

PROCEEDINGS OF THE NAT. ACAD. OF SCIENCES

---

*Guide to Typesetting PNAS  
Journal Articles in  
L<sup>A</sup>T<sub>E</sub>X Using*

**PNASone**

**and**

**PNAStwo**

---

**Amy Hendrickson**

**T<sub>E</sub>Xnology Inc.**

---

# CONTENTS

---

- Current Version *1*
- Files in This Package *2*
- Sample Files *3*
- Template File *3*
- Starting Your Article *3*
- Set the documentclass *3*
- Changing position of text on physical page *4*
- Optional Graphics Style File *4*
- Optional Font Files *4*
- Modifying the PostScript Font Files, PNASoneF.sty and PNAStwoF.sty *4*
- Additional Optional Style Files *5*
- Using Other .sty Files *5*
- Entering your own macros *5*
- Title Block *5*
- Enter Title *6*
- Enter Authors and Affiliation *6*
- Nature of Contribution *7*
- Abstract, Keywords, Abbreviation and Dropcap to Start Article Body *7*
- Sample Article Beginning *8*
- End of the Article *9*
- Acknowledgments *10*
- Making the Bibliography *10*
- References in BibTeX *11*
- Figure and Table Captions *12*
- Making Tables *12*
- Making Table Notes *13*
- Improving the Article Appearance *14*
- Math Advice *16*
- Enjoy! *17*
- Index to This Documentation *18*

# Guide to Using PNAS One and Two Column Journal Styles

Welcome to the use of PNASone and PNAStwo, the  $\LaTeX$  style files for typesetting articles to appear in the Proceedings of the National Academy of Sciences of the United States of America.

PNASone.cls produces one column articles, while PNAStwo.cls produces two column articles. Commands for the two styles are almost completely identical except that the results differ in the number of columns.

You will find that standard  $\LaTeX$  commands will work exactly as you expect them to when you use these styles. In addition, there are a few new commands written specifically for PNAS, which are explained in this document.

## Current Version

Please make sure that you have the current version of the style files and the documentation. If you are unsure if your version is current, please download new copies of the files from the PNAS Web site ([www.pnas.org](http://www.pnas.org)).

If you need assistance, contact [pnas@nas.edu](mailto:pnas@nas.edu). If you are encountering problems with a specific  $\LaTeX$  file, please attach the file to your message.

## 2 ■ ■ Using PNAS One and Two Column Styles ■ ■ ■

### Files in This Package

The following is a list of the files found in this package.

---

#### Basic style and font files

-----

PNASONE.CLS Basic LaTeX macro file for one column articles (by request only)  
PNASTWO.CLS Basic LaTeX macro file for two column articles

PNASONEF.STY PostScript font file for one column articles (by request only)  
PNASTWOF.STY PostScript font file for two column articles  
You will probably need to edit these files to enter the names of the PS fonts found on your system

#### Template and Sample files

-----

PNASTMPL.TEX Template file, for authors to use in making their own article.

PNASONES.TEX Sample files, demonstrating the use of  
PNASTWOS.TEX commands unique to this package.

PNASONES.PDF PDF versions of the sample files.  
PNASTWOS.PDF

#### Inserting .eps files (for illustration purposes only)

-----

figsamp.eps Figure sample file, to show the use of the graphicx.sty commands for inserting an .eps file

#### Documentation

-----

PNASdocs.pdf Help file, demonstrating the function and use of commands explicitly supported in the PNAS template file.

---

Most LaTeX systems will include the graphicx.sty file which you will need to include .eps files for your illustrations. If you find that you get an error message saying that you are missing this file after you have entered `\usepackage{graphicx}`, you may download the full graphicx.zip package from CTAN:

<http://www.ctan.org/tex-archive/help/Catalogue/entries/graphicx.html#Download>

(or to save the trouble of typing in this URL, Google "graphicx" and the first entry will lead you to CTAN.)

You may decompress graphicx.zip and drop graphicx.sty and the other files contained in the graphicx package into a directory on your system where other .sty files are found.

## Sample Files

The sample files are called PNASoneS.tex and PNAStwoS.tex. You can run L<sup>A</sup>T<sub>E</sub>X on either of these files and compare the code with the results. Each file has examples of the commands unique to the PNAS package, as well as many other commands.

## Template File

The template file, PNAStmpl.tex, is provided to make it easier to enter the initial article commands in the correct order.

You are strongly urged to use this file as the basis of your formatted article. To do this you should

- download from [www.pnas.org](http://www.pnas.org) PNAStwo.cls and PNAStwoF.sty and install in your LaTeX environment.
- download PNAStmpl.tex from [www.pnas.org](http://www.pnas.org) and copy PNAStmpl.tex to <yourfile>.tex,
- enter the text of your article and
- submit your article and separate figure files to PNAS online at [www.PNAScentral.org](http://www.PNAScentral.org).

## Starting Your Article

```

===== Sample Article Beginning =====
% Choose pnasone for one column; pnastwo for two column:
%\documentclass{pnasone}
%\documentclass{pnastwo}

%% OPTIONAL GRAPHICS STYLE FILE
% needed for inserting .eps files
% \usepackage[dvips]{graphicx}

%% OPTIONAL POSTSCRIPT FONT FILES
% Choose PNASoneF for one column; PNAStwoF for two column:
%\usepackage{PNASoneF}
%\usepackage{PNAStwoF}

%% ADDITIONAL OPTIONAL FILES
%% ie., Optional amsmath packages
\usepackage{amssymb,amsfonts,amsmath}
===== End Sample Article Beginning =====

```

## Set the documentclass

For one column articles: \documentclass{pnasone}  
 For two column articles: \documentclass{pnastwo}

## 4 ■ ■ Using PNAS One and Two Column Styles ■ ■ ■

### Changing position of text on physical page

Since not all printers position the printed page in the same place on the physical page, you can change the position yourself here, if you need to:

```
% \advance\voffset -.5in % minus dimension will raise the printed page on the
% physical page, positive dimension will lower it.
```

### Optional Graphics Style File

Needed for inserting .eps files.

Type into the square brackets the name of the driver program that you are using. If you don't know, try `dvips`, which is the most common PC/Unix driver, or `textures` for the TeXtures program on the Mac. These are the options:

```
[dvips], [xdvi], [dvipdf], [dvipdfm], [dvipdfmx], [pdftex], [dvipsone],
[dviwindo], [emtex], [dviwin], [pctexps], [pctexwin], [pctexhp], [pctex32],
[truettex], [tcidvi], [vtex], [oztex], [textures], [xetex]
```

For example,

```
\usepackage[dvips]{graphicx}
```

Note that inclusion of .eps files is for your reference only; when submitting to PNAS, submit figures separately.

### Optional Font Files

```
For one-column: \usepackage{PNASoneF}
```

```
For two-column: \usepackage{PNAStwoF}
```

You may need to edit the `PNASoneF.sty` or `PNAStwoF.sty` PostScript font files to make the font names match those on your system. See next section for information on doing this.

You may also leave these commands commented out (recommended) and typeset your article using the default Computer Modern fonts. If accepted, your article will be re-typeset at PNAS using PostScript fonts.

### Modifying the PostScript Font Files, `PNASoneF.sty` and `PNAStwoF.sty`

Most authors have at least some PostScript fonts on their system. The problem is that there are differing conventions for naming these fonts depending on the implementation of L<sup>A</sup>T<sub>E</sub>X. To make use of the fonts available on your system, the files `PNASoneF.sty` and `PNAStwoF.sty` may be edited to use these font names.

Please look at the top of the `PNASoneF.sty` or `PNAStwoF.sty` file, where you will see the lines you need to modify.

As soon as you have discovered what PostScript names are on your system, you can make the appropriate substitutions. You can find font names by looking into the directory where the .tfm fonts are found and making your best guess as to what Times Roman, for example, is called. You can find this directory by using `find` and searching for \*.tfm.

The top of the PNASoneF.sty or PNAStwoF.sty file will look like this:

---

```

%% Change these definitions, if necessary ====>
%% Times-Roman
%-----
% (Berry font names)
\def\timesroman{ptmr}
\def\timesbold{ptmb}
\def\timesitalic{ptmri}
\def\timesbolditalic{ptmbi}

% (Y & Y font names)
%\def\timesroman{tir}
%\def\timesbold{tib}
%\def\timesitalic{tii}
etc...
%% <==== End of changes needed. Do not make changes below this point.
```

---

## Additional Optional Style Files

The AMS math style files are commonly used to gain access to useful features, like extended math fonts and math commands. You can bring in these style files by using:

```

%% Examples of some useful amsmath packages
\usepackage{amssymb,amsfonts,amsmath}
```

## Using Other .sty Files

Be cautioned that introducing style files beyond the PNAS and AMS ones is risky because some packages may conflict with the PNAS .cls file and may also change the appearance of the paper. If there is a package that performs some function that you feel you need, verify that it doesn't affect the appearance of the finished article and indicate this usage during online submission of your article.

## Entering your own macros

You should enter any of your own macros in a block before `\begin{document}`. Be careful that you haven't redefined any existing commands. If a command is redefined, the original command will no longer work. For instance, naming a macro `\tt` might cause a problem because this command is already used for typewriter typeface. The `\tt` command would no longer produce that typeface change if you redefined `\tt`, and would instead produce your new macro definition.

We recommend you use the L<sup>A</sup>T<sub>E</sub>X form for making definitions (`\newcommand`), which will let you know if a command is already defined, whereas using the simple `\def` will simply use that definition from then on in the file without letting you know that you have redefined an existing command.

## 6 ■ ■ Using PNAS One and Two Column Styles ■ ■ ■

```
%% Optional Macro Files
%% \newcommand definition form is recommended
\newcommand{\mfrac}[2]{\frac{\displaystyle #1}{\displaystyle #2}}
\def\o{\omega}
```

### Title Block

Enter the commands for title and authors, use `\maketitle` to make the title block info print, start the article, with `\begin{article}` (Remember to put `\end{article}` before `\end{document}`)

```
\title{}
\author{}\affil{}{}

\maketitle

\begin{article}
```

(Note: Grant acknowledgments should go before the bibliography, within `\begin{acknowledgments}... \end{acknowledgments}`)

### Enter Title

For the title, only capitalize the first letter:

```
\title{Almost sharp fronts for the surface quasi-geostrophic equation}
```

### Enter Authors and Affiliation

When entering the author names, use the `\author` command; you can also use the `\affil{}{}`, and `\and` commands.

`\affil{<number>}{<Institution>}` Assign one number for each institution. The same number should be used for authors that are affiliated with the same institution, after the first time only the number is needed, ie, `\affil{number}{text}`, `\affil{number}{}`

`\and` should be used before the last author.

The `\thanks{}` command is ignored in the output file in favor of a blank reserved space for all PNAS publication footnotes.

(Note: % is used at the end of some lines to prevent extra space from appearing. An extra space is normally inserted with line endings.)

---

```
\author{%
<author name>%

\affil{<number>}{<Institution>},

(before last author)
\and

<author>
\affil{<number>}{}
}
```

---

For example

---

```
\author{Roberta Graff\affil{1}{University of Cambridge, Cambridge,
United Kingdom},
Javier de Ruiz Garcia\affil{2}{Universidad de Murcia, Bioquimica y Biologia
Molecular, Murcia, Spain},
\and
Franklin Sonnerly\affil{2}{}}
```

.....

**Roberta Graff<sup>\*</sup>, Javier de Ruiz Garcia<sup>†</sup>, and Franklin Sonnerly<sup>†</sup>**

<sup>\*</sup>University of Cambridge, Cambridge, United Kingdom, and <sup>†</sup>Universidad de Murcia, Bioquimica y Biologia Molecular, Murcia, Spain

---

## Nature of Contribution

Set default to

---

```
\contributor{Submitted to Proceedings of the
National Academy of Sciences of the United States of America}
```

---

## Abstract, Keywords, Abbreviation and Dropcap to Start Article Body

After the title block is completed and ended with `\maketitle`, the command `\begin{article}` should be used. (The end of the article should have the matching `\end{article}` command.)

The abstract will be entered in the `\begin{abstract}... \end{abstract}` environment.

Keywords follow the abstract. Enter a | between every term in the keywords environment.

If you want to enter abbreviations use the `\abbreviations{}` command.

Abbreviation pairs are separated with a ; and the abbreviation and its description are separated by a comma.

The first letter of the article should be a ‘drop cap’ which is achieved by using the `\dropcap{}` command:

Examples of these commands are provided on the next page.

## Sample Article Beginning

```

\documentclass{pnastwo}
%\usepackage{pnastwof}

\title{Almost sharp fronts for the surface\ quasi-geostrophic equation}
\author{Roberta Graff\affil{1}{University of Cambridge, Cambridge,
United Kingdom},
Javier de Ruiz Garcia\affil{2}{Universidad de Murcia, Bioquimica y Biologia
Molecular, Murcia, Spain},
\and
Franklin Sonnery\affil{2}{}}

\maketitle

\begin{article}
\begin{abstract}
We investigate the evolution of ‘‘almost-sharp’’
fronts for the surface quasi-geostrophic (QG) equation. ...
evolution to the evolution of sharp fronts.
\end{abstract}

\keywords{monolayer | structure | x-ray reflectivity | molecular electronics}

%% optional
\abbreviations{SAM, self-assembled monolayer; OTS,
octadecyltrichlorosilane}

\dropcap{I}n this article we study the evolution of ‘‘almost-sharp’’ fronts
for the surface quasi-geostrophic equation. This 2-D active scalar
.....

```

# Almost sharp fronts for the surface quasi-geostrophic equation

Roberta Graff<sup>\*</sup>, Javier de Ruiz Garcia<sup>†</sup>, and Franklin Sonnery<sup>†</sup>

<sup>\*</sup>University of Cambridge, Cambridge, United Kingdom, and <sup>†</sup>Universidad de Murcia, Bioquimica y Biologia Molecular, Murcia, Spain

Submitted to Proceedings of the National Academy of Sciences of the United States of America

**We investigate the evolution of ‘‘almost-sharp’’ fronts for the surface quasi-geostrophic (QG) equation. This equation was originally introduced in the geophysical context to investigate the formation and evolution of fronts, i.e. discontinuities between masses of hot and cold air. These ‘‘almost-sharp’’ fronts are weak solutions of QG with large gradient. We relate their evolution to the evolution of sharp fronts.**

monolayer | structure | x-ray reflectivity | molecular electronics

Abbreviations: SAM, self-assembled monolayer; OTS, octadecyltrichlorosilane

**I**n this article we study the evolution of ‘‘almost-sharp’’ fronts for the surface quasi-geostrophic equation. This 2-D active scalar equation reads for the surface quasi-geostrophic equation.

## End of the Article

After the body of the paper is entered, there are two optional commands that you can use to include a Materials and Methods section and/or appendices.

---

```
\begin{materials}
\section{Digital RNA SNP Analysis} A real-time PCR assay was designed
to amplify {\it PLAC4} mRNA, with the two SNP alleles being discriminated
by TaqMan probes. {\it PLAC4} mRNA concentrations were quantified in
extracted RNA samples followed by dilutions to approximately one target
template molecule of either type (i.e., either allele) per well.
Details are given in the {\it SI Materials and Methods}.
\end{materials}
```

```
\appendix Appendix text here.
```

```
\appendix[Appendix with a title]
Appendix text here.
```

.....

### Materials and Methods

**Digital RNA SNP Analysis.** A real-time PCR assay was designed to amplify *PLAC4* mRNA, with the two SNP alleles being discriminated by TaqMan probes. *PLAC4* mRNA concentrations were quantified in extracted RNA samples followed by dilutions to approximately one target template molecule of either type (i.e., either allele) per well. Details are given in the *SI Materials and Methods*.

### Appendix

Appendix text here.

### Appendix: Appendix with a title

Appendix text here.

---

## 10 ■ ■ Using PNAS One and Two Column Styles ■ ■ ■

Finally, you may include an acknowledgments section which should appear before your bibliography. After the bibliography insert your `\end{article}` and `\end{document}` commands.

---

```
-- text of paper here --

\begin{acknowledgments}
-- text of acknowledgments here, including grant info --
\end{acknowledgments}

\begin{bibliography}
\bibitem{<term>}Bibitem text

% ie,
% \bibitem{Neuhaus} Neuhaus J-M, Sitcher L, Meins F, Jr, Boller T
% (1991) A short C-terminal sequence is necessary and sufficient for the
% targeting of chitinases to the plant vacuole. {\it Proc Natl Acad Sci
% USA} 88:10362-10366.

\end{thebibliography}
\end{article}
\end{document}
```

---

### Acknowledgments

The acknowledgments section should appear immediately before the bibliography. In this section you should list any grant information or other acknowledgment text:

---

```
\begin{acknowledgments}
This work was partially supported by
Spanish Ministry of Science and Technology Grant BFM2002-02042 (to D.C. and
J.L.R.) and by National Science Foundation Grant DMS-0245242 (to C.F.).
\end{acknowledgments}
```

.....  
**ACKNOWLEDGMENTS.** This work was partially supported by Spanish Ministry of Science and Technology Grant BFM2002-02042 (to D.C. and J.L.R.) and by National Science Foundation Grant DMS-0245242 (to C.F.).

---

### Making the Bibliography

The bibliography is done as in most  $\LaTeX$  styles, written in a bibliography section with each reference preceded by `\bibitem{<biblabe>}`. The `\cite{<biblabe>}` command should be used to reference the bibliography labels. The command `\thebibliography` is followed by the widest number that will appear in the bibliography, usually `{10}` unless there are more than 100 entries, in which case you should use `{100}`.

References must be in PNAS style. See <http://www.pnas.org/misc/iforc.shtml#> online for more information.

Here is an example:

---

As seen in reference \cite{CLAch1}, we conclude ...

```
\begin{thebibliography}{10}
```

```
\bibitem{BN}
```

```
M.~Belkin and P.~Niyogi, {\em Using manifold structure for partially  
labelled classification}, Advances in NIPS, 15 (2003).
```

```
\bibitem{BBG:EmbeddingRiemannianManifoldHeatKernel}
```

```
P.~B\'erard, G.~Besson, and S.~Gallot, {\em Embedding {R}iemannian  
manifolds by their heat kernel}, Geom. and Fun. Anal., 4 (1994),  
pp.~374--398.
```

```
\bibitem{CLAch1}
```

```
R.R.~Coifman and S.~Lafon, {\em Diffusion maps}, Appl. Comp. Harm. Anal.,  
21 (2006), pp.~5--30.
```

```
\end{thebibliography}
```

.....

As seen in reference [3], we conclude ...

1. M. Belkin and P. Niyogi, *Using manifold structure for partially labelled classification*, Advances in NIPS, 15 (2003).
2. P. B\'erard, G. Besson, and S. Gallot, *Embedding Riemannian manifolds by their heat kernel*, Geom. and Fun. Anal., 4 (1994), pp. 374–398.
3. R.R. Coifman and S. Lafon, *Diffusion maps*, Appl. Comp. Harm. Anal., 21 (2006), pp. 5–30.

---

## References Produced with BibTeX

PNAS does not support submission of supporting files such as BibTeX .bbl files. Instead all references must be included in the article .tex document. If you currently use BibTeX, your bibliography is formed because the command `\bibliography{}` brings the <filename>.bbl file into your .tex document. To conform to PNAS requirements, copy the reference listings from your .bbl file and add them to the article .tex file, using the bibliography environment described above.

## Figure and Table Captions

Figure and table captions should be entered at the end of the document, after `\end{article}` and before `\end{document}`.

For one-column figures and tables, when using `pnasone.cls` or `pnastwo.cls`, use

```
\begin{figure}...\end{figure} and \begin{table}...\end{table}
```

For two-column figures and tables, when using `pnastwo.cls` use

```
\begin{figure*}...\end{figure*} and \begin{table*}...\end{table*}
```

---

```
\begin{figure}
\vspace*{.05in}
\caption{This is a figure caption...}
\end{figure}

\begin{figure*}
\vspace*{.05in}
\caption{This is a figure caption for a figure that spans both columns...}
\end{figure*}
```

.....

**Fig. 1.** This is a figure caption. This is a figure caption. This is a figure caption.

**Fig. 2.** This is a figure caption for a figure that spans both columns. This is a figure caption for a figure that spans both columns. This is a figure caption for a figure that spans both columns.

---

Table captions start with the first word capitalized. All following words are lowercase, no period at the end of the caption, as you will see in the example in the following section.

## Making Tables

- The use of vertical lines within tables is not allowed.
- Use the command `\hline` underneath the column headers, and at the bottom of the table.
- Make your table span the full column width. If a single column table, span the width of the single column, or span the width of the page if the table is two column width, if it is possible to do so without having an unreasonable amount of space between columns.

This is the command that makes the table fill the full column or page width:

```
\begin{tabular*}{\hsize}{@{\extracolsep{\fill}}(rest of table preamble}
```

The following example shows these steps being followed and the form of the table preamble that will cause the table to spread out to the width of one column:

```
\begin{table}
\centering
\caption{Example Table Caption}
\begin{tabular*}{\hsize}{@{\extracolsep{\fill}}lcr}
 $\alpha\beta\Gamma\Delta$  One&Two&Three\cr
\hline
one&two&three\cr
one&two&three\cr
\hline
\end{tabular*}
\end{table}
```

Table 1. Example Table Caption

$\alpha\beta\Gamma\Delta$ One	Two	Three
one	two	three
one	two	three

## Making Table Notes

To make table notes, we have a new command:

```
\tablenote{ } Entered in the body of the table, within tabular
```

Below you can see an example of a table that expands to the fill page width, and uses table notes.

```
\begin{table}
\caption{Summary of the experimental results}
\begin{tabular*}{\hsize}{@{\extracolsep{\fill}}rrrrrrrrrrrr}
\multicolumn{3}{l}{Parameters}&
\multicolumn{5}{c}{Averaged Results}&
\multicolumn{5}{c}{Comparisons}\cr
\hline
\multicolumn{1}{c}{n}&\multicolumn{1}{c}{S^*_{MAX}}&
\multicolumn{1}{c}{t_1}&\multicolumn{1}{c}{r_1}&
\multicolumn{1}{c}{m_1}&\multicolumn{1}{c}{t_2}&
\multicolumn{1}{c}{r_2}&\multicolumn{1}{c}{m_2}&
\multicolumn{1}{c}{t_{1b}}&\multicolumn{1}{c}{t_1/t_2}&
r_1/r_2&m_1/m_2&
t_1/t_{1b}\cr
\hline
10\tablenote{Stanford Synchrotron Radiation Laboratory (Stanford University,
Stanford, CA)}&1\quad &4&.0007&4&4&.0020&4&4&1.000&.333&1.000&1.000\cr
10\tablenote{\$R_{\rm FREE}=R\$ factor for the \$\sim 5\$% of the randomly
chosen unique reflections not used in the refinement.}&
5\quad &50&.0008&8&50&.0020&12&49&.999&.417&.698&1.020\cr
100\tablenote{Calculated for all observed data}&20\quad
&2840975&.0423&95&2871117&.1083&521&---&
.990&.390&.182&---\ \ \cr
\hline
\end{tabular*}
\end{table}
```

**Table 2. Summary of the experimental results**

Parameters			Averaged Results						Comparisons			
$n$	$S_{MAX}^*$	$t_1$	$r_1$	$m_1$	$t_2$	$r_2$	$m_2$	$t_{ib}$	$t_1/t_2$	$r_1/r_2$	$m_1/m_2$	$t_1/t_{ib}$
10*	1	4	.0007	4	4	.0020	4	4	1.000	.333	1.000	1.000
10 <sup>†</sup>	5	50	.0008	8	50	.0020	12	49	.999	.417	.698	1.020
100 <sup>‡</sup>	20	2840975	.0423	95	2871117	.1083	521	—	.990	.390	.182	—

\*Stanford Synchrotron Radiation Laboratory (Stanford University, Stanford, CA)

<sup>†</sup> $R_{FREE} = R$  factor for the  $\sim 5\%$  of the randomly chosen unique reflections not used in the refinement.

<sup>‡</sup>Calculated for all observed data

## Improving the Article Appearance

One of the most common errors a beginning LaTeX user makes is to use " for quote marks. This may print the first set of quote marks facing backwards. To avoid this use single quotes, ‘ ‘ and ’ ’ on the left and right side of the term.

Change "word" to ‘ ‘word’ ’

Change "word" to “word”

The tilde, which looks like this on the screen: ~, can be used to prevent line breaks as well as providing the correct intraword space. This may be used between a word and number, when it is inappropriate for the two to be separated, as in Figure~3. Another good use for the tilde is to give the correct space when you have a term that ends with a period but is midsentence, such as Ms.~Serandon.

Add discretionary hyphenation if necessary. Discretionary hyphenation is used if LaTeX doesn't know how to hyphenate a word and because of the word sticks out into the right margin. The discretionary hyphen will not be used unless the word is on the right margin and needs to break over lines. This is convenient because it lets you add hyphens when they are needed but doesn't print them if they are not.

```
su\~per\~ca\~li\~fra\~gi\~lis\~tic
```

You may also build a hyphenation dictionary with words that are commonly found in your papers:

```
\hyphenation{su-per-ca-li-fra-gi-lis-tic,FORTRAN}
```

Including a word in the hyphenation dictionary and not putting in any hyphens will prevent that word from hyphenating when used in your paper. For example `\hyphenation{FORTRAN}` will prevent FORTRAN from breaking over lines.

You can make a hyphenation dictionary and use it for many papers by copying it into the top of the file you are working on, before `\begin{document}`.

---

As we see in Figure~\ref{thirdfig}, and Mr.~Smith

.....

As we see in Figure 3, and Mr. Smith

---

## Math Advice

### A Tip on Using Eqnarray

You can add space between lines in an array, which may improve visibility, by supplying a dimension in square brackets after the end of the table line, `\\[6pt]` as you see below.

```
\begin{eqnarray}
x_1 & = & \left[ \frac{x - x_0}{\cos \Theta} \right] + (y - y_0) \sin \Theta \\
\Delta \Gamma y_1 & = & - \frac{\left( \frac{x}{-x_0} \right)}{\sin \Theta} + (y - y_0) \cos \Theta.
\end{eqnarray}
```

.....

$$x_1 = \left[ \frac{(x - x_0)}{\cos \Theta} \right] + (y - y_0) \sin \Theta \quad [1]$$

$$\Delta \Gamma y_1 = - \frac{\left( \frac{x}{-x_0} \right)}{\sin \Theta} + (y - y_0) \cos \Theta. \quad [2]$$

### Changing Font Size in Math

Font sizes in math can be changed in the same way that it would be any L<sup>A</sup>T<sub>E</sub>X document. You can see several examples below of calling for a particular math font size, where the use of `\textstyle` keeps parts of the equation easily visible.

The math font size choices from large to small are:

```
\displaystyle, \textstyle, \scriptstyle, \scriptscriptstyle
```

Displaystyle is that normally found in display math,

$$\sum ABC123$$

Textstyle is the size of math in a paragraph,

$$\sum ABC123$$

Scriptstyle is the size found in a super or sub script, or in the top or bottom of a fraction,

$$xyz^{ABC123} \frac{ABC}{123}$$

Scriptscriptstyle is the size of math in a super or subscript in math that is already super or subscripted, or a fraction found within a fraction.

$$xyz^{ABC123^{ABC123}} \frac{\frac{ABC}{123}}{\frac{ABC}{123}}$$

When you see an equation whose terms look so small and crowded, you will want to change the size of the terms. Try typing in `\textstyle` or `\displaystyle` to make the expression readable.

This example shows the change in a fraction found underneath the summation sign, from the default to the somewhat larger version after using the `\textstyle` command, and a similar change in a fraction inside another fraction.

---

```
Change from
\[\sum_{a+\frac{b}{c}\atop N\to\infty}\quad\quad
\frac{\left(\frac{x}{-x_0}\right)}{\sin \Theta} \]
to
\[\sum_{\textstyle a+\frac{b}{c}\atop N\to\infty}\quad\quad
\frac{\left(\frac{\textstyle x}{\textstyle -x_0}\right)}{\sin \Theta} \]
```

.....

Change from

$$\sum_{a+\frac{b}{c}\atop N\to\infty} \frac{\left(\frac{x}{-x_0}\right)}{\sin \Theta}$$

to

$$\sum_{\textstyle a+\frac{b}{c}\atop N\to\infty} \frac{\left(\frac{\textstyle x}{\textstyle -x_0}\right)}{\sin \Theta}$$


---

**Enjoy!**

– Amy Hendrickson  
*TeXnology Inc.*  
 April 2008

# INDEX

---

## Commands

- `eqnarray`, 16
- `\tablenote{}`, 13

Current Version, 1

Download file site, 1

Files in macro package, 2

- `figsamp.eps`, 2
- `pnasdocs.pdf`, 2
- `pnasdocs.ps`, 2
- `pnasone.cls`, 2
- `pnasones.tex`, 2
- `pnastwo.cls`, 2
- `pnastwos.tex`, 2

Hyphenation

- discretionary, 14

- preventing for particular word, 14

## Math

- font sizes, 16

- `eqnarray`, space between lines, 16

## PostScript font file

- modifying, 4

## Sample file, 3

- `PNASoneS.tex`, 3

- `PNASTwoS.tex`, 3

## Tables

- table notes, 13

## Template file, 3

- `pnastmpl.tex`, 3