6.02×10^{3} are not acceptable.

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"!

If your native language is not English, please get a native English-speaking colleague to proofread your paper.

VI. 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." 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). Do not use the word "essentially" to mean "approximately" or "effectively." 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

[1]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.

abbreviation "i.e." means "that is," and the abbreviation "e.g." means "for example." An excellent style manual and source of information for science writers is [8].

VII. Editorial Policy

Do not submit a reworked version of a paper you have submitted or published elsewhere. Do not publish "preliminary" data or results. The submitting author is responsible for obtaining agreement of all coauthors and any consent required from sponsors before submitting a paper. The *IEEE Radiation Effects Data Workshop Record* strongly discourages courtesy authorship. It is the obligation of the authors to cite relevant prior work.

VIII. Appendix

Appendices, if needed, appear before the acknowledgment.

IX. 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 the expression, "One of us (S.B.A.) thanks ..." Instead, write "S.B.A. thanks ..." Put sponsor acknowledgments in the unnumbered footnote on the first page.

X. References

[1] F. W. Sexton, D. M. Fleetwood, M. R. Shaneyfelt, P. E. Dodd, and G. L. Hash, "Single event gate rupture on thin gate oxides," *IEEE Trans. on Nucl. Sci.*, vol. 44, no. 6, pp. 2345-2352, Dec. 1997.

[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," unpublished.

[5] R. Nicole, "Title of paper with only first word capitalized," *J. Name Stand. Abbrev.*, submitted for publication.

[6] C. J. Kaufman, Rocky Mountain Research Laboratories, Boulder, CO, personal communication, 1992.

[7] Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, "Electron spectroscopy studies on magneto-optical media and plastic substrate interface," *IEEE Transl. J. Magn. Jpn.*, vol. 2, pp. 740-741, August 1987 [*Dig. 9th Annual Conf. Magn. Jpn.*, p. 301, 1982].

[8] M. Young, *The Technical Writer's Handbook.* Mill Valley, CA: University Science, 1989.