CMS Draft Analysis Note

The content of this note is intended for CMS internal use and distribution only

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Measurement of the WZ production cross section in the leptonic decay modes at = 13 TeV

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Abstract

This is an example of a *CMS Note* written in LaTeXusing the *cms-tdr* document class and processed using the same `tdr` perl script used in generating the CMS Physics TDRs. Instructions for producing CMS Notes and Internal Notes are given.

1 CMS papers

There are currently three kinds of CMS papers supported by this system in addition to tdrs: "CMS Analysis Note," "CMS Physics Analysis Summary," and "CMS Paper." The processing for these differs only in the header of the first page, which includes a different PDF figure for each kind. The appropriate header is chosen by the switch used in the `tdr` command.

This document only deals with papers set with PdfLaTeX. We found PdfLaTeX plus `cvs` to be a reliable system for the production of large documents such as the Physics TDRs and felt it would be useful to extend it to the production of shorter documents such as CMS Notes. As of 2010 `cvs` has been replaced by subversion (`svn`).

1.1 The mechanics of generating and typesetting papers

To start you will need to request a note directory in the `svn` repository from the TDR manager (currently George Alverson or Lucas Taylor). It is best to supply a list of the lxplus usernames of the co-authors who are to have write access to the repository at the time of the request.

To generate output, check out your note directory from `svn` following the example below. The `tag` below is the identifier for your paper, typically of the form XXX-YY-NNN. Following the sequence below will populate your local copy of the repository with only your note and not include the other notes. If you have a note, use "note". For a paper, use "paper." [Notes: (1) When running without Kerberos authentication, use svn+ssh://username@svn.cern.ch. (2) At Fermilab, even using `kinit user@CERN.CH` is not sufficient without specifying a specific svn server node (i.e., 137.138.229.205) instead of svn.cern.ch.]

```
> svn co -N svn+ssh://svn.cern.ch/reps/tdr2 myDir
> cd myDir
> svn update utils
> svn update -N [papers|notes]
> svn update [papers|notes]/XXX-YY-NNN
# use the following line for tcsh...
# ..use -sh for bash:
> eval `[papers|notes]/tdr runtime -csh`
> cd [papers|notes]/XXX-YY-NNN/trunk
# (edit the template, then to build the document)
> tdr  --style=[paper|pas|an|note] b XXX-YY-NNN
```

The `nodraft` switch is required to turn off the "Draft" overlay text.

If you wish to export your paper (for local work or for security), you can produce a tarball with all the necessary files with

```
> tdr --style=note --export b mynote.
```

This will function on Unix or Windows systems which have recent copies of LaTeX (including $\mathcal{AMS}$-LaTeX) and `perl` installed. We currently use the `sectsty`, `subfig`, `fancyhdr`, `mathpazo`, `rotating`, `fancybox`, `lineno`, `longtable`, `ifthen` and `natbib` styles, which may not be included in the default distribution, plus our own versions of `pdfdraftcopy` and the `pennames` particle name macros. The latter has been modified for use with the fonts required by our standard style and also to provide for automatic switching to an italic version when necessary.

2 svn commands

svn is similar in many ways to cvs. Once a repository has been checked out, the workflow is almost identical except for tagging. In svn, tagging is done by creating a new directory branch using the svn copy command. Please see the svn manual for details, particularly the chapter on branching and tagging and svn for cvs users. Please do not change the depth of the directory structure to the top-level TEX file for your document.

Please make sure to configure your svn client: edit ~/.subversion/config so that it appropriately tags pdf and other commonly used file types.

```
[auto-props]
*.pdf = svn:mime-type=application/pdf
*.png = svn:mime-type=image/png
*.jpg = svn:mime-type=image/jpeg
*.tex = svn:eol-style=native
*.eps = svn:mime-type=application/postscript
```

There are other useful settings as well. For example, to stop svn from asking to commit backup files and object files, you can set the global-ignores flag:

```
[miscellany]
global-ignores = *.o *.bak
```

3 Document layout

3.1 Standard macros

Notes will automatically include ptdr-definitions.sty, which provides definitions for many physics and CMS-related entities, e.g., GeV/c^2. These are discussed in more detail in section 4.4, and a complete list is given the Appendix.

All style-related parameters are set in the class file included by the script and generally follow the article style. The chapter command is not implemented.

3.2 Title block

Please see the LATEX source for this file to see how the title page is generated. In general it follows the normal LATEX practice for title pages.

The type of note (PAS, AN, Note, etc.) is set through the --style switch in the tdr script. When in draft mode, the string "Draft" is displayed on the page and the title block contains (in addition to the date), information about the svn status of the document and the PDF metadata.

For ANs which need to differentiate between primary and non-primary authors, using the star form of the author macro will add a footnote to indicate a primary author: \author*{A. Cern Person}.

3.3 Page size, margins and fonts

The standard European paper size is A4 (210 mm x 297 mm (8.3″ x 11.7″)) while American paper is US Letter (216 mm x 279 mm (8.5″ x 11.0″)), somewhat wider and shorter. In the era of straight PostScript this led to difficulties, but PDF print drivers now generally supply a "shrink

and center" option. In this template we have set the LaTeX page style parameters to match the standard A4 size (see Table 1) and rely upon that option to produce an acceptable result on US Letter paper.

Do not override the default fonts. They are currently set to be Palatino and Helvetica. The math fonts have also been changed to Palatino so that they do not clash with the body text, particularly in regards to numbers and units. This means the authors should use `\text` commands to put text in subscripts and superscripts, and most importantly *do not use* `\rm` in formulas with Greek symbols, otherwise you will end up with formulae looking like the second one below.

$$\phi = \text{a Greek letter} \tag{1}$$
$$\mathrm{\Phi} = \text{a mistake} \tag{2}$$

Also note that the math fonts include a full set of Greek symbols in Math Italic Bold (produced with `\mathbold`), but only uppercase in Math Bold (`\mathbf`). Use either `\boldsymbol` or `\boldmath` outside the math delimiters ($) (but inside braces) to get bold symbols. Compare:

`$\mathbold{\Psi \alpha}$`	$\mathbold{\Psi \alpha}$
`$\mathbf{\Psi \alpha}$`	$\mathbf{\Psi \alpha}$
`$\Psi \otimes \beta$`	$\Psi \otimes \beta$
`$\boldsymbol{\Psi \otimes \beta}$`	$\boldsymbol{\Psi \otimes \beta}$.

Note, however, that `\mathbold` will not work for most journal styles.

When Greek or symbol characters are used in the title, author, keywords or section heads, please use the `\texorpdfstring` command to provide alternate versions. Acrobat cannot deal with TeX characters and will ignore many of them for your PDF bookmark. See the following two subsections and check the corresponding bookmarks. (You may notice that this will produce four instances of "Package hyperref Warning: Token not allowed in a PDFDocEncoded string" in the output log.)

3.4 H_2O-α Demo

The title for this subsection was set with

```
\subsection{\texorpdfstring{H$_\text{2}$O-$\alpha$}{Water-alpha}}
```

The use of `\text` sets the numeral 2 in the same font and weight as the rest of the title (here Helvetica bold).

3.5 H_2O-α demo

The title for this subsection was set with

```
\subsection{H$_2$O-$\alpha$}.
```

3.6 Tables, figures

Place the captions above the object for tables and use `topcaption`, below for figures using `caption`. To force a full width figure or table in the two-column mode of most journal reprint formats, use `\textwidth` as the unit along with the starred versions of the commands:

```
\begin{figure*}[hbtp]\begin{center}
 \includegraphics[width=0.95\textwidth]{CMS-bw-logo}
```

```
\caption{Figures inserted using includegraphics.}
 \label{fig:ex1}\end{center}\end{figure*}
```

Table 1: An example table: Current page and paragraph layout parameters. (72.27 pt = 1 in)

\hoffset	0.0pt	\voffset	0.0pt
\textheight	668.63976pt	\textwidth	455.24408pt
\baselineskip	0.0pt	\marginparsep	8.53581pt
\topmargin	-8.0pt		
\headheight	25.0pt	\footskip	36.0pt
\oddsidemargin	0.0pt	\evensidemargin	0.0pt
\columnwidth	455.24408pt	\linewidth	455.24408pt

Figures can include PDF files using the `includegraphics` package, which is automatically installed by our class file. A nice feature is that if a file extension is not supplied, `includegraphics` supplies an appropriate one based on whether the file is being PdfLaTeXed or just LaTeXed. The package also can accept sizes to which the figures will be scaled. Specifying both width and height forces both dimensions to be changed and causes a distortion of the figure, however, so only use one of the two. Don't try to use scaling to correct a bad original aspect ratio. If neither width nor height is given, the size is taken from the Crop Box size embedded in the file, which is similar to the BoundingBox in PostScript. If there is too much white space around your figure, it may be that the Crop Box has been mis-set during a conversion from PostScript to PDF. Recommended translators on lxplus are `epstopdf` and `ps2pdf -dEPSCrop`. Native PostScript can not be included.

The `subfig` package is included and can be used for PASs and ANs (but not papers) to generate (a), (b), etc. labels under the subfigures through the use of the `subfloat` command. We have aliased `subfigure` to `subfloat` to avoid breaking older documents which may have depended on the `subfigure` package, but the spacing will not necessarily be the same. You may need to add line breaks by hand.

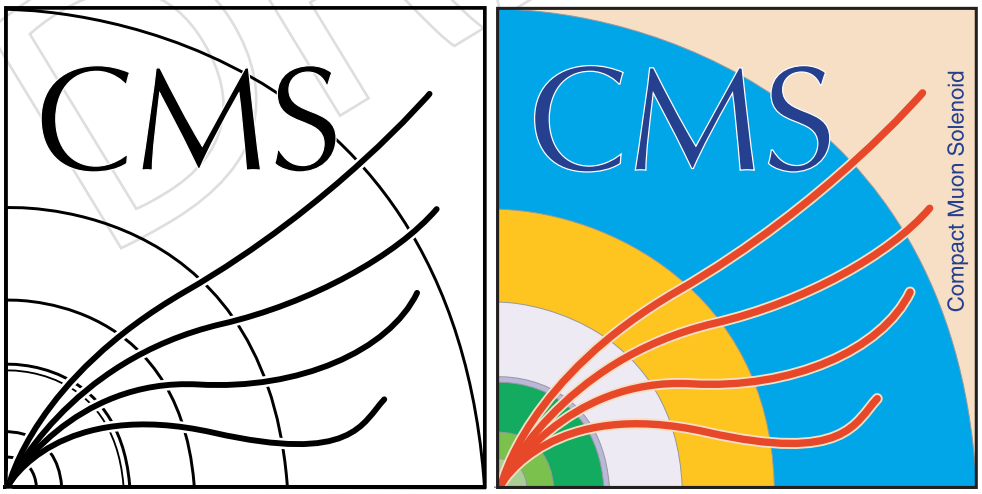

Figure 1: Figures inserted using includegraphics. (left) Black and white. (right) Color.

When including root-generated figures, please make sure to use the standard macro to set the figure parameters, and to first generate the output in eps format which is then converted

to PDF. The macro for TDR styles, `tdrstyle.C`, is available in the `utils/general` directory. For producing standard CMS figures for publication, the additional files `CMS_lumi.h`, and `CMS_lumi.C` are also present, as well as an example, `myMacro.C` and `histo.root`. Instructions for their proper use are currently available at `https://ghm.web.cern.ch/ghm/plots`.

The non-vector file types png and jpg are also picked up if present. Vector graphics is preferred except in cases such as scatter plots with millions of points. A screen grab saved as pdf is not vector graphics. In all cases, figures intended for publication should be publication quality.

As a result of the file-tracking we use for export, please keep the length of the graphics files (including any subdirectory names and the period plus extension, which is not normally entered) shorter than 65 characters.

4 Standards

Please check the *CMS Guidelines for Authors* and the *Notes for TDR authors* for authoritative information on CMS standards for publications and for tips on writing in LaTeX. (If you find any discrepancies between those documents and the practices in this example, please contact us.)

4.1 Math

Notes include the $\mathcal{AMS}$-LaTeX class file which defines many additional math symbols, including `\gtrsim` ($\gtrsim$). It also allows for better control in setting equations. Please see the $\mathcal{AMS}$-LaTeX user guide for complete details.

As previously mentioned, uniformity of symbol use should be enforced through use of the definitions in `ptdr-definitions`.

4.2 Figure style

Figures must have legible axis labels and values, symbol names, and line types when read at the final design size. For tdr-style documents, this is enforced through the use of the root macro file, tdrstyle.C, as discussed in Section 3.6.

4.3 Particle names: Z^0 to $J/\psi(1S)$

Most standard particle names can be typeset using the the `pennames-pazo` package, which is an implementation of the PENNAMES (Particle Entity Names) scheme adapted by us for use with Palatino/mathpazo fonts, as far as possible. The advantage is that the formatting will mostly adhere to particle naming conventions for typesetting (no, particle names are not mathematical symbols— they're more like units).

4.4 CMS macros

Macros introduced by CMS are listed in Appendix A. The macros for units are particularly useful, especially as the include the proper spacing between the magnitude and the unit (a thinspace), and they have an xspace at the end, which removes the necessity of ending them with a pair of braces. Thus, use `a momentum of 5\TeVc was measured` to produce "a momentum of 5 TeV/c was measured."

5 Submitting a note

Please follow the rules and procedures defined on the iCMS server or on the CMS wiki page for analysis notes and other CMS note types. For PAS documents or papers intended for journals, the CADI analysis management page controls submission.

6 References example

References ([1–11]) should use standard BibTeX citations and be placed in a separate bib file. This is automatically included by the `\bibliograph{auto_generated}` command placed at the end of the note. We recommend the use of inspirehep.net (SPIRES) identifiers as reference keys, where possible. This allows the reference to be easily found on Spires using the *find texkey* command. It also ensures uniqueness if the references are to be combined into a larger bib file later. Note, however, that Spires tends to classify all bibliographic entities as Articles. Entities such as arXiv postings do not have an associated journal, though, and should be entered in the bib file as Unpublished. See the bib file for this note for examples, including the correct use of hyperlinks (all references should be linked when possible). Some journal styles will lowercase the titles in references, so use curly braces (`{}`) to escape proper names and the like. Don't escape the entire title gratuitously. Direct references (e.g., see Ref. 7), may use the `\citenum` form of `\cite`.

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References

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A PTDR symbol definitions

If absolutely necessary, symbol definitions may be over-ridden using the `\renewcommand` command. If you don't want to over-ride the default version of a command but provide it for use outside the normal tdr system, please use the `\providecommand` command.

etal:	et al.
ie:	i.e.
eg:	e.g.
etc:	etc.
vs:	*vs.*
mdash:	—
Lone:	Level-1
Ltwo:	Level-2
Lthree:	Level-3
ACERMC:	ACERMC
ALPGEN:	ALPGEN
CALCHEP:	CALCHEP
CHARYBDIS:	CHARYBDIS
CMKIN:	CMKIN
CMSIM:	CMSIM
CMSSW:	CMSSW
COBRA:	COBRA
COCOA:	COCOA
COMPHEP:	COMPHEP
EVTGEN:	EVTGEN
FAMOS:	FAMOS
FEWZ:	FEWZ
GARCON:	GARCON
GARFIELD:	GARFIELD
GEANE:	GEANE
GEANTfour:	GEANT4
GEANTthree:	GEANT3
GEANT:	GEANT
HDECAY:	HDECAY
HERWIG:	HERWIG
HERWIGpp:	HERWIG++
POWHEG:	POWHEG
HIGLU:	HIGLU
HIJING:	HIJING
IGUANA:	IGUANA
ISAJET:	ISAJET
ISAPYTHIA:	ISAPYTHIA
ISASUGRA:	ISASUGRA
ISASUSY:	ISASUSY
ISAWIG:	ISAWIG
MADGRAPH:	MADGRAPH
MCATNLO:	MC@NLO
MCFM:	MCFM
MILLEPEDE:	MILLEPEDE
ORCA:	ORCA
OSCAR:	OSCAR
PHOTOS:	PHOTOS
PROSPINO:	PROSPINO
PYTHIA:	PYTHIA
SHERPA:	SHERPA
TAUOLA:	TAUOLA
TOPREX:	TOPREX
XDAQ:	XDAQ
DZERO:	D0
de:	$^\circ$
ten{x}:	$\times 10^{x}$
unit{x}:	x
mum:	μm[Most units include leading thinspace]

micron:	μm
cm:	cm
mm:	mm
mus:	μs
keV:	keV
MeV:	MeV
MeVns:	MeV [*no* leading thinspace with *ns* suffix]
GeV:	GeV
GeVns:	GeV
gev:	GeV
TeV:	TeV
TeVns:	TeV
PeV:	PeV
keVc:	keV/c
MeVc:	MeV/c
GeVc:	GeV/c
GeVcns:	GeV/c
TeVc:	TeV/c
keVcc:	keV/c^2
MeVcc:	MeV/c^2
GeVcc:	GeV/c^2
GeVccns:	GeV/c^2
TeVcc:	TeV/c^2
pbinv:	pb^{-1}
fbinv:	fb^{-1}
nbinv:	nb^{-1}
mubinv:	$\mu\mathrm{b}^{-1}$
percms:	$\mathrm{cm}^{-2}\,\mathrm{s}^{-1}$
lumi:	$\mathcal{L}$
Lumi:	$\mathcal{L}$
LvLow:	$\mathcal{L} = 10^{32}\,\mathrm{cm}^{-2}\,\mathrm{s}^{-1}$
LLow:	$\mathcal{L} = 10^{33}\,\mathrm{cm}^{-2}\,\mathrm{s}^{-1}$
lowlumi:	$\mathcal{L} = 2\times10^{33}\,\mathrm{cm}^{-2}\,\mathrm{s}^{-1}$
LMed:	$\mathcal{L} = 2\times10^{33}\,\mathrm{cm}^{-2}\,\mathrm{s}^{-1}$
LHigh:	$\mathcal{L} = 10^{34}\,\mathrm{cm}^{-2}\,\mathrm{s}^{-1}$
hilumi:	$\mathcal{L} = 10^{34}\,\mathrm{cm}^{-2}\,\mathrm{s}^{-1}$
PT:	p_T
pt:	p_T
ET:	E_T
HT:	H_T
et:	E_T
Em:	$\not\!\!E$
Pm:	$\not\!\!p$
PTm:	$\not\!\!p_\mathrm{T}$
PTslash:	$\not\!\!p_\mathrm{T}$
ETm:	$E_\mathrm{T}^\mathrm{miss}$
MET:	$E_\mathrm{T}^\mathrm{miss}$
ETmiss:	$E_\mathrm{T}^\mathrm{miss}$
ETslash:	$\not\!\!E_\mathrm{T}$
VEtmiss:	$\vec{E}_\mathrm{T}^\mathrm{miss}$
ptvec:	$\vec{p}_\mathrm{T}$
ptvecmiss:	$\vec{p}_\mathrm{T}^\mathrm{miss}$
dd{y}{x}:	$\frac{\mathrm{d}y}{\mathrm{d}x}$
ddinline{y}{x}:	$\mathrm{d}y/\mathrm{d}x$
rd:	d
re:	e
abs{x}:	$\lvert x\rvert$
zp:	Z′
JPsi:	J/ψ
Z:	Z
ttbar:	$\mathrm{t\bar{t}}$

Extensions to PENNAMES

cPgn:	ν
Pgn:	ν
cPagn:	$\overline{\nu}$
Pagn:	$\overline{\nu}$
cPgg:	γ
cPJgy:	J/ψ
cPZ:	Z
cPZpr:	Z′
cPqt:	t
cPqb:	b
cPqc:	c
cPqs:	s
cPqu:	u
cPqd:	d
cPq:	q
cPg:	g
cPG:	G
cPaqt:	$\overline{\mathrm{t}}$
cPaqb:	$\overline{\mathrm{b}}$
cPaqc:	$\overline{\mathrm{c}}$
cPaqs:	$\overline{\mathrm{s}}$
cPaqu:	$\overline{\mathrm{u}}$
cPaqd:	$\overline{\mathrm{d}}$
cPaq:	$\overline{\mathrm{q}}$
cPKstz:	K^{*0}

Future PENNAMES2 include `\xspace`

PH:	H
Ph:	h
PJGy:	J/ψ
PBzs:	B_s^0
Pg:	g
PSg:	$\widetilde{\mathrm{g}}$
PSQ:	$\widetilde{\mathrm{q}}$
PXXG:	G
PXXSG:	$\widetilde{\mathrm{G}}$
PSGcp:	$\widetilde{\chi}^+$
PSGc:	$\widetilde{\chi}$
PSGcz:	$\widetilde{\chi}^0$
PSGczDo:	$\widetilde{\chi}_1^0$
PSGczDt:	$\widetilde{\chi}_2^0$
PSGcpm:	$\widetilde{\chi}^\pm$
PSGcpDo:	$\widetilde{\chi}_1^+$
Pl:	l
PAl:	$\overline{\mathrm{l}}$
PGnl:	ν_l
PAGnl:	$\overline{\nu}_\mathrm{l}$
PQtpr:	t′

PAQtpr:	$\bar{t}'$	
PQbpr:	b'	
PAQbpr:	$\bar{b}'$	
PGg:	γ	
PKzS:	K^0_S	
PBs:	B_s	
PSQu:	$\tilde{u}$	
PSQd:	$\tilde{d}$	
PSQc:	$\tilde{c}$	
PSQs:	$\tilde{s}$	
PSQt:	$\tilde{t}$	
PSQb:	$\tilde{b}$	
PASQt:	$\bar{\tilde{t}}$	
PASQb:	$\bar{\tilde{b}}$	
PSGt:	$\tilde{\tau}$	
PZpr:	Z'	
PGn:	ν	
PAGn:	$\overline{\nu}$	
PSQtDo:	$\tilde{t}_1$	
PSQtDt:	$\tilde{t}_2$	
PQt:	t	
PAQt:	$\bar{t}$	
PQb:	b	
PAQb:	$\bar{b}$	
PGm:	μ	
PGt:	τ	
PQq:	q	
PQd:	d	
PQu:	u	
PQs:	s	
PQc:	c	
PAQq:	$\bar{q}$	
PAQd:	$\bar{d}$	
PAQu:	$\bar{u}$	
PAQs:	$\bar{s}$	
PAQc:	$\bar{c}$	
PGne:	ν_e	
PAGne:	$\overline{\nu}_e$	
PGnGm:	ν_μ	
PAGnGm:	$\overline{\nu}_\mu$	
PGnGt:	ν_τ	
PAGnGt:	$\overline{\nu}_\tau$	

AFB:	A_{FB}	
wangle:	$\sin^2\theta^{lept}_{eff}(M_Z^2)$	
stat:	(stat)	[Includes leading thinspace]
syst:	(syst)	[Includes leading thinspace]
thy:	(theo)	[Includes leading thinspace]
lum:	(lumi)	[Includes leading thinspace]
kt:	k_T	
BC:	B_c	
bbarc:	$b\bar{c}$	
bbbar:	$b\bar{b}$	
ccbar:	$c\bar{c}$	
bspsiphi:	$B_s \to J/\psi\,\phi$	

EE:	e^+e^-	
MM:	$\mu^+\mu^-$	
TT:	$\tau^+\tau^-$	
HGG:	$H \to \gamma\gamma$	
GAMJET:	$\gamma +$ jet	
PPTOJETS:	$pp \to$ jets	
PPTOGG:	$pp \to \gamma\gamma$	
PPTOGAMJET:	$pp \to \gamma +$ jet	
MH:	M_H	
RNINE:	R_9	
DR:	ΔR	
ga:	$\gtrsim$	
la:	$\lesssim$	
swsq:	$\sin^2\theta_W$	
cwsq:	$\cos^2\theta_W$	
tanb:	$\tan\beta$	
tanbsq:	$\tan^2\beta$	
sidb:	$\sin 2\beta$	
alpS:	α_S	
alpt:	$\tilde{\alpha}$	
QL:	Q_L	
sQ:	$\tilde{Q}$	
sQL:	$\tilde{Q}_L$	
ULC:	U^C_L	
sUC:	$\tilde{U}^C$	
sULC:	$\tilde{U}^C_L$	
DLC:	D^C_L	
sDC:	$\tilde{D}^C$	
sDLC:	$\tilde{D}^C_L$	
LL:	L_L	
sL:	$\tilde{L}$	
sLL:	$\tilde{L}_L$	
ELC:	E^C_L	
sEC:	$\tilde{E}^C$	
sELC:	$\tilde{E}^C_L$	
sEL:	$\tilde{E}_L$	
sER:	$\tilde{E}_R$	
sFer:	$\tilde{f}$	
sQua:	$\tilde{q}$	
sUp:	$\tilde{u}$	
suL:	$\tilde{u}_L$	
suR:	$\tilde{u}_R$	
sDw:	$\tilde{d}$	
sdL:	$\tilde{d}_L$	
sdR:	$\tilde{d}_R$	
sTop:	$\tilde{t}$	
stL:	$\tilde{t}_L$	
stR:	$\tilde{t}_R$	
stone:	$\tilde{t}_1$	
sttwo:	$\tilde{t}_2$	
sBot:	$\tilde{b}$	
sbL:	$\tilde{b}_L$	
sbR:	$\tilde{b}_R$	
sbone:	$\tilde{b}_1$	
sbtwo:	$\tilde{b}_2$	
sLep:	$\tilde{l}$	

sLepC:	$\widetilde{\mathrm{l}}^{\mathrm{C}}$
sEl:	$\widetilde{\mathrm{e}}$
sElC:	$\widetilde{\mathrm{e}}^{\mathrm{C}}$
seL:	$\widetilde{\mathrm{e}}_{\mathrm{L}}$
seR:	$\widetilde{\mathrm{e}}_{\mathrm{R}}$
snL:	$\widetilde{\nu}_L$
sMu:	$\widetilde{\mu}$
sNu:	$\widetilde{\nu}$
sTau:	$\widetilde{\tau}$
Glu:	g
sGlu:	$\widetilde{\mathrm{g}}$
Wpm:	$\mathrm{W}^{\pm}$
sWpm:	$\widetilde{\mathrm{W}}^{\pm}$
Wz:	W^{0}
sWz:	$\widetilde{\mathrm{W}}^{0}$
sWino:	$\widetilde{\mathrm{W}}$
Bz:	B^{0}
sBz:	$\widetilde{\mathrm{B}}^{0}$
sBino:	$\widetilde{\mathrm{B}}$
Zz:	Z^{0}
sZino:	$\widetilde{\mathrm{Z}}^{0}$
sGam:	$\widetilde{\gamma}$
chiz:	$\widetilde{\chi}^{0}$
chip:	$\widetilde{\chi}^{+}$
chim:	$\widetilde{\chi}^{-}$
chipm:	$\widetilde{\chi}^{\pm}$

Hone:	H_{d}
sHone:	$\widetilde{\mathrm{H}}_{\mathrm{d}}$
Htwo:	H_{u}
sHtwo:	$\widetilde{\mathrm{H}}_{\mathrm{u}}$
sHig:	$\widetilde{\mathrm{H}}$
sHa:	$\widetilde{\mathrm{H}}_{\mathrm{a}}$
sHb:	$\widetilde{\mathrm{H}}_{\mathrm{b}}$
sHpm:	$\widetilde{\mathrm{H}}^{\pm}$
hz:	h^{0}
Hz:	H^{0}
Az:	A^{0}
Hpm:	$\mathrm{H}^{\pm}$
sGra:	$\widetilde{\mathrm{G}}$
mtil:	$\widetilde{m}$
rpv:	$\not{R}$
LLE:	$LL\bar{E}$
LQD:	$LQ\bar{D}$
UDD:	$\overline{UDD}$
Lam:	λ
Lamp:	λ'
Lampp:	λ''
MD:	M_{D}
Mpl:	M_{Pl}
Rinv:	R^{-1}

B Particle symbols

PAz:	A^0
PBm:	B^-
PBpm:	$B^\pm$
PBp:	B^+
PBz:	B^0
PB:	B
PDiz:	$D_1(2420)^0$
PDm:	D^-
PDpm:	$D^\pm$
PDp:	D^+
PDstiiz:	$D_2^*(2460)^0$
PDstpm:	$D^*(2010)^\pm$
PDstz:	$D^*(2010)^0$
PDz:	D^0
PD:	D
PEz:	E^0
PHpm:	$H^\pm$
PHz:	H^0
PJgy:	$J/\psi(1S)$
PKeiii:	K_{e3}
PKgmiii:	$K_{\mu 3}$
PKia:	$K_1(1400)$
PKii:	$K_2(1770)$
PKi:	$K_1(1270)$
PKm:	K^-
PKpm:	$K^\pm$
PKp:	K^+
PKsta:	$K^*(1370)$
PKstb:	$K^*(1680)$
PKstiii:	$K_3^*(1780)$
PKstii:	$K_2^*(1430)$
PKstiv:	$K_4^*(2045)$
PKstz:	$K_0^*(1430)$
PKst:	$K^*(892)$
PKzL:	K_L^0
PKzS:	K_S^0
PKzeiii:	K_{e3}^0
PKzgmiii:	K_3^0
PKz:	K^0
PK:	K
PLpm:	$L^\pm$
PLz:	L^0
PN:	N
PNa:	$N(1440)P_{11}$
PNb:	$N(1520)D_{13}$
PNc:	$N(1535)S_{11}$
PNd:	$N(1650)S_{11}$
PNe:	$N(1675)D_{15}$
PNf:	$N(1680)F_{15}$
PNg:	$N(1700)D_{13}$
PNh:	$N(1710)P_{11}$
PNi:	$N(1720)P_{13}$
PNj:	$N(2190)G_{17}$
PNk:	$N(2220)H_{19}$
PNl:	$N(2250)G_{19}$
PNm:	$N(2600)I_{1,11}$
PSHpm:	$\widetilde{H}^{\pm_j}$
PSHz:	$\widetilde{H}_j^0$
PSWpm:	$\widetilde{W}^\pm$
PSZz:	$\widetilde{Z}^0$
PSe:	$\widetilde{e}$
PSgg:	$\widetilde{\gamma}$
PSgm:	$\widetilde{\mu}$
PSgn:	$\widetilde{\nu}$
PSgt:	$\widetilde{\tau}$
PSgxpm:	$\widetilde{\chi}_i^\pm$
PSgxz:	$\widetilde{\chi}_i^0$
PSg:	$\widetilde{g}$
PSq:	$\widetilde{q}$
PWR:	W_R
PWm:	W^-
PWpr:	W'
PWp:	W^+
PW:	W
PZLR:	Z_{LR}
PZgc:	Z_χ
PZge:	Z_η
PZgy:	Z_ψ
PZi:	Z_1
PZz:	Z^0
PaBz:	$\overline{B}^0$
PaB:	$\overline{B}$
PaDz:	$\overline{D}^0$
PaD:	$\overline{D}$
PaKz:	$\overline{K}^0$
PaSq:	$\overline{\widetilde{q}}$
PagL:	$\overline{\Lambda}$
PagOp:	$\overline{\Omega}^+$
PagSm:	$\overline{\Sigma}^-$
PagSp:	$\overline{\Sigma}^+$
PagSz:	$\overline{\Sigma}^0$
PagXp:	$\overline{\Xi}^+$
PagXz:	$\overline{\Xi}^0$
Pagne:	$\overline{\nu}_e$
Pagngm:	$\overline{\nu}_\mu$
Pagngt:	$\overline{\nu}_\tau$
Paii:	$a_2(1320)$
Pai:	$a_1(1260)$
Pap:	$\overline{p}$
Paqb:	$\overline{q}_b$
Paqc:	$\overline{q}_c$
Paqd:	$\overline{q}_d$
Paqs:	$\overline{q}_s$
Paqt:	$\overline{q}_t$
Paqu:	$\overline{q}_u$
Paq:	$\overline{q}$
Paz:	$a_0(980)$

717	Pbgcia:	$\chi_{b1}(2P)$
718	Pbgciia:	$\chi_{b2}(2P)$
719	Pbgcii:	$\chi_{b2}(1P)$
720	Pbgci:	$\chi_{b1}(1P)$
721	Pbgcza:	$\chi_{b0}(2P)$
722	Pbgcz:	$\chi_{b0}(1P)$
723	Pbi:	$b_1(1235)$
724	PcgLp:	Λ_c^+
725	PcgS:	$\Sigma_c(2455)$
726	PcgXp:	Ξ_c^+
727	PcgXz:	Ξ_c^0
728	Pcgcii:	$\chi_{c2}(1P)$
729	Pcgci:	$\chi_{c1}(1P)$
730	Pcgcz:	$\chi_{c0}(1P)$
731	Pcgh:	$\eta_c(1S)$
732	Pem:	e^-
733	Pep:	e^+
734	Pe:	e
735	Pfia:	$f_1(1390)$
736	Pfib:	$f_1(1510)$
737	Pfiia:	$f_2(1720)$
738	Pfiib:	$f_2(2010)$
739	Pfiic:	$f_2(2300)$
740	Pfiid:	$f_2(2340)$
741	Pfiipr:	$f_2'(1525)$
742	Pfii:	$f_2(1270)$
743	Pfiv:	$f_4(2050)$
744	Pfi:	$f_1(1285)$
745	Pfza:	$f_0(1400)$
746	Pfzb:	$f_0(1590)$
747	Pfz:	$f_0(975)$
748	PgD:	Δ
749	PgDa:	$\Delta(1232)P_{33}$
750	PgDb:	$\Delta(1620)S_{31}$
751	PgDc:	$\Delta(1700)D_{33}$
752	PgDd:	$\Delta(1900)S_{31}$
753	PgDe:	$\Delta(1905)F_{35}$
754	PgDf:	$\Delta(1910)P_{31}$
755	PgDh:	$\Delta(1920)P_{33}$
756	PgDi:	$\Delta(1930)D_{35}$
757	PgDj:	$\Delta(1950)F_{37}$
758	PgDk:	$\Delta(2420)H_{3,11}$
759	PgL:	Λ
760	PgLa:	$\Lambda(1405)S_{01}$
761	PgLb:	$\Lambda(1520)D_{03}$
762	PgLc:	$\Lambda(1600)P_{01}$
763	PgLd:	$\Lambda(1670)S_{01}$
764	PgLe:	$\Lambda(1690)D_{03}$
765	PgLf:	$\Lambda(1800)S_{01}$
766	PgLg:	$\Lambda(1810)P_{01}$
767	PgLh:	$\Lambda(1820)F_{05}$
768	PgLi:	$\Lambda(1830)D_{05}$
769	PgLj:	$\Lambda(1890)P_{03}$
770	PgLk:	$\Lambda(2100)G_{07}$
771	PgLl:	$\Lambda(2110)F_{05}$
772	PgLm:	$\Lambda(2350)H_{09}$
773	PgO:	Ω
774	PgOm:	Ω^-
775	PgOma:	$\Omega(2250)^-$
776	PgS:	Σ
777	PgSa:	$\Sigma(1385)P_{13}$
778	PgSb:	$\Sigma(1660)P_{11}$
779	PgSc:	$\Sigma(1670)D_{13}$
780	PgSd:	$\Sigma(1750)S_{11}$
781	PgSe:	$\Sigma(1775)D_{15}$
782	PgSf:	$\Sigma(1915)F_{15}$
783	PgSg:	$\Sigma(1940)D_{13}$
784	PgSh:	$\Sigma(2030)F_{17}$
785	PgSi:	$\Sigma(2050)$
786	PgSm:	Σ^-
787	PgSp:	Σ^+
788	PgSz:	Σ^0
789	PgU:	Υ
790	PgUa:	$\Upsilon(1S)$
791	PgUb:	$\Upsilon(2S)$
792	PgUc:	$\Upsilon(3S)$
793	PgUd:	$\Upsilon(3S)$
794	PgUe:	$\Upsilon(10860)$
795	PgUf:	$\Upsilon(11020)$
796	PgX:	Ξ
797	PgXa:	$\Xi(1530)P_{13}$
798	PgXb:	$\Xi(1690)$
799	PgXc:	$\Xi(1820)D_{13}$
800	PgXd:	$\Xi(1950)$
801	PgXe:	$\Xi(2030)$
802	PgXm:	Ξ^-
803	PgXz:	Ξ^0
804	Pgfa:	$\phi(1680)$
805	Pgfiii:	$\phi_3(1850)$
806	Pgf:	$\phi(1020)$
807	Pgg:	γ
808	Pgha:	$\eta(1295)$
809	Pghb:	$\eta(1440)$
810	Pghpr:	$\eta'(958)$
811	Pgh:	η
812	Pgmm:	μ^-
813	Pgmp:	μ^+
814	Pgm:	μ
815	Pgne:	ν_e
816	Pgngm:	ν_μ
817	Pgngt:	ν_τ
818	Pgoa:	$\omega(1390)$
819	Pgob:	$\omega(1600)$
820	Pgoiii:	$\omega_3(1670)$
821	Pgo:	$\omega(783)$
822	Pgpa:	$\pi(1300)$
823	Pgpii:	$\pi_2(1670)$
824	Pgpm:	π^-
825	Pgppm:	$\pi^\pm$
826	Pgpp:	π^+
827	Pgpz:	π^0

Pgp:	π
Pgra:	$\rho(1450)$
Pgrb:	$\rho(1700)$
Pgriii:	$\rho_3(1690)$
Pgr:	$\rho(770)$
Pgt:	τ
Pgya:	$\psi(3770)$
Pgyb:	$\psi(4040)$
Pgyc:	$\psi(4160)$
Pgyd:	$\psi(4415)$
Pgy:	$\psi(2S)$
Phia:	$h_1(1170)$
Pn:	n
Pp:	p
Pqb:	q_b
Pqc:	q_c
Pqd:	q_d
Pqs:	q_s
Pqt:	q_t
Pqu:	q_u
Pq:	q
PsDipm:	$D_{s1}(2536)^{\pm}$
PsDm:	D_s^-
PsDp:	D_s^+
PsDst:	D_s^*

Future PENNAMES include \xspace

PH:	H
PJGy:	J/ψ
PBzs:	B_s^0
Pg:	g
PSg:	$\widetilde{g}$
PSQ:	$\widetilde{q}$
PXXG:	G
PXXSG:	$\widetilde{G}$
PSGcp:	$\widetilde{\chi}^+$
PSGc:	$\widetilde{\chi}$
PSGcz:	$\widetilde{\chi}^0$
PSGczDo:	$\widetilde{\chi}_1^0$
PSGczDt:	$\widetilde{\chi}_2^0$
PSGcpm:	$\widetilde{\chi}^{\pm}$
Pl:	l
PAl:	$\bar{l}$
PGnl:	ν_l
PAGnl:	$\overline{\nu}_l$
PQtpr:	t'
PAQtpr:	$\bar{t}'$
PQbpr:	b'
PAQbpr:	$\bar{b}'$
PGg:	γ
PKzS:	K_S^0
PBs:	B_s
PSQt:	$\widetilde{t}$
PZpr:	Z'
PGn:	ν
PAGn:	$\overline{\nu}$

C OS X specific instructions

These instructions are based on a clean installation of Mac OS X 10.7.3 (Lion). This release has current versions of both perl and svn.

Download the TeXLive 2011 installation, `http://mirror.ctan.org/systems/mac/mactex/MacTeX.mpkg.zip`, and install (if not already done). This is a relatively large installation.

If a simple *kinit Your_CERN_Username@CERN.CH* doesn't allow you to access the svn repository in the standard fashion, you can follow the instructions at `http://svn.web.cern.ch/svn/howto.php#accessing-sshlinux` to set up an ssh key pair. I tried using the keychain, but it isn't supported in the included version of svn. There are commercial versions available with GUIs, and maybe even free versions—I didn't look very hard—but they are not necessary.

Then follow the general instructions in `https://svnweb.cern.ch/cern/wsvn/tdr2/papers/XXX-08-000/trunk/XXX-08-000_temp.pdf` (this document) and `https://svnweb.cern.ch/cern/wsvn/tdr2/utils/trunk/general/notes_for_authors.pdf`.

Additional style files are required to generate documents in the journal formats, and many of these need to be installed individually.