GUIDELINES FOR AUTHORS SUBMITTING MANUSCRIPTS FOR THE 1997 PARTICLE ACCELERATOR CONFERENCE*

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Abstract

Papers presented at PAC'95 and EPAC'96 were published electronically – and much was learnt from these efforts. The new publication method requires special care on the part of authors and more work in the preparation of the final document for the editorial team. Experience has highlighted the need to give more help to authors with the preparation of their papers, particularly for the inclusion of graphics and use of fonts. This paper summarizes procedures and practices that should contribute to a problem-free production of the PAC'97 proceedings.

1 ELECTRONIC PUBLISHING

The conference proceedings will be available as a book and as a CD-ROM, and participants will choose which format they want at the time they register. Advantages of the CD-ROM include its compact size and ease of searching. Publication via CD-ROM, however, necessitates changes in the way papers are generated and submitted.

1.1 From PostScript to Adobe PDF format

Adobe's Acrobat suite of software allows one to process PostScript files into their PDF (Portable Document Format) which is suitable for electronic publication. Each PDF file carries a set of information containing a title, the author name, subject and keywords. The PostScript is converted with the 'Distiller' which also builds 'thumbnails' (icon-like versions of each page), and an index for all words that it can recover from the PostScript. In order to recognise words in the document, **the PostScript file must have been created using non-bitmapped fonts**. Acrobat Catalog creates indexes across many documents and allows boolean searches on the document's header information as well as the text on the pages.

All that the user requires is the Adobe Acrobat CD-ROM Reader, which is freely available for several computer platforms. The aim for PAC'97 is to have the following:

- One file containing thumbnails per paper
- Author Index and Table of Contents with hypertext links to the relevant pages
- Reader software for as many platforms as possible (PC, MAC, Sun, HP-UX, IBM, SGI, LINUX, etc.)
- Word search within a single paper through the reader
- Possibility to print one paper at a time (through the reader).

1.2 Viewer Performance

The quality of the screen image will depend on the platform/display capabilities and on the font used. It is recommended not to use bit-mapped fonts, as they are difficult to read except at the largest magnifications; they also slow down the performance considerably. This is because the bit-mapped fonts are designed to be rendered at a single resolution, like 300 or 600 dots per inch (dpi), but it is only on a computer screen where the resolution varies and the effect is noticeable.

Another key factor in determining the speed with which a page is displayed is the size of the file. Apart from text which is using bit-mapped fonts, a page is displayed very quickly. Illustrations can be painfully slow if the files are too big.

1.3 Why is paper size an issue?

The Distiller places the text/images which are described in the PostScript on a page which is of a pre-determined size. For PAC'97 we wish to set this to correspond to US letter size paper (11 in. high by 8.5 in. wide) but when our colleagues overseas want to print on their own standard A4 size paper we want the result to be reasonable. The height of the text is defined for all contributions (241 mm) and normally one would centre this on the page. This would result in different bottom margins for the two sizes of paper and when they are converted to PDF, the A4 text would appear higher on the page.

The solution adopted, as for EPAC'96, is to have different margins for the two paper sizes so that the text area is of the same size and the lower left corner is the same distance from the edges of the sheet for both sizes. A printout of the PostScript file looks a little strange but the version viewed with the 'Reader' will be much better.

Margins	A4 Paper	US letter
left	20 mm	20 mm
right	20 mm	26 mm
top	28 mm	10 mm
bottom	28 mm	28 mm

Note, when you print a PostScript file on, say, a LaserJet there is a good chance that the margins will not be exactly what you asked for. Paper registration errors and firmware differences may lead to discrepancies of 1 mm or more. This is often more evident when printing double

* You should NOT place a 'thanks' in the title, but we have done so – just to remind you that there should be at least 5mm of vertical space between the bottom of the author names and the top of the Abstract.

† See PAC'97 WWW site http://www.triumf.ca/pac97.html

sided. However, provided authors adhere to the guidelines, the electronic version will be in perfect alignment.

2 LAYOUT SPECIFICATIONS

Your paper should look like these instructions. Templates for $\LaTeX 2_\varepsilon$ and Microsoft WORD can be retrieved via anonymous FTP from:

host: ftp.triumf.ca
path: pac97/templates

Templates can also be retrieved from the Web site:

http://www.triumf.ca/pac97.html

The total text height is 241 mm (9.5 in.) and the width is 170 mm (6.7 in.). The paper should be in two column format. The column width is 82.5 mm (3.25 in.) and the separation is 5 mm (0.2 in.). The body of the text is set in 10pt using a Times font. The line spacing is 12 points (6 lines to the inch). There should be *no* page numbers.

2.1 Fonts, Headings, and Type Sizes

The title is set in boldface capitals using 14pt. The author names and institutions are set in 12pt. There should be a minimum of 5 mm (0.20 in.) vertical space between the author names and the abstract.

Sectioning is based on three levels. Section headings are centred, boldface uppercase 10pt, and sandwiched between vertical spaces of 2.8ex above and 1.5ex below. The 'ex' is the height of a lower case x in the 10pt Times font. Subsection headings are left justified, slanted 10pt, and sandwiched between spaces of 2.6ex and 1.2ex. Subsubsections are left justified, standard 10pt, and placed between vertical spaces of 2.4 ex and 1.0ex. Each level of sectioning is indicated by arabic numerals (1–9…). The 'Abstract' heading is left justified, slanted 10pt. The 'References' heading is type set as for a section heading.

The 'searchability' and readability of your paper are heavily dependent on proper choice of fonts. Restrict your font usage to Times and Symbol for text and equations and Zapf Dingbats for data points in graphs if you are using a Mac or PC.

2.2 Figures, Tables, Equations

Tables, figure captions and equations are 10-point. Place figures and tables as close as possible to their first mention in the text. If a displayed equation needs a number, place it flush with the right margin of the column. If absolutely essential, a long equation can be set in 8pt; but the preference is to break it across more than one line.

2.3 References

Bibliographic references should be listed and numbered at the end of your paper. The individual citations are set in 8pt Times font. Citation numbers within the text should be placed online in square brackets. For more information on bibliographic format and standard symbols, units of measure, abbreviations, etc., see Reference[1].

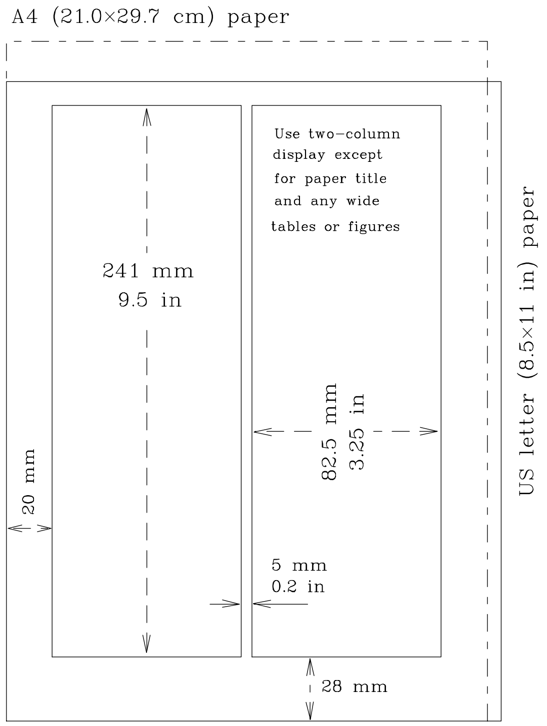

Figure 1: Example of an illustration: Layout on US letter and A4 paper sizes.

2.4 Page Limits

Contributed (oral or poster) papers may not exceed three pages. Invited oral papers may not exceed five pages. Aware that the page limit has often been a cause of frustration for authors, the editorial team has already gone to some length to fine tune the style/class file so as to increase the text density without loss of readability in the paper and viewer formats; hence the smaller fonts for section headings and smaller title-box. Papers which rely on 'dirty tricks' or devious modifications to style/class files to meet the page-limit will not be accepted; instead they will be returned to the author (see section 10.2) for re-working.

3 PREFERRED SOFTWARE FOR PAPER PREPARATION

$\LaTeX 2_\varepsilon$ and WORD are preferred by the editorial team. It is acceptable for authors to use other software to prepare their papers but they will have to be careful to follow the layout instructions and conventions and be sure that their PostScript files will be acceptable.

3.1 Things to Avoid

- **Type 1 Computer Modern Fonts with Textures do not process well** – the result is not useful.
- **EPS figures from Illustrator or Photoshop do not fit correctly in LaTeX documents** – beware.

- **PCX format (PC figures) in LaTeX documents** – use EPS.

Though colour often enhances the viewability of a graph or figure, this is not so for the text. All text, including the title, authors and sectioning, etc., should be in black.

4 USING LATEX

For the PAC'95 proceedings, most of the LaTeX prepared papers had used bit-mapped fonts and had to be re-worked by the editorial team. We hope that the use of suitable fonts (i.e. **Times, Symbol and Zapf Dingbats**) with LaTeX 2_ε will greatly reduce the problems. It is expected that authors using LaTeX 2_ε will use the 'class' formatting specification.

4.1 Font Selection

We propose that people should use LaTeX 2_ε together with the *times* package. This avoids many of the problems, although maths fonts are still bit-mapped, and has the advantage that it is a narrower font and one can therefore get more into the paper.

It is possible to use slightly older versions of LaTeX/TeX but they must support the New Font Selection Scheme (which has been available since 1989) and Times fonts must be available.

4.2 Tables and Figures

Full page width tables and figures can be obtained by using the *figure** and *table** environments.

Graphics can be incorporated using the \epsfig[2] command available in the *epsfig* package. This command (and its more modern counterpart \includegraphics in the *graphics* package of LaTeX 2_ε) allows re-sizing and rotation of the graphics, which should be in Encapsulated PostScript (EPS) format. Authors using older versions of LaTeX can use the *epsfig* or *psfig* styles.

Authors should use relative path-names when referring to external files as this makes the source more portable. e.g. "../graphs/1bc006f1.eps" and not the complete file path.

Though the figure should be centred, the captioning command should be placed outside any centring commands so that the style dictates the placement of the caption.

4.3 Denser Lists

New dense list environments *Itemize, Enumerate* and *Description* are available with the *pac97.cls* file. These allow a more economical use of the space whilst the original versions *itemize, enumerate* and *description* remain available.

4.4 Making the PostScript

The version of *dvips* in use varies across the laboratories but in general one should use the switch which limits the output resolution to 600dpi (-D600) and watch out for the -K option which concerns the removal of document structuring comments from included graphics (these can sometimes confuse the printer and prevent printing). Type 1 PostScript Computer Modern fonts may be available at some laboratories and will enhance the appearance of equations after translation to the PDF.

The PostScript file should be made with first-page first, not reverse order.

4.5 LaTeX Installation

Since the majority of problems with previous conferences seem to have come from LaTeX installations, we would recommend that laboratories create suitable installations of LaTeX 2_ε, together with the appropriate packages which should include *psnfss, psfonts* etc. Information about how to make such an installation can be found in Appendix B of 'The LaTeX Companion'[2], or by looking in the TeX archive sites[3].

5 USING WORD

The problems with WORD arise largely because, even though a template is provided, it is not possible to *enforce* a style. It is hoped that, as authors become accustomed to producing papers for electronic publication, this will improve.

5.1 General

It is very easy to stray from the required layout and style when using WORD. Authors should take care over the fonts which are used, including fonts within graphics. Fonts should be restricted to **Times, Symbol and Zapf Dingbats**.

5.2 Tables and Figures

Full page width tables and figures can be created by inserting a new section with the appropriate total width (170 mm).

Using an illustration (graph, etc.) which has been saved in the Encapsulated PostScript format gives better resolution in the final document because it will scale properly under zooming. Most applications allow one to save a graphic or image in EPS format, so this is recommended.

WORD offers the possibility of saving the illustration within the document file or making a link (or pointer) to the file which is only incorporated when the PostScript is generated for printing. The advantages to the author of using a link to the graphics file are a saving in disk space and ability to modify the illustration independently. It will be easier for the editorial team to fix problems with illustrations if they are sent separately, either on the diskette or by ftp.

5.3 Making the PostScript

The choice of printer driver can make a considerable difference to the PostScript produced. We have found that the Apple LaserWriter or generic Windows PostScript printer work well.

The PostScript file should have the first-page first, not reverse order.

5.3.1 On a PC

- Use the options from the print command to print to a file using the appropriate driver.
- Check the result by copying the file to a port with a PostScript printer attached.

5.3.2 On a MAC

- Select *LaserWriter 8* in the Chooser
- Select *Print* from the File Menu
- Select *File* as the destination and click *Save*
- Select *ASCII, Level 1 Compatible, Format = Postscript, Font Inclusion = no fonts*, give the appropriate filename and click *Save*
- Check the PostScript file by printing it using a utility like Apple LaserWriter Utility.

6 ILLUSTRATIONS

6.1 Colour

PDF, like PostScript, supports colour, therefore colour will be visible on the screen when viewing the proceedings. Authors should not forget, however, that the proceedings will also be published in book form which will be in black and white. The printer will render colours in greyscales and patterns, so authors should inspect the black and white version of their printed paper to ensure that information is not lost due to the lack of colour, and modify the colour palette if necessary.

6.2 Fill Patterns

For best results authors should use standard half-tones (*not* custom) and solid colour or grey fills.

6.3 Use of EXCEL

EXCEL produces nice graphics relatively easily and allows you to print them to Encapsulated PostScript (EPS) files. However, it is very easy to end up with unnecessarily large files. This has been observed on several occasions and was found to be the result of using *custom* line styles for grid lines on a graph. In one case, choosing default (*auto*) grid lines reduced the EPS file from 4 Mbytes to 37 kbytes and the visual result was not significantly different.

6.4 Use of ProFit

This gives very unpredictable results when trying to incorporate the EPS files in other documents. In most cases the graphics will have to be scanned and re-introduced into the original. Until the problems are understood, this software is not recommended.

7 USING A SCANNER

7.1 Photographs

Photographs cannot be accepted for electronic publication; it is expected that authors will provide a scanned image. Photographs are difficult to handle: there is an inevitable loss of resolution and drawing the image on the screen is slow. If fine detail is not an issue, the results can be acceptable. Typically the scanner produces a TIFF file. Authors using LaTeX should convert this to PostScript. WORD users may adopt compressed JPEG images (with e.g. Adobe Photoshop) which are probably the best way to achieve high resolution with minimum file size.

7.2 Resolution and Scaling Settings

The aim should be to make the smallest possible file with adequate quality. The final printed document will come out at 600 dpi, so it is pointless scanning with more than this. For colour and greyscale, this means a maximum of 200 dpi because the printer cannot handle any more. The ratio original-to-final size of the image can also affect the density. For example, a 6.5 in. image scanned at 300 dpi and scaled in the document to fit a 3.25 in. column width will concentrate the information and increase the density to 600 dpi. The way to set up the scanner is:

- Choose line art as default, only use greyscale or colour if absolutely necessary.
- Choose the zoom to produce an image of the correct final size (50% zoom reduces file size by a factor 4)
- Set the density to 600 for line art or 200 for greyscale and colour. If the graphic file fails to fit on 1 diskette (1.4MB), then rescan using the 300 or 100 dpi settings.

7.3 Dark Backgrounds

Scanning images with dark backgrounds (like oscilloscope photographs or screen dumps) produces large files. By using an image inverter (usually an option on the scanner program) and using the negative, the information remains as clear but the file is dramatically smaller.

8 SUBMITTING FILES ON DISKETTE

For the editorial team to be able to repair troublesome contributions, authors are requested to submit ALL of their source files as well as the PostScript. Some additional information is also required so that the team can work with the files and this is why there is so much requested on the form which has to accompany the submission.

In addition, a **single-sided printed version of the paper is essential** so that the electronic version can be verified and it can also serve as a master for scanning, if there are problems and all other attempts at recovery fail.

8.1 Contents

The following should be included:

- The PostScript file of the complete document, including graphics (do not send PDF)
- The text source file
- Any special files/macros used to make the document
- Graphics files

- A record of which computer platform, operating system and version number was used to prepare the document, plus the word processing package used and its version number.

The files should be named according to the paper's conference programme code, e.g. for paper 1BC 6 the paper number should be padded with leading zeros to give a three digit number, as in the following example:

- 1bc006.ps – the PostScript file
- 1bc006.tex – the LaTeX source file
- 1bc006.doc – the WORD source file
- 1bc006f1.eps – EPS file for figure 1
- 1bc006.txt – text file with hard/soft-ware details.

File names should be limited to 8 characters, plus up to three characters for the file extension. The diskette should be clearly labelled with the programme code. Use an additional diskette if there is not enough room on the first.

Delivery of a diskette is the preferred means of submission for a paper. In some cases it may not be possible to write to a diskette and then the ftp 'drop-box' may be used:

host: ftp.triumf.ca & path: pac97/papers

8.2 Compression

If the paper is going to work well in the electronic environment it will easily fit on a 1.4 Mbyte diskette without any compression.

If the PostScript file will not fit on the diskette, there is probably a problem with one of the graphics or the PostScript has not been created correctly.

9 TROUBLE SHOOTING

9.1 Files Too Big

If it is not obvious why a PostScript file is so big, try viewing it with a PostScript viewer. As the file is displayed, you will see which parts take a long time to draw; these are the likely sources of the problem.

If the file is drawn quite quickly, but takes a long time to start, it is likely that there are a lot of font definitions which have been included in the PostScript. In this case the file should be re-generated without any fonts included.

9.2 File will not Print

Again it is useful to review the PostScript with a viewer. If there is nothing obvious, the problem is probably coming from an illustration file. Try re-making the PostScript with other options or use a different printer driver.

10 PRODUCTION OF THE PROCEEDINGS

10.1 At the Conference

The acceptance of contributions will be at least a two stage process: the inventory of files, forms and hard copy will be checked immediately. The PostScript files will then be passed to the editorial team who will process them and check for problems. A chart will be displayed indicating the status of papers submitted; authors should check the chart from time to time to follow the progress of their paper(s).

If there are problems with a paper, the author will be invited to return to the Proceedings Office so that the problem can be discussed/resolved.

10.1.1 Papers must be presented

At PAC'95 and EPAC'96 it was decided to eliminate the 'Publish Only' category. This tradition will continue at PAC'97 and only those papers which are presented will be published. Papers accompanying posters that are not displayed or not attended regularly during their assigned sessions will also not be published.

10.1.2 Deadlines

The deadlines for submission at the conference will follow the rhythm of the conference. Authors should submit their contribution during the 24 hour 'window' that commences at 1:00 p.m. on the day preceding their presentation and ends at 1:00 p.m. on the day of their presentation.

10.2 After the Conference

If extreme difficulties are encountered with the processing of a paper, it will be the policy of the editorial team to inform authors about problems with their submissions. This is seen as a very important step in training authors (and editors) for future conferences.

Only in extreme cases will the hard copy be scanned. If there are problems with graphics which are likely to be very time consuming, the offending figure will be scanned and re-inserted in the source file of the paper as an EPS file.

11 ACKNOWLEDGEMENTS

The editorial team has borrowed freely from the author guides provided to PAC'95[4] and EPAC'96[5] in the preparation of these guidelines for publication, and this debt if gratefully acknowledged.

12 REFERENCES

[1] 'Information for IEEE Trans. and Journal authors', IEEE Publishing Services, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, USA.

[2] 'The LaTeX Companion', by Goossens, Mittelbach and Samarin, published by Addison-Wesley, 1994.

[3] The Comprehensive TeX Archive Network (CTAN) consists of anonymous ftp servers which can deliver all of the TeX/LaTeX sources. See for example ftp.shsu.edu (Sam Houston State University, Texas) or ftp.tex.ac.uk (Cambridge University, England).

[4] L.T. Gennari: 'Guidelines for authors submitting manuscripts for the 1995 PAC'.

[5] J. Poole: 'Some observations on the preparation of papers for electronic publication'.