Making Posters with LaTeX

Big Fonts on Big Pages

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I have made a number of changes to the local installation of TeX which, when combined, will allow you to produce posters. One set of changes allows you to use PostScript fonts that are larger than the largest font normally available. The other set of changes allows you set text on very large pages which print on multiple sheets of paper, which you can cut and paste to form poster-sized pages.

There are already a number of LaTeX style files that replace the standard Computer Modern fonts in the text with the members of one of the PostScript font families while retaining the Computer Modern math and symbol fonts. If you invoke the **`times`** style option to pick the Times family, then the **`\rm`** font becomes Times-Roman, **`\it`** becomes Times-Italic, and so on. PostScript fonts may easily be scaled to any size, and so I have added a **`monster`** style option which adds some larger fonts to those defined in the **`times`** and other PostScript styles.

Making a big page print on multiple sheets of paper is also accomplished with some PostScript programming. A new **`\special`** command is available, allowing you to tell the PostScript driver how many rows and columns of sheets of paper are to make up each page. The **`\special`** command can be used in plain TeX as well as LaTeX documents. You also have to tell TeX or LaTeX to set large pages.

One side-effect of these changes is that it is nearly impossible to preview a poster using the ordinary tools. Most previewers cannot handle the PostScript fonts, and do not generally show you more than what fits on one sheet of paper. You will have to run **`dvips`** to make a PostScript file and preview that with a PostScript previewer like Ghostscript (**`gs`**), **`ghostview`** or **`pageview`**.

Don't forget that these changes are local. You won't be able to send the **`.tex`** file for a poster to a collaborator and have him print it properly. (You can mail the PostScript files, however.)

Big Fonts

It is easy to get PostScript fonts in LaTeX. All you have to do is invoke a document style option. For example, to replace all the standard TeX fonts in the text with Times-Roman, you would start the document with a line like

```
\documentstyle[times]{article}
```

All of the math symbols, Greek letters, math italic fonts stay the same. The typewriter font is replaced by Courier, and the sans serif font is replaced by Helvetica. Here is a list of the available document style options and the PostScript fonts they provide:

Style option	PostScript Font family
`avantgarde`	AvantGarde
`bookman`	Bookman
`chancery`	ZapfChancery-MediumItalic
`ncs`	NewCenturySchlbk
`palatino`	Palatino
`times`	Times-Roman

The largest of the font size setting commands in standard LaTeX is **`\Huge`**, in which the characters are 25pt, or a little more than a third of an inch (8.8mm) high. If in addition to the **`times`** style option, for example, you also invoke the **`monster`** document style option, you then have these additional LaTeX-style size setting commands:

Size option	Character height	baselineskip
`\HUGE`	30pt	36pt
`\monster`	43pt	52pt
`\Monster`	62pt	75pt
`\MONSTER`	89pt	107pt
`\screamer`	128pt	154pt
`\Screamer`	185pt	222pt
`\SCREAMER`	266pt	319pt

These character heights may seem odd, but they actually continue the progression of sizes in the standard distribution. (These sizes correspond to even **`\magstep`**'s from 6 to 18.)

Here is some **`\HUGE`** text:

This is HUGE.

Here is some **`\monster`** text:

This is monster.

Here is some **`\Monster`** text:

This is Monster.

Here is some **`\MONSTER`** text:

This is MON

Here is some **`\screamer`** text:

This is sc

Here is some **`\Screamer`** text:

This is

Here is some **`\SCREAMER`** text:

This

I must warn you that TEX has a limited amount of memory devoted to fonts, and that using PostScript fonts at all may put you very close to the edge. You will not be able to mix many sizes of type, especially if you use different faces, such as **`\bf`**, **`\it`**, or **`\tt`**.

You should find that there are versions of the standard fonts at these large magnifications, so you should be able to typeset equations. If you are running **`dvips`** and you see some unusual output on your screen, it's probably in the process of building one of the fonts that you need. Pay particular attention to capital Greek letters in your output—I have already seen one case where everything seemed to print OK, except that my **`\Delta`**'s were missing.

Big Pages

It should now be obvious that the screamer fonts are not of much use if you are limited to 8.5×11 inch pieces of paper. I have made some changes to the public domain PostScript driver **`dvips`**, written by Tomas Rokicki, that allow you to tell LaTeX that you want much larger pages and have the results printed on several sheets of paper. Unfortunately, laser printers cannot print right out to the edge of the paper, and so there is a one half inch margin that you must cut off before pasting the sheets together to reproduce a large page.

I have not done much to automate this process, so there are a number of things you will have to figure out when you are designing your poster. The most important is the overall size of the poster in sheets of paper, and whether the sheets of paper are going to be in landscape or portrait orientation. Let's say that you want your poster to fit within a 4 foot width, with a couple of inches to spare. This could be four sheets in landscape orientation, or a little less than six sheets in portrait orientation. You might envision your poster as four columns of text, each wide enough to fit on one landscape sheet of paper and long enough to fill the space, or perhaps as three columns, each spread across two portrait-oriented sheets.

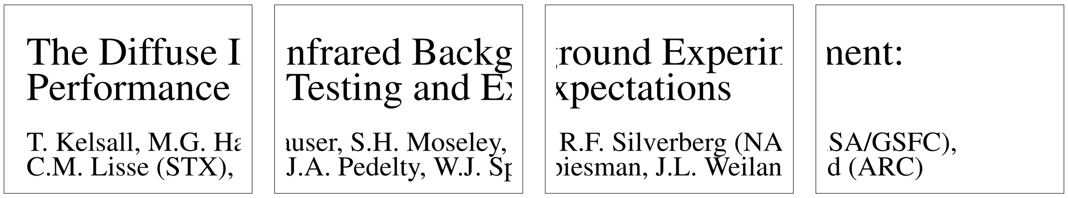
For this example, I have decided to break up my poster into two separate pieces. First, I'm going to make a title that is four landscape pages wide and one high, using the biggest fonts that allow me to fit in the title and the author names. For my text, I'm just going to set my text in landscape orientation, but use **`\HUGE`** text with **`\monster`** sized, bold section headings.

Let's consider the title. Because you lose half an inch off of each sheet at a page boundary, or one inch overall, the total width of our poster is going to be $44 - 3 = 41$ inches. With one inch margins, this corresponds to an **`\hsize`** or **`\textwidth`** of 39 inches. Here is a sample LaTeX file. Note the page dimension commands, and the **`\special`** commands.

```
\documentstyle[times,11pt]{article}
\oddsidemargin 0in
\headheight 0in
\headsep 0in
\textheight 6.5in
\textwidth 39in
\raggedbottom
\begin{document}
\pagestyle{empty}
\special{landscape}
\special{poster nrows=1 ncols=4}
{\screamer The Diffuse Infrared Background Experiment:  \\Performance
Testing and Expectations}
\vspace*{1in}
{\MONSTER
T. Kelsall, M.G. Hauser, S.H. Moseley, R.F. Silverberg (NASA/GSFC),\\
C.M. Lisse (STX), J.A. Pedelty, W.J. Spiesman, J.L. Weiland (ARC)}
\end{document}
```

There are two important **`\special`** commands in the input. The first forces the document into landscape orientation. The second, **`\special{poster nrows=1 ncols=4}`** does the poster layout. (The order of the two doesn't matter.) The **`poster`** special wants to know how many rows and columns of pieces of paper are required per page. The default is one, so I really didn't have to specify **`nrows`**.

Here is a scaled down version of what the output looks like. The real output would be spread across four sheets of paper, with little marks to guide the cuts you have to make before pasting it all together.



There is no check that you have matched the page size, as known to LaTeX, with the poster size as given by the **`nrows`** and **`ncols`** arguments of the **`poster`** special. If the poster is too small, then text will fall off the edge and be lost, and if the poster is too large you will get extra, blank pages from the printer.

Let's turn our attention to the text of the poster. The only trick here is making the section headings come out in a **`\monster`** size. I redefined the **`\section`** command to set the section headings in **`\monster`** size (last argument), and to increase the amount of vertical space that comes before a section heading (fourth argument). Before I did that, the section headings at the top of a page would be too high. Here is the start of the file:

```
\documentstyle[psfig,times,11pt]{preprint}
\topmargin 0in
\oddsidemargin 0in
\headheight 0in
\headsep 0in
\textheight 6.5in
\textwidth 9in
\makeatletter
\def\section{\@startsection {section}{1}{\z@}{-43pt plus -30pt minus
-8pt}{2.3ex plus .2ex}{\monster\bf}}
\makeatother
\special{landscape}
\begin{document}
\pagestyle{empty}
\section*{Introduction}
\HUGE The Warm Ionized Medium (WIM) has a well ...
```

And here's what the first page looks like:

Introduction

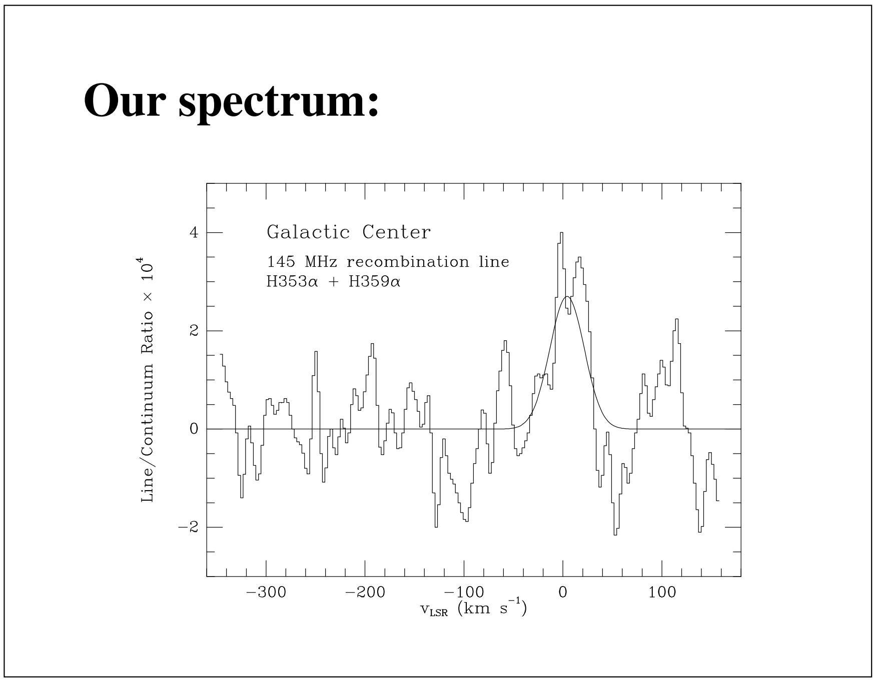
The Warm Ionized Medium (WIM) has a well determined mean electron density of $\langle n_e \rangle = 0.03\,\mathrm{cm}^{-3}$, but the actual space density n_e, and hence the filling factor $f = \langle n_e \rangle / n_e$, is unknown. The electron temperature T_e is also an uncertainty. Reynolds (1990) has recently pointed out that the power required to keep this gas ionized is large, and that it increases if the temperature differs much from 10,000 K.

Low frequency radio recombination lines are sensitive probes of low density ionized gas. Lines from the WIM should be strongest in the 100–150 MHz range.

On a later page, I used the **\psfig** macros to insert a PostScript figure into my document, being careful to make sure that it fit on the page. Here's the relevant fragment of my **.tex** file:

```
\section*{Our spectrum:}
\vspace*{24pt}
\centerline{\psfig{figure=plot.145.ps,height=5.5in,angle=-90}}
```

And here's what it looks like:



Previewing

Because they depend on features of the PostScript language, posters cannot really be previewed properly with TEX previewers. The thing to do is to process a poster into PostScript, using the **dvips** program, and to preview the PostScript. The GhostScript program **gs** is available on the Sun's and the VAXes. It runs under DECWindows, OpenWindows, and X11. On the Sun's there is a program called **ghostview** which provides a nicer user interface for GhostScript, and which runs under both OpenWindows and X11. Sun's own **pageview** program runs only under OpenWindows. If you are using SunView, you can still use GhostScript by invoking it this way:

```
gs -sDEVICE=sunview myfile.ps
```

Finally, I'll warn you that the PostScript previewers are more forgiving that the printers themselves. That is, you may find pages that look OK in the previewer, and yet they refuse to print.