

# The `aip` substyle for REVTeX\*

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This file embodies the implementation of the AIP journal substyles for APS's REVTeX 4.2 document class for electronic submissions to AIP journals.

The distribution point for this work is <http://publishing.aip.org/authors/preparing-your-manuscript>. The archive contains ready-to-install files, documentation, and full source.

This package is also distributed via CTAN: <http://www.ctan.org/pub/tex-archive/macros/latex/contrib/aip>, and as a ready-to-install image as <http://www.ctan.org/pub/tex-archive/install/macros/latex/contrib/aip.tds.zip>.

The `aip` package was commissioned by the American Institute of Physics and is distributed under the terms of the L<sup>A</sup>T<sub>E</sub>X Project Public License, the same license under which all the portions of L<sup>A</sup>T<sub>E</sub>X itself is distributed. Please see <http://ctan.tug.org/macros/latex/base/lppl.txt> for details.

To use this document class, you must have a working T<sub>E</sub>X installation equipped with L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> and possibly pdftex and Adobe Acrobat Reader or equivalent.

To install, retrieve the distribution, unpack it into a directory on the target computer, and move the file `aip.rtx` into a location in your filesystem where it will be found by L<sup>A</sup>T<sub>E</sub>X.

To use, read the user documentation `auguide.pdf`.

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## 1 Overview

REVT<sub>ε</sub> is a L<sup>A</sup>T<sub>ε</sub>X document class, somewhat like a hybrid of the standard L<sup>A</sup>T<sub>ε</sub>X `book` and `article` classes.

This document class implements the AIP society and journal substyles: the journals represent a set of mutually exclusive class options that, in this case, allow the document class to address multiple journals within the AIP family. This society is obtained with class option `aip`.

## 2 Processing Instructions

The package file `aip.rtx` is generated from this file, `aip4-2.dtx`, using the DOCSTRIP facility of L<sup>A</sup>T<sub>ε</sub>X via `tex aip4-2.dtx`. The typeset documentation that you are now reading is generated from the same file by typesetting it with L<sup>A</sup>T<sub>ε</sub>X or pdftex via `latex aip4-2.dtx` or `pdflatex aip4-2.dtx`.

### 2.1 Build Instructions

You may bootstrap this suite of files solely from `aip4-2.dtx`. Prepare by installing L<sup>A</sup>T<sub>ε</sub>X<sub>2<sub>ε</sub></sub> (and either `tex` or `pdftex`) on your computer, then carry out the following steps:

1. Within an otherwise empty directory, typeset `aip4-2.dtx` with  $\text{\LaTeX}$  or `pdflatex`; you will obtain the typeset documentation you are now reading, along with the installer `aip.ins`, and the file `README-AIP`.  
 Note: you will have to run  $\text{\LaTeX}$  twice, then `makeindex`, then  $\text{\LaTeX}$  again in order to obtain a valid index and table of contents.
2. Now typeset `aip4-2.dtx` with  $\text{\TeX}$ (not  $\text{\LaTeX}$ ), thereby generating the package file `aip.rtx`.
3. Install `aip.rtx` by moving it to a location in your filesystem where it will be found by  $\text{\LaTeX}$ , like `tex/latex/aip`.
4. Install `aip.pdf` by moving it to `doc/latex/aip`.
5. Using the `.dbj` information herein, generate the needed `.bst` files and install them in `bibtex/bst/aip`.

## 2.2 Bill of Materials

Following is a list of the files in this distribution arranged according to provenance.

### 2.2.1 Primary Source

One single file generates all.

```
%aip4-2.dtx
%
```

### 2.2.2 Generated by `latex aip4-2.dtx`

Typesetting the source file under  $\text{\LaTeX}$  generates the readme and the installer.

```
%README aip.ins
%
```

### 2.2.3 Generated by `tex aip4-2.dtx`

Typesetting the installer generates the package files.

```
%aip.rtx
%
```

### 2.2.4 Documentation

The following are the online documentation:

```
%aip.pdf
%
```

### 2.2.5 Auxiliary

The following are auxiliary files generated in the course of running  $\text{\LaTeX}$ :

```
%aip.aux aip.idx aip.ind aip.log aip.toc
%
```

### 3 Code common to all modules

The following may look a bit klotchy, but we want to require only one place in this file where the version number is stated, and we also want to ensure that the version number is embedded into every generated file.

Now we declare that these files can only be used with L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>. An appropriate message is displayed if a different T<sub>E</sub>X format is used.

```
1 %<*driver|package|aapm|sor>
2 \NeedsTeXFormat{LaTeX2e}[1996/12/01]%
3 %</driver|package|aapm|sor>
```

As desired, the following modules all take common version information:

```
4 %<package>\ProvidesFile{aip4-2.rtx}%
5 %<aapm>\ProvidesFile{aapm4-2.rtx}%
6 %<sor>\ProvidesFile{sor4-2.rtx}%
7 %<*driver>
8 \expandafter\ProvidesFile\expandafter{\jobname.dtx}%
9 %</driver>
```

The following line contains, for once and for all, the version and date information. By various means, this information is reproduced consistently in all generated files and in the typeset documentation.

```
10 %<*driver|package>
11 %<version>
12 [2022/06/05 4.2f AIP substyle for REVTeX]% \fileversion
13 %</driver|package>
```

### 4 The driver module driver

This module, consisting of the present section, typesets the programmer’s documentation, generating the .ins installer and README-AIP as required.

Because the only uncommented-out lines of code at the beginning of this file constitute the driver module itself, we can simply typeset the .dtx file directly, and there is thus rarely any need to generate the “driver” DOCSTRIP module. Module delimiters are nonetheless required so that this code does not find its way into the other modules.

The `\end{document}` command concludes the typesetting run.

```
14 %<*driver>
```

#### 4.1 The Preamble

The programmers documentation is formatted with the ltxdoc class with local customizations, and with the usual code line indexing.

```
15 \documentclass{ltxdoc}
16 \RequirePackage{ltxdocext}%
17 \let\url\undefined
18 \RequirePackage[colorlinks=true,linkcolor=blue]{hyperref}%
19 \gdef\lquote{'}\gdef\rquote{'}%
20 \CodelineIndex\EnableCrossrefs % makeindex -s gind.ist aip
21 \RecordChanges % makeindex -s gglo.ist -o aip.gls aip.glo
```

### 4.1.1 Docstrip and info directives

We use so many DOCSTRIP modules that we set the `StandardModuleDepth` counter to 1.

```
22 \setcounter{StandardModuleDepth}{1}
```

The following command retrieves the date and version information from this file.

```
23 \expandafter\GetFileInfo\expandafter{\jobname.dtx}%
```

## 4.2 The “Read Me” File

As promised above, here is the contents of the “Read Me” file. That file serves a double purpose, since it also constitutes the beginning of the programmer’s documentation. What better thing, after all, to have appear at the beginning of the typeset documentation?

A good discussion of how to write a ReadMe file can be found in Engst, Tonya, “Writing a ReadMe File? Read This” *MacTech* October 1998, p. 58.

Note the appearance of the `\StopEventually` command, which marks the dividing line between the user documentation and the programmer documentation.

The usual user will not be asked to do a full build, not to speak of the bootstrap. Instructions for carrying these processes begin the programmer’s manual.

```
24 \begin{filecontents*}{README-AIP}
25 \title{%
26 The \classname{aip} substyle for REV\TeX%
27 \protect\thanks{%
28 \fileversion\ \copyright 2009 American Institute of Physics
29 % For version number and date,
30 % search on "\fileversion" in the .dtx file,
31 % or see the end of the README file.
32 }%
33 }%
34
35 \author{%
36 Arthur Ogawa\thanks{mailto:arthur\_ogawa at sbcglobal.net}%
37 }%
38 \date{Version \fileversion, dated \filedate}%
39 \maketitle
40
41 This file embodies the implementation of the
42 AIP journal substyles for APS’s \revtex\ 4.2 document class
43 for electronic submissions to AIP journals.
44
45 The distribution point for this work is
46 \url{http://publishing.aip.org/authors/preparing-your-manuscript}.
47 The archive contains ready-to-Install files, documentation, and full source.
48
49 This package is also distributed via CTAN:
50 \url{http://www.ctan.org/pub/tex-archive/macros/latex/contrib/aip}, and as a ready-to-install
51 \url{http://www.ctan.org/pub/tex-archive/install/macros/latex/contrib/aip.tds.zip}.
52
53 The \classname{aip} package was commissioned by the American Institute of Physics
54 and is distributed under the terms of the \LaTeX\ Project Public License,
55 the same license under which all the portions of \LaTeX\ itself is distributed.
```

56 Please see `\url{http://ctan.tug.org/macros/latex/base/lppl.txt}` for details.  
57  
58 To use this document class, you must have a working  
59 `\TeX` installation equipped with `\LaTeXe`  
60 and possibly `pdftex` and Adobe Acrobat Reader or equivalent.  
61  
62 To install, retrieve the distribution,  
63 unpack it into a directory on the target computer,  
64 and move the file `\file{aip.rtx}`  
65 into a location in your filesystem where it will be found by `\LaTeX`.  
66  
67 To use, read the user documentation `\file{auguide.pdf}`.  
68  
69 `\tableofcontents`  
70  
71 `\section{Overview}`%  
72 `\revtex` is a `\LaTeXe` document class, somewhat like a hybrid of  
73 the standard `\LaTeX` `\classname{book}` and `\classname{article}` classes.  
74  
75 This document class implements the AIP society and journal substyles:  
76 the journals represent a set of mutually exclusive class options that, in this case, allow t  
77 document class to address multiple journals within the AIP family.  
78 This society is obtained with class option `\classoption{aip}`.  
79  
80 `\section{Processing Instructions}`  
81  
82 The package file `\file{aip.rtx}`  
83 is generated from this file, `\file{aip4-2.dtx}`,  
84 using the `{\sc docstrip}` facility of `\LaTeX`  
85 via `|tex aip4-2.dtx|`.  
86 The typeset documentation that you are now reading is generated from  
87 the same file by typesetting it with `\LaTeX` or `pdftex`  
88 via `|latex aip4-2.dtx|` or `|pdflatex aip4-2.dtx|`.  
89  
90 `\subsection{Build Instructions}`  
91  
92 You may bootstrap this suite of files solely from `\file{aip4-2.dtx}`.  
93 Prepare by installing `\LaTeXe` (and either `tex` or `pdftex`) on your computer,  
94 then carry out the following steps:  
95 `\begin{enumerate}`  
96 `\item`  
97 Within an otherwise empty directory,  
98 `typeset \file{aip4-2.dtx}` with `\LaTeX` or `pdflatex`;  
99 you will obtain the typeset documentation you are now reading,  
100 along with  
101 the installer `\file{aip.ins}`,  
102 and the file `\file{README-AIP}`.  
103  
104 Note: you will have to run `\LaTeX` twice, then `\file{makeindex}`, then  
105 `\LaTeX` again in order to obtain a valid index and table of contents.  
106 `\item`  
107 Now `typeset \file{aip4-2.dtx}` with `\TeX` (not `\LaTeX`),  
108 thereby generating the package file `\file{aip.rtx}`.  
109 `\item`

```

110 Install \classname{aip.rtx}
111 by moving it to a location
112 in your filesystem where it will be found by \LaTeX,
113 like \file{tex/latex/aip}.
114 \item
115 Install \classname{aip.pdf}
116 by moving it to
117 \file{doc/latex/aip}.
118 \item
119 Using the \file{.dbj} information herein,
120 generate the needed \file{.bst} files and install them in
121 \file{bibtex/bst/aip}.
122 \end{enumerate}
123 \end{filecontents*}

```

### 4.3 The Document Body

Here is the document body, containing only a `\DocInput` directive—referring to this very file. This very cute self-reference is a common `ltxdoc` idiom.

```

124 \begin{document}%
125 \newcommand\revtex{REV\TeX}%
126 \expandafter\DocInput\expandafter{\jobname.dtx}%
127 % ^^A\PrintChanges
128 \end{document}
129 %</driver>

```

## 5 AIP: A set of journal-specific extensions to REV<sub>TEX</sub>

To create a journal substyle, you create a `.rtx` file, in our case `aip.rtx`. Within that file, you override procedures and parameter assignments as you see fit. Ideally they will be generally applicable to all of that society’s journals (see the file `aps.rtx` for a realization of this scheme). Also within that file, you include a section of code for each journal, that for JMP looks like:

```

% \@ifx{\@journal\journal@jmp}{%
% (code specific to the JMP)
% }{}%
%

```

## 6 The aip class option: the aip module

The file `aip.rtx` is read in by the `revtex4` document class if `\@society` has the value `aip`.

Here, code specific to AIP journals appears.

We first give some text entities (amounting to journal abbreviations), then some AIP-specific initialisations, then code for particular AIP journals. In the latter case, the choice is keyed off the macro `\@journal`.

Note on `\AtEndOfClass`: this file, like all journal substyles, is read in at `\AtEndOfClass` time, so you should not use this command in this file. Note for

L<sup>A</sup>T<sub>E</sub>X developers: It would be an improvement in L<sup>A</sup>T<sub>E</sub>X to `\let\AtEndOfClass` to something like `\@firstofone`. This change would be effected in `\@onefilewithoptions`.

```
130 %<*package>
```

## 6.1 Defend Against Forseeable Errors

Protect this file from being read in by anything but REVTeX.

```
131 \ifx\undefined\substyle@ext
132 \def\@tempa{%
133 \endinput
134 \GenericWarning{I must be read in by REVTeX! (Bailing out)}%
135 }%
136 \expandafter\else
137 \def\@tempa{%
138 \expandafter\fi\@tempa
139 \class@info{RevTeX society AIP selected}%
```

## 6.2 Substyle Options

Here are the class options relating to the AIP:

```
140 \DeclareOption{jcp}{\change@journal{jcp}}%
141 \DeclareOption{pop}{\change@journal{pop}}%
142 \DeclareOption{rsi}{\change@journal{rsi}}%
143 \DeclareOption{jap}{\change@journal{jap}}%
144 \DeclareOption{apl}{\change@journal{apl}}%
145 \DeclareOption{apm}{\change@journal{apm}}%
146 \DeclareOption{cha}{\change@journal{cha}}%
147 \DeclareOption{pof}{\change@journal{pof}}%
148 \DeclareOption{bmf}{\change@journal{bmf}}%
149 \DeclareOption{rse}{\change@journal{rse}}%
150 \DeclareOption{jmp}{\change@journal{jmp}}%
151 \DeclareOption{adv}{\change@journal{adv}}%
152 \DeclareOption{sd}{\change@journal{sd}}%
153 \DeclareOption{jor}{\change@journal{jor}}%
154 \DeclareOption{cp}{\change@journal{cp}}%
```

## 6.3 Abbreviations

The following macros constitute typing shortcuts for certain journal names.

```
155 \def\adv{AIP Advances}%
156 \def\ao{Appl.\ Opt.}%
157 \def\ap{Appl.\ Phys.}%
158 \def\apl{Appl.\ Phys.\ Lett.}%
159 \def\apm{Appl.\ Phys.\ Lett.\ Mater.}%
160 \def\apj{Astrophys.\ J.}%
161 \def\bell{Bell Syst.\ Tech.\ J.}%
162 \def\bmf{Biomicrofluidics}%
163 \def\cha{Chaos}%
164 \def\jqe{IEEE J.\ Quantum Electron.}%
165 \def\assp{IEEE Trans.\ Acoust.\ Speech Signal Process.}%
166 \def\aprop{IEEE Trans.\ Antennas Propag.}%
167 \def\mtt{IEEE Trans.\ Microwave Theory Tech.}%
```

```

168 \def\iovs{Invest.\ Ophthalmol.\ Vis.\ Sci.}%
169 \def\jcp{J.\ Chem.\ Phys.}%
170 \def\jap{J.\ Appl.\ Phys.}%
171 \def\jmp{J.\ Math.\ Phys.}%
172 \def\jmo{J.\ Mod.\ Opt.}%
173 \def\josa{J.\ Opt.\ Soc.\ Am.}%
174 \def\josaa{J.\ Opt.\ Soc.\ Am.\ A}%
175 \def\josab{J.\ Opt.\ Soc.\ Am.\ B}%
176 \def\jpp{J.\ Phys.\ (Paris)}%
177 \def\jpr{J.\ Phys.\ Chem.\ Ref.\ Data}%
178 \def\ltp{Low.\ Temp.\ Phys.}%
179 \def\nat{Nature (London)}%
180 \def\oc{Opt.\ Commun.}%
181 \def\ol{Opt.\ Lett.}%
182 \def\pl{Phys.\ Lett.}%
183 \def\pop{Phys.\ Plasmas}%
184 \def\pof{Phys.\ Fluids}%
185 \def\pra{Phys.\ Rev.\ A}%
186 \def\prb{Phys.\ Rev.\ B}%
187 \def\prc{Phys.\ Rev.\ C}%
188 \def\prd{Phys.\ Rev.\ D}%
189 \def\pre{Phys.\ Rev.\ E}%
190 \def\prl{Phys.\ Rev.\ Lett.}%
191 \def\rmp{Rev.\ Mod.\ Phys.}%
192 \def\rsi{Rev.\ Sci.\ Instrum.}%
193 \def\rse{J.\ Renewable Sustainable Energy}%
194 \def\rspie{Proc.\ Soc.\ Photo-Opt.\ Instrum.\ Eng.}%
195 \def\sjqe{Sov.\ J.\ Quantum Electron.}%
196 \def\vr{Vision Res.}%
197 \def\sd{Structural\ Dynamics}%
198 \def\jor{J.\ Rheol.}%
199 \def\cp{AIP\ Conference\ Proceedings}%

```

Option allowing for “numerical author-year” bibliography.

```

200 \DeclareOption{author-numerical}{%
201   \@booleantrue\authoryear@sw
202   \@booleantrue\authornum@sw
203 }%

```

Optionally allow article title in bibliography entries. A new switch is defined here: \aip@jtitx@sw signifies that the numbered style bibliography is to be prepared without article titles in @ARTICLE entries. Otherwise, such titles are incorporated if present in the .bib entry. By default, exclude the article titles.

```

204 \DeclareOption{article-title}{%
205   \@booleanfalse\aip@jtitx@sw
206 }%
207 \@booleantrue \aip@jtitx@sw

```

Establish default options for this society.

```

208 \@booleanfalse\authoryear@sw
209 \@booleanfalse\authornum@sw
210 \@booleanfalse\onecolumn@sw
211 \@booleanfalse\newonecolumn@sw

```

`\@bibdataout@init` Procedure `\@bibdataout@aip` has the job of writing the control record into the `\@bibdataout@aip` job's `\jobnameaip4-2.dtx.bib` file, where it will adjust the options to `aip4-2.dtx.bst` processing. It is installed into the initialization procedure `\@bibdataout@init`, and its meaning is set by the society (AIP) and journal.

```
212 \appdef\@bibdataout@rev{\@bibdataout@aip}%
213 \def\@bibdataout@aip{%
214 \immediate\write\@bibdataout{%
```

An entry that controls processing of the `aip4-2.dtx.bst` file has entry type `@CONTROL`.

```
215 @CONTROL{%
216 aip41Control%
```

Say whether we want long bibliography style (the default), or the abbreviated style.

```
217 \longbibliography@sw{\true@sw}{\aip@jtitx@sw{\false@sw}{\true@sw}}%
218 {%
219 ,pages="1",title="0"%
220 }{%
221 ,pages="0",title=""%
222 }%
223 }%
224 }%
```

Place a `\citation` into the auxiliary file corresponding to this entry.

```
225 \if@filesw
226 \immediate\write\@auxout{\string\citation{aip41Control}}%
227 \fi
228 }%
```

For AIP, the preprint style `preprint` is the default.

```
229 \@booleantrue\preprintsty@sw
```

`\showPACS@sw` If `\showPACS@sw` is true, print the PACS information in the title block, otherwise `\showKEYS@sw` not. Similarly for `\showKEYS@sw` and the keywords.

```
230 \@booleantrue\showPACS@sw
231 \@booleantrue\showKEYS@sw
```

`\refname` In reprint style only, we eliminate the head above the bibliography.

```
232 % TeXSupport
233 \let\old@refname\refname
234 \appdef\setup@hook{%
235 \preprintsty@sw}{-%
236 \let\refname\@empty
237 }%
238 }%
```

## 6.4 AIP Setup

Here we define the default procedures for AIP journals. Individual AIP journals may override these definitions.

### 6.4.1 Running header and footer

Page style for all AIP journals. We assert our own page style only if nobody else has done so. Users wishing to customize their documents will be able to invoke a `\pagestyle` command anywhere in the preamble. FIXME: `\preprintsty@sw` is defined?

```
239 \appdef\setup@hook{%
240 \preprintsty@sw{%
241 \ps@preprint
242 }{%
243 \ps@article
244 }%
245 }%
```

The spc says: “Running title must be provided on title page”, and that journal classes 1b and 2 have no running title.

```
246 \def\ps@preprint{%
247 \def\@oddhead{\@runningtitle\hfil}%
248 \def\@evenhead{\@runningtitle\hfil}%
249 \def\@oddfoot{\hfil\thepage\quad\checkindate\hfil}%
250 \def\@evenfoot{\hfil\thepage\quad\checkindate\hfil}%
251 \let\@mkboth\@gobbletwo
252 \let\sectionmark\@gobble
253 \let\subsectionmark\@gobble
254 }%
255 \def\ps@article{%
256 \def\@evenhead{\let\\\heading@cr\thepage\quad\checkindate\hfil\@runningtitle}%
257 \def\@oddhead{\let\\\heading@cr\@runningtitle\hfil\checkindate\quad\thepage}%
258 \def\@oddfoot{}%
259 \def\@evenfoot{}%
260 \let\@mkboth\@gobbletwo
261 \let\sectionmark\@gobble
262 \let\subsectionmark\@gobble
263 }%
264 \def\@runningtitle{\@shorttitle}%
```

### 6.4.2 Title block

The specifics of the title block. Apply to all AIP journals; individual journals may override these settings.

```
\titlepage
265 \renewenvironment{titlepage}{%
266 \let\wastwocol@sw\twocolumn@sw
267 \onecolumngrid
268 \newpage
269 \thispagestyle{titlepage}%
270 \c@page\z@ article sets this to one not zero???
271 }{%
272 \wastwocol@sw\twocolumngrid}\newpage}%
273 }%
```

`\@fnsymbol` On the title page, footnotes are lettered with right parenthesis: “a”).

```
274 \let\@fnsymbol@latex\@fnsymbol
```

275 \let\@fnsymbol\@alph

\adjust@abstractwidth This procedure is used by many titlepage elements to indent on the left by a particular amount. The author list uses \frontmatter@authorformat to accomplish the same.

```
276 \def\adjust@abstractwidth{%
277   \parindent1em\relax
278   \advance\leftskip.5in\relax
279   \@totalleftmargin\leftskip
280   \@afterheading\@afterindentfalse
281 }%
```

\frontmatter@abstractheading AIP Journals all set the abstract head the same way, with no head.

```
282 \def\frontmatter@abstractheading{}
```

\frontmatter@abstractfont All AIP journals set the abstract body the same way.

```
283 \def\frontmatter@abstractfont{%
284   %\small
285   \adjust@abstractwidth
286 }%
```

All AIP journal preprints use separate titlepage and full-width abstract.

```
287 \appdef\setup@hook{%
288   \preprintsty@sw{%
289     \@booleantrue\titlepage@sw
290   }%
291   \let\section\section@preprintsty
292   % \let\@hangfrom@section\@hangfrom@section@preprintsty
293   \let\subsection\subsection@preprintsty
294   \let\subsubsection\subsubsection@preprintsty
295 }-}%
296 }%
```

\frontmatter@authorformat All AIP journals set the author list the same. The leading is 11.5 points, and there is 11.5 points of extra space above the first author line (which amounts to the same thing as 11.5 points extra below the title) for a total of 23 points base-to-base.

```
297 \def\frontmatter@@indent{%
298   \skip@\@flushglue
299   \@flushglue\z@ plus.3\hsize\relax
300   \raggedright
301   \advance\leftskip.5in\relax
302   \@totalleftmargin\leftskip
303   \@flushglue\skip@
304 }%
305 \def\frontmatter@authorformat{%
306   \frontmatter@@indent
307   \sffamily
308   %\advance\baselineskip\p@
309   %\parskip11.5\p@\relax
310 }%
311 \renewcommand*\email[1][Electronic mail: ]{\begingroup\sanitize@url\@email{#1}}%
```

`\frontmatter@above@affilgroup` The default amount of space above affiliation.  
312 `\def\frontmatter@above@affilgroup{%`  
313 `}%`

`\frontmatter@above@affiliation` The default amount of space above affiliation.  
`\frontmatter@above@affiliation@script` 314 `\def\frontmatter@above@affiliation@script{%`  
315 `\frontmatter@indent`  
316 `%\advspace{3.5\p@}%`  
317 `}%`  
318 `\def\frontmatter@above@affiliation{%`  
319 `}%`

`\frontmatter@affiliationfont` All AIP journals set the affiliation the same. Like the author, but in italic.  
320 `\def\frontmatter@affiliationfont{%`  
321 `\frontmatter@indent`  
322 `\preprintsty@sw}{\small}%`  
323 `\it`  
324 `}%`

`\frontmatter@collaboration@above`  
325 `\def\frontmatter@collaboration@above{%`  
326 `}%`

Set up the default AIP style for title block authors and affiliations.

`\frontmatter@setup` All AIP journals set the title page using the same font and size. However, justification varies for the title block elements, so we assert none here.  
327 `\def\frontmatter@setup{%`  
328 `\normalfont`  
329 `}%`

`\frontmatter@title@above` All AIP journals set the article title 12 point Times Roman, bold, flush left.  
`\frontmatter@title@format` 330 `\def\frontmatter@title@above{\advspace{6\p@}}%`  
`\frontmatter@title@below` 331 `\def\frontmatter@title@format{%`  
332 `\preprintsty@sw}{\Large}%`  
333 `\sffamily`  
334 `\bfseries`  
335 `\raggedright`  
336 `\parskip\z@skip`  
337 `}%`  
338 `\def\frontmatter@title@below{\advspace{3\p@}}%`

`\frontmatter@makefnmark` All AIP journals share this procedure for setting the titlepage footnote text: superior lowercase letter, with right parenthesis.  
339 `\def\@author@parskip{3\p@}%`  
340 `\@booleantrue\altaffilletter@sw`  
341 `\def\frontmatter@makefnmark{%`  
342 `\@textsuperscript{%`  
343 `\normalfont\@thefnmark%(`  
344 `)%`  
345 `}%`  
346 `}%`  
347 `\def\frontmatter@authorbelow{%`

```

348 \addvspace{3\p@}%
349 }%

```

`\affil@cutoff` We override `\affil@cutoff` to enforce the rule that, if a single affiliation appears on the title page, then no affiliation superscript at all is produced.

```

350 \let\affil@cutoff\tw@

```

De awa.

`\frontmatter@RRAP@format` All AIP journals use the same format for the “Received, Revised, etc.” block on the title page.

Change note: 11.5 points b-b from author/affiliation down to date.

```

351 \def\frontmatter@RRAP@format{%
352   \addvspace{5\p@}%
353   \small
354   \raggedright
355   \advance\leftskip.5in\relax
356   \@totalleftmargin\leftskip
357   % \preprintsty@sw@\parskip.5ex\relax}%
358   \everypar{%
359     \hbox\bgroup(\@gobble@leavemode@uppercase%)
360   }%
361   \def\par{%
362     \@ifvmode{}\{(
363       \unskip)\egroup\@par
364     }%
365   }%
366 }%
367 \def\punct@RRAP{;\egroup\ \hbox\bgroup}%
368 \def\@gobble@leavemode@uppercase#1#2{\expandafter\MakeTextUppercase}%

```

`\frontmatter@PACS@format`

```

369 \def\frontmatter@PACS@format{%
370   \addvspace{11\p@}%
371   % \footnotesize
372   \adjust@abstractwidth
373   \parskip\z@skip
374   \samepage
375 }%

```

`\frontmatter@keys@format`

```

376 \def\frontmatter@keys@format{%
377   % \footnotesize
378   \adjust@abstractwidth
379   \samepage
380 }%

```

`\ps@titlepage` Title page style. Currently empty except for preprint header, which consists of all the `\preprint` arguments, stacked flush right at the right margin.

```

381 \def\ps@titlepage{%
382   \def\@oddhead{%
383     \@runningtitle
384     \hfill
385     \produce@preprints\@preprint

```

```

386 }%
387 \let\@evenhead\@oddhead
388 \def\@oddfoot{%
389   \hb@xt@\z@\{\byrevtex\hss}%
390   \hfil
391   \preprintsty@sw{\thepage}{}%
392   \quad\checkindate
393   \hfil
394 }%
395 \let\@evenfoot\@oddfoot
396 }%
397 \def\byrevtex{\byrevtex@sw{Typeset by REV\TeX and AIP}{}}%

```

`\produce@preprints`

```

398 \def\produce@preprints#1{%
399   \preprint@sw{%
400     \vtop to \z{%
401       \def\baselinestretch{1}%
402       \small
403       \let\preprint\preprint@count
404       \count@\z@#1\@ifnum{\count@>\tw@}{%
405         \hbox{%
406           \let\preprint\preprint@hlist
407           #1\setbox\z@\lastbox
408         }%
409       }{%
410         \let\preprint\preprint@cr
411         \halign{\hfil#\cr#1\cr}%
412         \par
413         \vss
414       }%
415     }%
416   }{}%
417 }%
418 \def\preprint@cr#1{#1\cr}%
419 \def\preprint@count#1{\advance\count@\@ne}%
420 \def\preprint@hlist#1{#1\hbox{, }}%

```

### 6.4.3 Lead-in paragraph

The `Lead-in paragraph` environment formats the AIP “lead paragraph”. To avoid introducing new syntax, we take over the `quotation` environment until the first `\section` (or other sectioning command) appears.

```

421 \newenvironment{Lead@inParagraph}{%
422   \par
423   \bfseries
424   \@afterheading\@afterindentfalse
425 }{%
426   \par
427   \hb@xt@\hsize{\hfil\leaders\hrule\hfil\leaders\hrule\hfil\hfil}%
428 }%

```

At the beginning of the document temporarily change the meaning of the `quotation` environment, restoring it once the first sectioning command is given.

```

429 \appdef\frontmatter@init{%
430 \let@environment{quotation@ltx}{quotation}%
431 \let@environment{quotation}{Lead@inParagraph}%
432 }%
433 \appdef\@startsection@hook{%
434 \let@environment{quotation}{quotation@ltx}%
435 }%

```

#### 6.4.4 Stacked Heads

All AIP journals put a period (.), followed by quad space, after the section number. Also, no hanging section number.

```

436 \def\@secntformat#1{\csname the#1\endcsname.\quad}%
437 \def\@hangfrom#1#2#3{#1#2#3}%

```

Note that in the following, we wish to set the section head uppercase, so we use David Carlisle's `\MakeTextUppercase`. However, because this procedure effectively parses its argument (looking for things to *not* translate), it has to be invoked in such a way that the argument of the `\section` command is passed to it as its own argument.

To accomplish this, we use the `\@hangfrom@` hook, which was developed for this purpose.

```

438 \def\section{%
439 \@startsection
440 {section}%
441 {1}%
442 {\z@}%
443 {0.8cm \@plus1ex \@minus .2ex}%
444 {0.5cm}%
445 {}%
446 \normalfont
447 \small
448 \sffamily
449 \bfseries
450 \raggedright
451 }%
452 }%
453 \def\@hangfrom@section#1#2#3{\@hangfrom{#1#2}\MakeTextUppercase{#3}}%
454 \def\@hangfroms@section#1#2{#1\MakeTextUppercase{#2}}%

```

See, e.g., BMF.044101.1 (1) or BMF.044103.1 (1)

```

455 \def\subsection{%
456 \@startsection
457 {subsection}%
458 {2}%
459 {\z@}%
460 {.8cm \@plus1ex \@minus .2ex}%
461 {.5cm}%
462 {}%
463 \normalfont
464 \small
465 \sffamily
466 \bfseries
467 \raggedright

```

```

468 }%
469 }%
    See, e.g., BMF_044104_1 (1), JMP_123520_1 (48),
470 \def\subsubsection{%
471   \@startsection
472     {subsubsection}%
473     {3}%
474     {\z@}%
475     {.8cm \@plus1ex \@minus .2ex}%
476     {.5cm}%
477     {%
478       \normalfont
479       \small
480       \sffamily
481       \bfseries
482       \itshape
483       \raggedright
484     }%
485 }%

```

#### 6.4.5 Runin Heads

```

486 \def\paragraph{%
487   \@startsection
488     {paragraph}%
489     {4}%
490     {\parindent}%
491     {\z@}%
492     {-1em}%
493     {\normalfont\normalsize\itshape}%
494 }%
495 \def\subparagraph{%
496   \@startsection
497     {subparagraph}%
498     {5}%
499     {\parindent}%
500     {3.25ex \@plus1ex \@minus .2ex}%
501     {-1em}%
502     {\normalfont\normalsize\bfseries}%
503 }%

```

`\section@preprintsty` Here are the formatting procedures specific to the preprint style; the only difference  
`\subsection@preprintsty` is that the heads are flush left instead of centered.  
`\subsubsection@preprintsty`

```

504 \def\section@preprintsty{%
505   \@startsection
506     {section}%
507     {1}%
508     {\z@}%
509     {0.8cm \@plus1ex \@minus .2ex}%
510     {0.5cm}%
511     {%
512       \normalfont
513       \bfseries

```

```

514     \raggedright
515   }%
516 }%
517 %\def\@hangfrom@section@preprintsty#1#2#3{\@hangfrom{#1#2}\MakeTextUppercase{#3}}%
518 \def\subsection@preprintsty{%
519   \@startsection
520     {subsection}%
521     {2}%
522     {\z@}%
523     {.8cm \@plus1ex \@minus .2ex}%
524     {.5cm}%
525     {}%
526     \normalfont
527     \bfseries
528     \raggedright
529   }%
530 }%
531 \def\subsubsection@preprintsty{%
532   \@startsection
533     {subsubsection}%
534     {3}%
535     {\z@}%
536     {.8cm \@plus1ex \@minus .2ex}%
537     {.5cm}%
538     {}%
539     \normalfont
540 %   \small
541     \itshape\bfseries
542     \raggedright
543   }%
544 }%

```

For examples of `theorem`, `proposition`, `lemma`, `remark`, `corollary`, `example`, and `proof` (with optional title), using independent numbering for each class, and with numbered and roman lists therein, see JMP\_122901.1 (48).

For theorems, etc, numbered by section, (and with theorems in the appendix) but equations numbered throughout, see JMP\_123301.1 (48).

For a (roman) list in text, theorem, and proof, see JMP\_123514.1 (48).

For numbered list in text, and equations numbered by section, see JMP\_123518.1 (48).

All AIP journals use frontmatter footnotes by default.

```

545 \let\frontmatter@footnote@produce\frontmatter@footnote@produce@footnote

```

#### 6.4.6 Table of Contents

The toc will itself make an entry in the toc, but we temporarily turn off toc formatting for the duration.

```

546 \def\@pnumwidth{1.55em}
547 \def\@tocrmarg {2.55em}
548 \def\@dotsep{2}
549 \def\ltxu@dotsep{4.5pt}
550 \setcounter{tocdepth}{3}

```

```

551 \def\tableofcontents{%
552 \addtocontents{toc}{\string\tocdepth@munge}%
553 \print@toc{toc}%
554 \addtocontents{toc}{\string\tocdepth@restore}%
555 }%

556 \def\tocdepth@munge{%
557 \let\l@section@saved\l@section
558 \let\l@section@gobble@tw@
559 }%
560 \def@gobble@tw@#1#2{%}

561 \def\tocdepth@restore{%
562 \let\l@section\l@section@saved
563 }%

564 \def\l@part#1#2{\addpenalty{\@secpenalty}}%
565 \begingroup
566 \set@tocdim@pagenum{#2}%
567 % \@tempdima 3em %
568 \parindent \z@
569 \rightskip\tocleft@pagenum plus 1fil\relax
570 \skip@parfillskip\parfillskip\z@
571 \addvspace{2.25em plus\p@}%
572 \large \bf %
573 \leavevmode\ignorespaces#1\unskip\nobreak\hskip\skip@
574 \hb@xt@\rightskip{\hfil\unhbox\z@}\hskip-\rightskip\hskip\z@skip
575 \par
576 \nobreak %
577 \endgroup
578 }%

```

`\l@section` Determine which TOC elements are automatically indented.

```

579 \def\tocleft@{\z@}%
580 \def\tocdim@min{5\p@}%
581 \def\l@section{%
582 \l@sections{}{section}% Implicit #3#4
583 }%
584 \def\l@f@section{%
585 \addpenalty{\@secpenalty}%
586 \addvspace{1.0em plus\p@}%
587 \bf
588 }%
589 \def\l@subsection{%
590 \l@sections{section}{subsection}% Implicit #3#4
591 }%
592 \def\l@subsubsection{%
593 \l@sections{subsection}{subsubsection}% Implicit #3#4
594 }%
595 \def\l@paragraph#1#2{%}
596 \def\l@subparagraph#1#2{%}

```

Activate the auto TOC processing.

```

597 \let\toc@pre\toc@pre@auto
598 \let\toc@post\toc@post@auto

```

```

599 \def\listoffigures{\print@toc{lof}}%
600 \def\l@figure{\@dottedtocline{1}{1.5em}{2.3em}}

601 \def\listoftables{\print@toc{lot}}%
602 \let\l@table\l@figure

```

#### 6.4.7 Default column bottom

All AIP journal styles have flush bottoms.

```
603 \@booleanfalse\raggedcolumn@sw
```

#### 6.4.8 Table alignment style

```

\tableft@skip@float All AIP publications have the same table specification: Scotch rules above and
\tabmid@skip@float below, centered in column.
\tabright@skip@float
\array@row@pre@float 604 \def\tableft@skip@float{\z@ plus\hsize}%
\array@row@pst@float 605 \def\tabmid@skip@float{\@flushglue}%
606 \def\tabright@skip@float{\z@ plus\hsize}%
607 \def\array@row@pre@float{\hline\hline\noalign{\vskip\doublerulesep}}%
608 \def\array@row@pst@float{\noalign{\vskip\doublerulesep}\hline\hline}%

```

#### 6.4.9 Footnote formatting

We customize the formatting of footnotes for all AIP journals.

```

\@makefntext
609 \def\@makefntext#1{%
610 \def\baselinestretch{1}%
611 \leftskip1em%
612 \parindent1em%
613 \noindent
614 \nobreak\hskip-\leftskip
615 \hb@xt@\leftskip{%
616 \hss\@makefnmark\ %
617 }%
618 #1%
619 \par
620 }%

```

#### 6.4.10 Appendix

```

\appendix
\@hangfrom@appendix 621 \prepdef\appendix{%
\@hangfroms@appendix 622 \par
\@appendixcntformat 623 \let\@hangfrom@section\@hangfrom@appendix
624 %\let\@hangfroms@section\@hangfroms@appendix
625 \let\@sectioncntformat\@appendixcntformat
626 }%
627 \def\@hangfrom@appendix#1#2#3{%
628 #1%
629 \@if@empty{#2}{%
630 #3%
631 }{%
632 #2\@if@empty{#3}{-:\ #3}%

```

```

633 }%
634 }%
635 \def\@hangfroms@appendix#1#2{%
636 #1#2%
637 }%
638 \def\@appendixcntformat#1{\appendixname\ \csname the#1\endcsname}%

```

#### 6.4.11 Bibliography

Customize the REVTeX for the AIP society. this task requires three components: the BIBTeX `aipnum.bst` and `aipauth.bst` style files, customizing code for `natbib`, and customizations of the `thebibliography` environment.

`\@bibstyle` Define the argument of the `\bibliographystyle` command. The user must have installed a `.bst` file of the corresponding name. This file will then be used by BIBTeX when compiling the document's `.bbl` file.

The default bibliography style for the AIP journal substyles are `aipnum.bst` and `aipauth.bst`. To generate them, use `custom-bib` version 4.21 or later. Run the `.bst` generator, `makebst.tex`, and accept all defaults, with the following exceptions:

1. ORDERING OF REFERENCES: c: seq-no (references in order of Citation);
2. AUTHOR NAMES: i: nm-init,ed-au (Initials + surname);
3. NUMBER OF AUTHORS: l: max 12, min 12 (there will be three prompts total);
4. TYPEFACE FOR AUTHORS IN LIST OF REFERENCES: u: nmft,nmft-def (User defined author font);
5. FONT FOR FIRST NAMES: u: fnm-def (First names in user defined font);
6. EDITOR NAMES IN INCOLLECTION ETC: a: nmfted (Editors in collection like authors);
7. DATE FORMAT: p: yr-par (Date in parentheses);
8. SUPPRESS MONTH: x: xmth (Date is year only);
9. TITLE OF ARTICLE: i: tit-it (Title italic)
10. ARTICLE TITLE PRESENT: x: jtitt-x (No article title);
11. JOURNAL NAME FONT: r: jttl-rm (Journal title normal);
12. TECHNICAL REPORT TITLE: b: trtit-b (Tech. report title like books);
13. JOURNAL VOLUME: b: vol-bf (Volume bold);
14. VOLUME PUNCTUATION: c: volp-com (Volume with comma);
15. PAGE NUMBERS: f: jpg-1 (Only start page number);
16. JOURNAL NAME PUNCTUATION: x: jnm-x (Space after journal);

17. PUBLISHER IN PARENTHESES: d: pub-date (Publisher and date in parentheses);
18. PUBLISHER POSITION: p: pre-pub (Publisher before chapter, pages);
19. ISBN NUMBER: isbn: (Include ISBN for books, booklets)
20. ISSN NUMBER: issn: (Include ISSN for periodicals)
21. EDITOR IN COLLECTIONS: b: edby (Booktitle, edited by ...);
22. PUNCTUATION BETWEEN SECTIONS (BLOCKS): c: blk-com (Comma between blocks);
23. ABBREVIATE WORD 'PAGES': a: pp ('Page' abbreviated);
24. ABBREVIATE WORD 'EDITORS': a: ed ('Editor' abbreviated);
25. OTHER ABBREVIATIONS: a: abr (Abbreviations);
26. ABBREVIATION FOR 'EDITION': a: ednx ('Edition' abbreviated as 'ed');
27. EDITION NUMBERS: n: ord (Numerical editions);
28. STORED JOURNAL NAMES: a: jabr (Abbreviated journal names);
29. FONT OF 'ET AL': i: etal-it (Italic et al);
30. ADDITIONAL REVTeX DATA FIELDS: r: revdata, eprint, url, url-blk (Include REVTeX data fields collaboration, eid, eprint, numpages, url)
31. NEW FONT SELECTION SCHEME: n: nfss (NFSS);
32. ADDITIONAL REVTeX DATA FIELDS: y: revdata (additional data fields);
33. REFERENCE COMPONENT TAGS: y: reference component tags;
34. URL ADDRESS: n: URL as note;

A file `aipnum.dbj` file equivalent to the following should result:

```
%\input docstrip
%\preamble
%-----
%*** REVTeX-compatible aipnum4-1.bst 2009-10-08 ***
%\endpreamble
%\postamble
%End of customized bst file
%\endpostamble
%\keepsilent
%\askforoverwritefalse
%\def\MBopts{\from{merlin.mbs}{%
% head,\MBopta}
%\from{physjour.mbs}{\MBopta}
%\from{geojour.mbs}{\MBopta}
%\from{photjour.mbs}{\MBopta}
%\from{merlin.mbs}{tail,\MBopta}}
```

```

%\def\MBopta{%
% lang, %: Use language field to switch hyphenation patterns for title
% pres,pres-bf, %: Presentation, speaker bold face
% seq-no, %: Citation order (unsorted, like unsrt.bst)
% vonx, %: Sort without von part (de la Maire after Mahone)
% nm-init,ed-au, %: Initials + surname (J. F. Smith)
% nmft,nmft-def, %: User defined author font (\bibnamefont)
% fnm-def, %: First names in user defined font (\bibnamefont)
% nmfted, %: Editors incollection like authors font
% nmand-rm, %: 'And' in normal font (JONES and JAMES)
% lab,lab-def, %: User defined citation font (\citenamefont)
% and-rm, %: Cited 'and' in normal font
% yr-par, %: Date in parentheses as (May 1993)
% date-nil-x, %: If date is empty, then do not produce the surrounding punctuation (parens, brace)
% tit-qq, %: Title and punctuation in double quotes (''Title, '' ..)
% inproceedings-chapter, %: produce pages after chapter, just as in InBook
% jtit-x, %: Title is ignored
% inproceedings-chapter, %: produce pages after chapter just as in InBook
% article-booktitle, %: format booktitle
% article-series, %: article can has series
% jtll-rm, %: Journal name normal font
% journal-address, %: Include address field (in parentheses) along with journal name
% book-bt, %: Field 'booktitle', or if absent field 'title', is book title
% thesis-title-o, %: Title is optional: no warning issued if empty
% techreport-institution-par, %: format tech report institution like book publisher
% vol-bf, %: Volume bold as {\bf vol}(num)
% vnum-x, %: Journal vol, without number as 34
% volp-com, %: Volume with comma as vol(num), ppp
% jpg-1, %: Only start page number
% book-editor-booktitle, %: Book permits empty author, produces title before editor in this case
% inbook-editor-booktitle, %: Allow using both title/booktitle, both author/editor
% bookaddress, %: Italic booktitle followed by bookaddress in roman
% num-xser, %: Allows number without series and suppresses word "number"
% number-cap, %: Capitalize word 'number' as: "Number 123"
% chapter-cap, %: Capitalize word 'chapter' as: 'Chapter 42'
% series-number, %: Series number as: 'Springer Lecture Notes No. 125'
% numser-booktitle, %: After book title and conference address, and before editors
% ser-vol, %: Series, vol. 23
% ser-rm, %: format series roman , even when used with volume
% volume-cap, %: Capitalize word 'volume', as: 'Volume 7 in Lecture Series'
% ser-ed, %: Series and volume after booktitle and before editors
% jnm-x, %: Space after journal name
% pg-bk,book-chapter-pages, %: As chapter and page: chapter 42, page 345
% pub-date, %: Publisher with address and date in parentheses (Oxford, 1994)
% ay-empty-pub-parens-x, %: eliminate parentheses altogether if nothing inside
% pre-pub, %: Publisher before volume, chapter, pages
% pre-edn, %: Edition before publisher
% pre-pub,pre-edn, %: Edition, publisher, volume, chapter, pages
% isbn, %: Include ISBN for books, booklets, etc.
% issn, %: Include ISSN for periodicals
% doi-link,doi, %: Doi forms a link to the publication, anchored to the volume or title
% edby, %: In booktitle, edited by .. (where .. is names)
% blk-com, %: Comma between blocks
% fin-endsbibitem, %: Command at end instead of period

```

```

% pp,%: 'Page' abbreviated as p. or pp.
% ed,%: 'Editor' abbreviated as ed. or eds.
% abr,%: Abbreviations of such words
% ednx,%: 'Edition' abbreviated as 'ed'
% ord,%: Numerical editions as 1st, 2nd, 3rd, etc
% jabr,%: Abbreviated journal names
% etal-it,%: Italic et al
% revdata,eprint,url,url-blk,translation,%: Include REVTeX data fields collaboration, eid, eprint
% SLACcitation,%: Produce SLACcitation field
% numpages-x,%: Do not include numpages field
% url,url-prefix-x,%: URL without prefix (default: 'URL ')
% bibinfo,%: Reference component tags like \bibinfo in the content of \bibitem
% bibfield,%: Element tags like \bibfield in the content of \bibitem
% nfss,%: Use LaTeX commands which may not work with Plain TeX
%,{
% }}
%\generate{\file{aipnum4-1.bst}{\MBopts}}
%\endbatchfile
%
```

Between the two files `aipnum.dbj` and `aipauth.dbj`, the differences are limited: `aipnum.dbj` has two lines lacking in `aipauth.dbj`:

```

% seq-no,%: Citation order (unsorted, like unsrt.bst)
% nm-init,ed-au,%: Initials + surname (J. F. Smith)
%
```

thus, the “numbered citation” bibliography is sorted by citation order, and the names are give first initial, then last name.

Likewise, `aipauth.dbj` has one line lacking in `aipnum.dbj`:

```

% nm-rev,%: Surname + comma + initials (Smith, J. F.)
%
```

Thus, the “author-year” bibliography is sorted by author name, and names are given last name first, followed by initials.

We ensure that the journal substyle has the first word in the matter by installing the (default) AIP code later on (see Section 6.25).

`\pre@bibdata` Set up to write endnotes to a .bib file; its data will be incorporated into the bibliography.

```
639 \def\pre@bibdata{\jobname\bibdata@app}%
```

`\bibsection` We define the sectioning command to use when starting the bibliography (we use `\refname`).

```
640 \def\refname{References}%
641 \def\rtx@bibsection{%
642 \@ifx@empty\refname{%
643 \par\vspace{6\p@ plus 6\p@}%
644 }{%
```

The following line has been commented out:

```

%\let\@hangfroms@section\@hang@froms
%
```

```

645 \expandafter\section\expandafter*\expandafter{\refname}%
646 \nobreaktrue
647 }%
648 }%

\bibpreamble
  \bibsep 649 \let\bibpreamble\@empty
  \newblock 650 \appdef\setup@hook{%
651 \bibsep\z@\relax
652 }%
653 \def\newblock{\ }%

\bibfont We define the font switch that applies to the body of the bibliography.
654 \appdef\setup@hook{%
655 \def\bibfont{%
656 \preprintsty@sw}{\footnotesize}%
657 \@clubpenalty\clubpenalty
658 \labelsep\z@
659 }%
660 }%
661 \let\place@bibnumber\place@bibnumber@sup

```

#### 6.4.12 Index

```

662 \newenvironment{theindex}{%
663 \columnseprule \z@
664 \columnsep 35\p@
665 \c@secnumdepth-\maxdimen
666 \onecolumngrid@push
667 \section{\indexname}%
668 \thispagestyle{plain}%
669 \parindent\z@
670 \parskip\z@ plus.3\p@\relax
671 \let\item\@idxitem
672 \onecolumngrid@pop
673 }{%
674 }%
675 %
676 \def\@idxitem{\par\hangindent 40\p@}
677 %
678 \def\subitem{\par\hangindent 40\p@ \hspace*{20\p@}}
679 %
680 \def\subsubitem{\par\hangindent 40\p@ \hspace*{30\p@}}
681 %
682 \def\indexspace{\par \vskip 10\p@ plus5\p@ minus3\p@\relax}

```

#### 6.4.13 Typesize Processing

The formatting specification for the preprint option is: Times Roman 12 pt, double spacing, with 1-inch margins on letter paper. Paragraphs indented “five spaces”. Display math on standard indent, with equation number flush right in parenthesis, with subequations roman.

That for reprint option is to format similar to the printed journal; with most journals set (approximately analyzed) 10-point, 2-column grid, letter paper.

```

683 \expandafter\def\csname rtx@aip10pt\endcsname{%
684 \let\@currname@class\@currname
685 \def\@currname{aps10pt\substyle@post}%
686 \class@info{Reading file \@currname.\substyle@ext}%
687 \input{\@currname.\substyle@ext}%
688 \let\@currname\@currname@class
689 \class@info{Overriding 10pt}%
690 \aipreprint
691 }%
692 \expandafter\def\csname rtx@aip11pt\endcsname{\csname rtx@aip12pt\endcsname}%
693 \expandafter\def\csname rtx@aip12pt\endcsname{%
694 \let\@currname@class\@currname
695 \def\@currname{aps12pt\substyle@post}%
696 \class@info{Reading file \@currname.\substyle@ext}%
697 \input{\@currname.\substyle@ext}%
698 \let\@currname\@currname@class
699 \class@info{Overriding 12pt}%
700 \aippreprint
701 }%

```

`\today` Procedure `\today` is used in the article class, but not in this document class.

```

702 \def\today{%
703 \number\day\space
704 \ifcase\month
705 \or January\or February\or March\or April\or May\or June%
706 \or July\or August\or September\or October\or November\or December%
707 \fi\space
708 \number\year
709 }%

```

## 6.5 A. Running Title

User-provided running title `\@shorttitle` to be set.

## 6.6 B. Equation numbering, figure and table numbering

Equations can be numbered throughout, or by section, with appendix equations prepended by the appendix label. Figures and tables are numbered throughout.

## 6.7 C. Title

Title page may break above abstract, within author list. Title notes are signified by superior letter followed by right parenthesis.

## 6.8 D. Author footnote

Set short line above these footnotes.

## 6.9 E. Author

Class option `superscriptaddress` is standard.

```

710 \clo@superscriptaddress

```

## **6.10 F. Affiliations**

Set italic.

## **6.11 G. Received date**

## **6.12 H. Abstract**

Single paragraph, no indent.

## **6.13 J. Lead Paragraph**

Set boldface, flush left before main text, single paragraph. Separated from text by a short centered rule.

## **6.14 K. Headings**

Use labels: ROMAN, LETTER, arabic, letter. Set ALLCAPS, boldface; Initial cap, boldface; Initial cap, bold-italic; Initial cap, italic.

Theorem, proof title followed by colon. Follow author.

## **6.15 L. Text Footnotes**

Not permitted; use endnotes.

## **6.16 M. Citations and Bibliography**

Numerical aip4-2.dtxaipnum.bst, author-year aip4-2.dtxaipauth.bst, and numbered author-year aip4-2.dtxaipnumauth.bst are the available choices. Numerical is standard, with all styles permitted in journal classes 3a and 4b.

## **6.17 N. References**

Article Title usage:

Article title required in all journals with "unpublished", "to be published", "in press" and "submitted" refs.

Exceptions:

Journal classes 1a,1b,2,4a:

Article title not allowed in published references, except in the case of "in press" or submitted" (see sample references below).

Journal class 3a:

Article title allowed but not required in author-year references (use must be consistent within a single manuscript).

Journal class 3b:

Article title required in all journal references and report references.

Journal class 4b:

Article title allowed in journal references in author-year mode.

## 6.18 O. Examples of Numerical References

## 6.19 P. References in Author-year mode

## 6.20 Q. Numbered Author-year References

## 6.21 R. Tables

Placed within text (floated), labeled with Roman numeral.

Table caption placed above table, followed by space, two double lines, space, table column headings, space, single line, table contents, two double lines.

Footnotes labeled with superior lower-case letter, set below table contents.

## 6.22 S. Figures

Placed within text (floated), labeled with arabic numbers.

Caption set below figure. A citation to be set inline, not superscripted.

## 6.23 Society defaults

After this society file is read in, we will process the `\@journal-` and `\@pointsize-` specific code. Here we define the defaults.

We select **Chaos** as the default journal substyle, because it is the most permissive in terms of bibliography and citation style, and it is formatted in two column in the reprint style.

```
711 \def\@journal@default{cha}%  
712 \def\@pointsize@default{12}%
```

## 6.24 Journal-Specific Code

For AIP journals, we supply code specific to JCP, POP, RSI, JAP, APL, CHA, POF, BMF, RSE, JMP.

### 6.24.1 jcp

A member of the journal class 1a.

```
713 \def\rtx@aipjcp{%  
714 \typeout{Using journal substyle \@journal.}%
```

Journal class 1a uses the (superscript) numerical citation style by default.

```
715 \@booleanfalse\authoryear@sw
```

End of jcp code.

```
716 }%
```

### 6.24.2 pop

A member of the journal class 1a.

```
717 \def\rtx@aipop{%  
718 \typeout{Using journal substyle \@journal.}%
```

Journal class 1a uses the (superscript) numerical citation style by default.

```
719 \@booleanfalse\authoryear@sw
```

End of pop code.

720 }%

### 6.24.3 rsi

A member of the journal class 1a.

```
721 \def\rtx@aiprsi{%  
722 \typeout{Using journal substyle \@journal.}%
```

Journal class 1a uses the (superscript) numerical citation style by default.

```
723 \@booleanfalse\authoryear@sw
```

End of rsi code.

724 }%

### 6.24.4 jap

Sole member of the journal class 1b.

No running title.

```
725 \def\rtx@aipjap{%  
726 \typeout{Using journal substyle \@journal.}%
```

Journal class 1b uses the (superscript) numerical citation style by default.

```
727 \@booleanfalse\authoryear@sw
```

```
728 \let\@runningtitle\@empty
```

End of jap code.

729 }%

### 6.24.5 apl

Sole member of the journal class 2.

No running title.

```
730 \def\rtx@aipapl{%  
731 \typeout{Using journal substyle \@journal.}%
```

Journal class 2 uses the (superscript) numerical citation style by default.

```
732 \@booleanfalse\authoryear@sw
```

```
733 \let\@runningtitle\@empty
```

End of apl code.

734 }%

### 6.24.6 apm

```
735 \def\rtx@aipapm{%  
736 \typeout{Using journal substyle \@journal.}%  
737 \@booleanfalse\authoryear@sw  
738 \let\@runningtitle\@empty  
739 }%
```

### 6.24.7 cha

Sole member of the journal class 3a.

```
740 \def\rtx@aipcha{%  
741 \typeout{Using journal substyle \@journal.}%
```

Article titles are allowed.

```
742 \@booleanfalse\aip@jtitx@sw
    End of cha code.
743 }%
```

#### 6.24.8 pof

Sole member of the journal class 3b.

```
744 \def\rtx@aippof{%
745 \typeout{Using journal substyle \@journal.}%
```

Journal class 3b uses the (superscript) numerical citation style by default. Article titles are required, so we include them if available, but if absent, we can do no more than make a warning in the .blg.

```
746 \@booleanfalse\authoryear@sw
747 \@booleanfalse\aip@jtitx@sw
    End of pof code.
748 }%
```

#### 6.24.9 bmf

A member of the journal class 4a, the Biomicrofluidics journal is single column.

```
749 \def\rtx@aipbmf{%
750 \typeout{Using journal substyle \@journal.}%
```

Journal class 4a uses the (superscript) numerical citation style by default. Journal is formatted in a single column.

```
751 \@booleanfalse\authoryear@sw
    End of bmf code.
752 }%
```

#### 6.24.10 sd

```
753 \def\rtx@aipsd{%
754 \typeout{Using journal substyle \@journal.}%
755 \@booleanfalse\authoryear@sw
756 }%
```

#### 6.24.11 cp

```
757 \def\rtx@aipcp{%
758 \typeout{Using journal substyle \@journal.}%
759 \@booleanfalse\authoryear@sw%
760 % \@booleantrue\authoryear@sw
761 \@booleanfalse\twocolumn@sw%
762 % \@booleantrue\longbibliography@sw%
763 % \@booleanfalse\aip@jtitx@sw
764 }%
```

#### 6.24.12 jor

```
765 \def\rtx@aipjor{%
766 \typeout{Using journal substyle \@journal.}%
767 \@booleantrue\authoryear@sw%
```

```

768 \@booleantrue\twoside@sw\@mparswitchfalse%
769 }%

```

### 6.24.13 rse

A member of the journal class 4a.

```

770 \def\rtx@aiprse{%
771 \typeout{Using journal substyle \@journal.}%

```

Journal class 4a uses the (superscript) numerical citation style by default.

```

772 \@booleanfalse\authoryear@sw

```

End of rse code.

```

773 }%

```

### 6.24.14 jmp

Sole member of the journal class 4b, Journal of Mathematical Physics is single column. For an example of `itemize`, see JMP\_122901.1 (48).

```

774 \def\rtx@aipjmp{%
775 \typeout{Using journal substyle \@journal.}%

```

Article titles are allowed. Journal is formatted in a single column.

```

776 \@booleanfalse\aip@jtitx@sw
777 \@booleanfalse\twocolumn@sw
778 \@booleantrue\onecolumn@sw

```

End of jmp code.

```

779 }%

```

### 6.24.15 adv

```

780 \def\rtx@aipadv{%
781 \typeout{Using journal substyle \@journal.}%
782 \@booleanfalse\authoryear@sw
783 \let\@runningtitle\@empty
784 }%

```

## 6.25 Establish AIP Defaults

`\footinbib@sw` All AIP journals invoke the `footinbib` option.

```

785 \@booleantrue\footinbib@sw

```

`\place@bibnumber` We install code that will govern the style in which `\cite` commands are formatted, `\@bibstyle` select the presentation for `\bibitems` and control the `BIBTEX` processing.

`\bibpunct` Note that a journal substyle may override these settings. Likewise, document preamble may itself invoke `\bibpunct` or `\bibliographystyle`, thereby overriding these settings and those of the journal substyle.

The numbered citations of `aipnum` and `aipauthnum` are compatible with `footinbib` and the compression and coalescing features of `natbib`, while `aipauth`'s author-year citations are not. Therefore, we de-select such options if we are selecting author-year citations.

Note on `natbib` presets: `aipnum` and `aipauthnum` uses the Chicago `\bibpunct` style; while `aipauth` uses that of Nature.

Note on `\NAT@mcite`: if not using numerical citations, we set `\NAT@mcite` to a lower value, to turn off the mcite semantics of `natbib`.

```

786 \let\old@place@bibnumber\place@bibnumber
787 \let\place@bibnumber\place@bibnumber@sup
788 \appdef\setup@hook{%
789 \authoryear@sw{%
790 \aip@jtitx@sw{%
791 \def\@bibstyle{aipauth\substyle@post}%
792 }{%
793 \def\@bibstyle{aipauth\substyle@post}%
794 }%
795 \authornum@sw{%
796 \bibpunct{}{}{,}{s}{\textsuperscript{,}}%
797 \let\onlinecite\rev@citealpnum
798 }{%
799 \bibhang10\p@
800 \bibpunct{(%
801 )}{(
802 )}; }{a}{,}{f,}%
803 \@booleanfalse\footinbib@sw
804 \let\NAT@mcite\@ne
805 \let\NAT@sort\z@
806 \def\NAT@cmprs{\z@}%
807 \let\NAT@def@citea\rtx@def@citea
808 \let\NAT@def@citea@close\rtx@def@citea@close
809 }%
810 }{%
811 \aip@jtitx@sw{%
812 \def\@bibstyle{aipnum\substyle@post}%
813 }{%
814 \def\@bibstyle{aipnum\substyle@post}%
815 }%
816 \bibpunct{}{}{,}{s}{\textsuperscript{,}}%
817 \let\onlinecite\rev@citealpnum
818 }%
819 }%
820 \def\make@footnote@endnote{%
821 \footinbib@sw{%
822 \authoryear@sw{\authornum@sw{\false@sw}{\true@sw}}{\false@sw}%
823 }{%
824 \ltx@footnote@push
825 \def\thempfn{Note\thefootnote}%
826 \let\ltx@footmark\rev@citemark
827 \let\ltx@foottext\rev@endtext
828 \appdef\class@enddocumenthook{\auto@bib}%
829 \let\printendnotes\relax
830 }%
831 }{}%
832 }%

```

`\aipreprint` We want to override `aip4-2.dtx`'s `xaps10pt.rtx`.

```

833 \def\aipreprint{%
834 }%

```

\aippreprint We want to override aip4-2.dtxaps12pt.rtx.

```
835 \def\aippreprint{%  
836 }%
```

### 6.25.1 Fixing the bug for single author/affiliation

In case of single author/affiliation no need to produce the affiliation number after the author name.

```
837 %%  
838 \xdef\t@talAU{0}% TeXSupport  
839 \def\frontmatter@author@produce@script{%  
840 \begingroup  
841 \let\@author@present\@author@present@script  
842 \frontmatterverbose@sw{\typeout{\string\frontmatter@author@produce@script:}\say\@AAC@list  
843 \let\AU@temp\@empty  
844 \@tempcnta\z@  
845 \let\AF@opr \@gobble  
846 \def\AU@opr{\@author@count\@tempcnta}%  
847 \def\CO@opr{\@collaboration@count\AU@temp\@tempcnta}%  
848 \@AAC@list%  
849 \xdef\t@talAU{the\@tempcnta}% TeXSupport  
850 \expandafter\CO@opr\@author@cleared  
851 \begingroup  
852 \frontmatter@authorformat  
853 \let\AF@opr \@affilID@def  
854 \let\AU@opr \@author@present  
855 \def\CO@opr{\@collaboration@present\AU@temp}%  
856 \set@listcomma@list\AU@temp  
857 \@AAC@list  
858 \unskip\unskip  
859 \par  
860 \endgroup  
861 \begingroup  
862 \frontmatter@above@affiliation@script  
863 \let\AFF@opr \@affil@script  
864 \@AFF@list  
865 \frontmatter@footnote@produce  
866 \par  
867 \endgroup  
868 \endgroup  
869 }%  
870 \def\doauthor#1#2#3{% TeXSupport  
871 \ignorespaces#1\unskip\@listcomma  
872 \begingroup  
873 \ifnum\t@talAU=1\else\ifnum\c@affil=\@ne\relax\else#3\fi\fi% TeXSupport  
874 \@ifempty{#2}{\endgroup}{-}{\endgroup{\ifnum\t@talAU=1\else\ifnum\c@affil=\@ne\relax\els  
875 \space \@listand  
876 }%  
877 %%
```

### 6.25.2 Page restriction for APL (removed)

This macro was installed to calculate page-length for APL articles. Appended by Ms. Sehar Tahir (Aptara) for American Institute of Physics. To impose page restrictions for APL journal at MSP stage.

```
878 %%
879 %% HISTORY
880 %% Revised page restriction to 4 pages: 05/10/2011
881 %% Tweaked the page over length message: 31/10/2011
882 %% Removed unused page restriction code: 30/09/2020
883 %%
884 \DeclareOption{no-pagerrestrict}{%
885   \class@warn{Deprecated pagerrestrict code. Option 'no-pagerrestrict' was ignored.}}%
```

End of apl pagerrestriction code.

### 6.25.3 Style updates for jmp and rse

JMP, BMF and RSE journal's to be as one column at Reprint stage

```
886 %%
887 %% JMP, BMF and RSE journal's to be as one column at Reprint stage
888 %%
889 \appdef\rtx@require@packages{%
890 \def\jnl@rse{rse}%
891 \def\jnl@jmp{jmp}%
892 \preprintsty@sw{%
893   {\ifx\@journal\jnl@jmp%
894     \onecolumn@sw{%
895       \typeout{AIP Info: \@journal\space journal style Single column, 2013/07/30}%
896     \@booleanfalse\twocolumn@sw%
897   \appdef\setup@hook{%
898     \twoside@sw{%
899       \oddsidemargin 28pt
900       \evensidemargin 0pt
901       \marginparwidth 60pt
902     }{%
903       \oddsidemargin 28pt
904       \evensidemargin 0pt
905       \marginparwidth 44pt
906     }%
907   }%
908 \marginparsep 10pt
909 \topmargin -17pt
910 \headheight 12pt
911 \headsep 25pt
912 \topskip 10pt
913 \splittopskip\topskip
914 \footskip 30pt
915 \textheight=53.5pc
916 \textwidth 33pc
917 \columnsep 10pt
918 \def\title@column#1{%
919   \minipagefootnote@init
920   \beginingroup
```

```

921 \let\@footnotetext\frontmatter@footnotetext
922 \ltx@no@footnote
923 #1%
924 \endgroup
925 \minipagefootnote@foot
926 }%
927 }{}%
928 % \fi% Curly brace
929 }

```

#### 6.25.4 Style updates for bmf and addition of new substyle sd

BMF journal to match with final layout (textheight and other page setup dimensions). Addition of new journal SD: Structural Dynamics.

```

930 %% BMF journal to match with final layout (textheight)
931 %% Addition of new journals SD: Structural Dynamics
932 %
933 \def\jnl@bmf{bmf}%
934 \def\jnl@sd{sd}%
935 \preprintsty@sw{}%
936 {%\ifx\@journal\jnl@bmf%
937 \newonecolumn@sw{%
938 \typeout{AIP Info: \@journal\space journal style Single column, 2011/08/11}%
939 \@booleanfalse\twocolumn@sw%
940 \appdef\setup@hook{%
941 \twoside@sw{%
942 \oddsidemargin 28pt
943 \evensidemargin 0pt
944 \marginparwidth 60pt
945 }{%
946 \oddsidemargin 28pt
947 \evensidemargin 0pt
948 \marginparwidth 44pt
949 }%
950 }%
951 \marginparsep 10pt
952 \topmargin -17pt
953 \headheight 12pt
954 \headsep 25pt% 25pt
955 \topskip 10pt
956 \splittopskip\topskip
957 \footskip 30pt
958 % \textheight=53.5pc
959 \textheight=54.5pc%
960 \textwidth 33pc
961 \columnsep 10pt
962 \def\title@column#1{%
963 \minipagefootnote@init
964 \begingroup
965 \let\@footnotetext\frontmatter@footnotetext
966 \ltx@no@footnote
967 #1%
968 \endgroup
969 \minipagefootnote@foot

```

```

970 }%
971 \def\adjust@abstractwidth{%
972 \parindent1em\relax
973 % \advance\leftskip.5in\relax
974 \advance\leftskip2.5pc\relax
975 \advance\rightskip2.5pc\relax
976 \@totalleftmargin\leftskip
977 \@afterheading\@afterindentfalse
978 }%
979 % \fi
980 }{}%
981 }

```

### 6.25.5 Addition of new substyle jor

Addition of new journal JOR: Journal of Rheology.

```

982 %%
983 %% Journal of Rheology (jor)
984 %%
985 \def\jnl@jor{jor}%
986 \preprintsty@sw{}%
987 {\ifx\@journal\jnl@jor%
988 \typeout{AIP Info: \@journal\space journal style Single column, 2013/10/24}%
989 \@booleanfalse\twocolumn@sw%
990 \appdef\setup@hook{%
991 \twoside@sw{%
992 \oddsidemargin 28pt
993 \evensidemargin 0pt
994 \marginparwidth 60pt
995 }{%
996 \oddsidemargin 28pt
997 \evensidemargin 0pt
998 \marginparwidth 44pt
999 }%
1000 }%
1001 \marginparsep 10pt
1002 \topmargin -17pt
1003 \headheight 12pt
1004 \headsep 25pt
1005 \topskip 10pt
1006 \splittopskip\topskip
1007 \footskip 30pt
1008 \textheight=53.5pc
1009 \textwidth 33pc
1010 \columnsep 10pt
1011 \def\title@column#1{%
1012 \minipagefootnote@init
1013 \begingroup
1014 \let\@footnotetext\frontmatter@footnotetext
1015 \ltx@no@footnote
1016 #1%
1017 \endgroup
1018 \minipagefootnote@foot
1019 }%

```

```

1020 \def\frontmatter@title@format{%
1021 \preprintsty@sw}{\Large}%
1022 \sffamily%
1023 \bfseries%
1024 \leftskip0pt plus1fill%
1025 \rightskip0pt plus1fill%
1026 \parindent\z@%
1027 %\raggedright%
1028 \parskip\z@skip%
1029 }%
1030 \def\frontmatter@@indent{%
1031 \skip@\@flushglue
1032 \@flushglue\z@ plus.3\hsize\relax
1033 \leftskip0pt plus1fill%
1034 \rightskip0pt plus1fill%
1035 \parindent\z@%
1036 %\raggedright
1037 %\advance\leftskip.5in\relax
1038 \@totalleftmargin\leftskip
1039 \@flushglue\skip@
1040 }%
1041 %\def\frontmatter@authorformat{%
1042 % \frontmatter@@indent
1043 % \sffamily
1044 }%
1045 \def\frontmatter@RRAP@format{%
1046 \addvspace{5\p@}%
1047 \small
1048 \leftskip0pt plus1fill%
1049 \rightskip0pt plus1fill%
1050 \parindent\z@%
1051 %%\raggedright
1052 %%\advance\leftskip.5in\relax
1053 \@totalleftmargin\leftskip
1054 \everypar{%
1055 \hbox\bgroup(\@gobble@leavemode@uppercase%)
1056 }%
1057 \def\par{%
1058 \@ifvmode}{%{(
1059 \unskip)\egroup\@par
1060 }%
1061 }%
1062 }%
1063 \def\frontmatter@abstractfont{%
1064 \def\frontmatter@abstractwidth{\textwidth}
1065 \def\abstractname{Synopsis}
1066 \def\frontmatter@abstractheading{%
1067 \begingroup
1068 \centering\large
1069 {\bfseries\abstractname}
1070 \par\vskip.25\baselineskip
1071 \endgroup
1072 }%
1073 \appdef\setup@hook{%

```

```

1074 \preprintsty@sw}{}%
1075 \let\refname\old@refname%\@empty
1076 }%
1077 }%
1078 %
1079 \def\ps@article{%
1080 \def\@evenhead{\let\\\heading@cr\sffamily\thepage\quad\checkindate\hfil\@runningtitle\hfil}
1081 \def\@oddhead{\let\\\heading@cr\hfil\sffamily\@runningtitle\hfil\checkindate\quad\thepage}
1082 \def\@oddfoot{}%
1083 \def\@evenfoot{}%
1084 \let\@mkboth\@gobbletwo
1085 \let\sectionmark\@gobble
1086 \let\subsectionmark\@gobble
1087 }%
1088 \def\@make@capt@title#1#2{%
1089 \@ifx@empty\float@link{\@firstofone}{\expandafter\href\expandafter{\float@link}}%
1090 {\bfseries#1}}\@caption@fignum@sep#2%
1091 }%
1092 \def\@caption@fignum@sep{{\bfseries.} }%
1093 \fi}

```

### 6.25.6 Addition of new substyle cp

Addition of new journal AIP-CP: AIP Conference Proceedings.

```

1094 %%
1095 %% AIP Conference Proceedings
1096 %%
1097 \def\jnl@cp{cp}%
1098 \preprintsty@sw}{}%
1099 {\ifx\@journal\jnl@cp%
1100 \typeout{AIP Info: \@journal\space journal style Single column, 2013/10/30}%
1101 \@booleanfalse\twocolumn@sw%
1102 \appdef\setup@hook{%
1103 \twoside@sw{%
1104 \oddsidemargin 0pt
1105 \evensidemargin 0pt
1106 \marginparwidth 60pt
1107 }{%
1108 \oddsidemargin 0pt
1109 \evensidemargin 0pt
1110 \marginparwidth 44pt
1111 }%
1112 }%
1113 \marginparsep 10pt
1114 \topmargin -29.5pt
1115 \headheight 12pt
1116 \headsep 25pt
1117 \topskip 10pt
1118 \splittopskip\topskip
1119 \footskip 30pt
1120 \textheight=53.5pc
1121 \textwidth 39pc
1122 \columnsep 10pt
1123 %%

```

```

1124 \def\title@column#1{%
1125 \minipagefootnote@init
1126 \begingroup
1127 \let\@footnotetext\frontmatter@footnotetext
1128 \ltx@no@footnote
1129 #1%
1130 \endgroup
1131 \minipagefootnote@foot
1132 }%
1133 %%
1134 \def\frontmatter@title@format{%
1135 \preprintsty@sw}{\LARGE}% \Large
1136 %\sffamily%
1137 \bfseries%
1138 \leftskip0pt plus1fill%
1139 \rightskip0pt plus1fill%
1140 \parindent\z@%
1141 %\raggedright%
1142 \parskip\z@skip%
1143 }%
1144 %%
1145 \def\frontmatter@@indent{%
1146 \skip@\@flushglue
1147 \@flushglue\z@ plus.3\hsize\relax
1148 \leftskip0pt plus1fill%
1149 \rightskip0pt plus1fill%
1150 \parindent\z@%
1151 %\raggedright
1152 %\advance\leftskip.5in\relax
1153 \@totalleftmargin\leftskip
1154 \@flushglue\skip@
1155 }%
1156 %%
1157 \def\frontmatter@RRAP@format{%
1158 \addvspace{5\p@}%
1159 \small
1160 \leftskip0pt plus1fill%
1161 \rightskip0pt plus1fill%
1162 \parindent\z@%
1163 %\raggedright
1164 %\advance\leftskip.5in\relax
1165 \@totalleftmargin\leftskip
1166 \everypar{%
1167 \hbox\bgroup(\@gobble@leavemode@uppercase%)
1168 }%
1169 \def\par{%
1170 \@ifvmode{}{%(
1171 \unskip)\egroup\@par
1172 }%
1173 }%
1174 }%
1175 \def\frontmatter@abstractfont{\small}%
1176 \def\frontmatter@abstractwidth{\textwidth}
1177 \def\@keys@name{{\small\bfseries Keywords:} }%

```

```

1178 \def\@pacs@name{{\small\bfseries PACS:} }%
1179 \def\abstractname{Abstract.}
1180 %%
1181 \def\frontmatter@abstractheading{%
1182 \begingroup
1183 % \centering\large
1184 \small%
1185 {\bfseries\abstractname}
1186 % \par\vskip.25\baselineskip
1187 \endgroup
1188 }%
1189 %%
1190 \def\adjust@abstractwidth{%
1191 \parindent1em\relax
1192 % \advance\leftskip.5in\relax
1193 \@totalleftmargin\leftskip
1194 \@afterheading\@afterindentfalse
1195 \small%
1196 }%
1197 %%
1198 \def\frontmatter@PACS@format{%
1199 % \addvspace{11\p@}%
1200 \adjust@abstractwidth
1201 % \parskip\z@skip
1202 \samepage
1203 }%
1204 \def\frontmatter@keys@format{%
1205 \addvspace{11\p@}%
1206 \adjust@abstractwidth
1207 \parskip\z@skip
1208 \samepage
1209 }%
1210 %%
1211 \def\frontmatter@authorformat{%
1212 \frontmatter@@indent
1213 \Large%
1214 % \sffamily
1215 \vskip.5\baselineskip%
1216 }%
1217 %%
1218 %%
1219 \def\titleblock@produce{%
1220 \begingroup
1221 \ltx@footnote@pop
1222 \def\@mpfn{mpfootnote}%
1223 \def\thempfn{\thempfootnote}%
1224 \c@mpfootnote\z@
1225 \let\@makefnmark\frontmatter@makefnmark
1226 \frontmatter@setup
1227 \thispagestyle{titlepage}\label{FirstPage}%
1228 \frontmatter@title@produce
1229 \groupauthors@sw{%
1230 \frontmatter@author@produce@group
1231 }-%

```

```

1232 \frontmatter@author@produce@script
1233 }%
1234 \frontmatter@RRAPformat{%
1235 \expandafter\produce@RRAP\expandafter{\@date}%
1236 \expandafter\produce@RRAP\expandafter{\@received}%
1237 \expandafter\produce@RRAP\expandafter{\@revised}%
1238 \expandafter\produce@RRAP\expandafter{\@accepted}%
1239 \expandafter\produce@RRAP\expandafter{\@published}%
1240 }%
1241 \frontmatter@abstract@produce
1242 \@ifx@empty\@keywords{ }{%
1243 \@keywords@produce\@keywords
1244 }%
1245 \@ifx@empty\@pacs{ }{%
1246 \@pacs@produce\@pacs
1247 }%
1248 \par
1249 \frontmatter@finalspace
1250 \endgroup
1251 }%
1252 %%
1253 \appdef\setup@hook{%
1254 \preprintsty@sw{ }{%
1255 \let\refname\old@refname%\@empty
1256 }%
1257 }%
1258 %%
1259 \def\ps@article{%
1260 % \def\@evenhead{\let\\heading@cr\thepage\quad\checkindate\hfil{\leftmark}}%
1261 % \def\@oddhead{\let\\heading@cr{\rightmark}\hfil\checkindate\quad\thepage}%
1262 \def\@evenhead{ }%
1263 \def\@oddhead{ }%
1264 \def\@oddfoot{ }%
1265 \def\@evenfoot{ }%
1266 \let\@mkboth\markboth
1267 \let\sectionmark\@gobble
1268 \let\subsectionmark\@gobble
1269 }%
1270 %%
1271 \def\@make@capt@title#1#2{%
1272 \@ifx@empty\float@link{\@firstofone}{\expandafter\href\expandafter{\float@link}}%
1273 {\bfseries#1}\@caption@fignum@sep#2%
1274 }%
1275 \def\@caption@fignum@sep{{\bfseries.} }%
1276 \setcounter{secnumdepth}{0}
1277 \def\section{\@startsection{section}{1}{\z@}{-0.8cm \@plus-1ex \@minus -.2ex}{0.5cm}{\normal
1278 \def\subsection{\@startsection{subsection}{2}{\z@}{-.8cm \@plus-1ex \@minus -.2ex}{.5cm}{\no
1279 \def\subsubsection{\@startsection{subsubsection}{3}{\z@}{-.8cm \@plus-1ex \@minus -.2ex}{.5c
1280 %
1281 \def\BIBsection{\@startsection{section}{1}{\z@}{-0.8cm \@plus-1ex \@minus -.2ex}{0.5cm}{\nor
1282 \def\figurename{FIGURE}
1283 %%
1284 \newcommand\rtx@myciteonline[3]{%
1285 \ifNAT@swa

```

```

1286 \leavevmode
1287 \unskip
1288 % \textsuperscript{\normalfont#1}% TeXSupport
1289 \space[{\normalfont#1}]%
1290 \if*#3* \else \ (#3) \fi
1291 \else
1292 #1%
1293 \fi
1294 \endgroup
1295 }%
1296 %%
1297 \appdef\setup@hook{%
1298 \authoryear@sw{}{%
1299 \def\NAT@cmprs{\z@}
1300 % \let\rtx@citesuper\rtx@mycitesuper%
1301 \let\NAT@citesuper\rtx@myciteonline%\rtx@citesuper
1302 \let\place@bibnumber\old@place@bibnumber
1303 \gdef\place@bibnumber@online#1{{#1}.\hskip5pt}%
1304 \let\place@bibnumber\place@bibnumber@online
1305 \def\NAT@spacechar{}%
1306 \def\NAT@conj{and\ }%
1307 \bibpunct{}{}{, }{s}{}{\textsuperscript{,}}% TeXSupport
1308 }%
1309 }%
1310 %%
1311 \def\rtx@mybibsection{%
1312 \@ifx@empty\refname{%
1313 \par\vspace{6\p@ plus 6\p@}%
1314 }{%
1315 \expandafter\BIBsection\expandafter*\expandafter{\refname}%
1316 \@nobreaktrue
1317 }%
1318 }%
1319 \let\bibsection\rtx@mybibsection%
1320 \fi}
1321 %

```

### 6.25.7 pof

This macro modifies the reprint output of POF journal to single column.

```

1322 %% POF journal to be one column at Reprint stage
1323 %%
1324 %% HISTORY
1325 %% Further corrected the text area and margins to closely match Print output: 23/04/2012
1326 \def\jnl@pof{pof}%
1327 \preprintsty@sw{}%
1328 {\ifx@journal\jnl@pof%
1329 \typeout{AIP Info: \@journal\space journal style Single column, 2011/08/11}%
1330 \@booleanfalse\twocolumn@sw%
1331 \appdef\setup@hook{%
1332 \twoside@sw{%
1333 \oddsidemargin 28pt
1334 \evensidemargin 0pt
1335 \marginparwidth 60pt

```

```

1336 }{%
1337 \oddsidemargin 28pt
1338 \evensidemargin 0pt
1339 \marginparwidth 44pt
1340 }%
1341 }%
1342 \marginparsep 10pt
1343 \topmargin -17pt
1344 \headheight 12pt
1345 \headsep 25pt
1346 \topskip 10pt
1347 \splittopskip\topskip
1348 \footskip 30pt
1349 \textheight=53.5pc
1350 \textwidth 33pc
1351 \columnsep 10pt
1352 \def\title@column#1{%
1353 \minipagefootnote@init
1354 \begingroup
1355 \let\@footnotetext\frontmatter@footnotetext
1356 \ltx@no@footnote
1357 #1%
1358 \endgroup
1359 \minipagefootnote@foot
1360 }%
1361 \fi}
1362 }%
End of pof code.
1363 %</package>

```

## 7 AAPM: The Society Journals Style (mph sub-style)

The file `aapm.rtx` is read in by the `revtex4` document class for applying the journal specific changes. User should use `[aapm,mph]` for applying the required updates.

```

1364 %<*aapm>
Protect this file from being read in by anything but REVTeX.
1365 \ifx\undefined\substyle@ext
1366 \def\@tempa{%
1367 \endinput
1368 \GenericWarning{I must be read in by REVTeX! (Bailing out)}}%
1369 }%
1370 \expandafter\else
1371 \def\@tempa{%
1372 \expandafter\fi\@tempa
1373 \class@info{RevTeX society AAPM selected}%
1374 \DeclareOption{mph}{\change@journal{mph}}%
1375 %%
1376 \@booleantrue\longbibliography@sw

```

```

1377 \@booleanfalse\authoryear@sw
1378 \def\@bibstyle{aapmrev\substyle@post}%
1379 \appdef\@bibdataout@rev{\@bibdataout@aapm}%
1380 \def\@bibdataout@aapm{%
1381 \immediate\write\@bibdataout{%
1382 @CONTROL{%
1383 aapm41Control%
1384 \longbibliography@sw{%
1385 ,pages="1",title="0"%
1386 }{%
1387 ,pages="0",title=""%
1388 }%
1389 }%
1390 }%
1391 \if@filesw
1392 \immediate\write\@auxout{\string\citation{aapm41Control}}%
1393 \fi
1394 }%
1395 \appdef\setup@hook{%
1396 \lengthcheck@sw{%
1397 \RequirePackage{times}}%
1398 \frenchspacing%
1399 }{%
1400 }
1401 \@booleantrue\preprintsty@sw
1402 \@booleantrue\showPACS@sw
1403 \@booleantrue\showKEYS@sw
1404 \appdef\setup@hook{%
1405 \preprintsty@sw}{%
1406 \let\refname\@empty
1407 }%
1408 }%
1409 \appdef\setup@hook{%
1410 \preprintsty@sw{%
1411 \ps@preprint
1412 }{%
1413 \ps@article
1414 }%
1415 }%
1416 \def\ps@preprint{%
1417 \def\@oddhead{\@runningtitle\hfil}%
1418 \def\@evenhead{\@runningtitle\hfil}%
1419 \def\@oddfirst{\hfil\thepage\quad\checkindate\hfil}%
1420 \def\@evenfirst{\hfil\thepage\quad\checkindate\hfil}%
1421 \let\@mkboth\@gobbletwo
1422 \let\sectionmark\@gobble
1423 \let\subsectionmark\@gobble
1424 }%
1425 \def\ps@article{%
1426 \def\@evenhead{\let\\heading@cr\thepage\quad\checkindate\hfil\@runningtitle}%
1427 \def\@oddhead{\let\\heading@cr\@runningtitle\hfil\checkindate\quad\thepage}%
1428 \def\@oddfirst{}%
1429 \def\@evenfirst{}%
1430 \let\@mkboth\@gobbletwo

```

```

1431 \let\sectionmark@gobble
1432 \let\subsectionmark@gobble
1433 }%
1434 \def\@runningtitle{\@shorttitle}%
1435 \renewenvironment{titlepage}{%
1436 \let\wastwocol@sw\twocolumn@sw
1437 \onecolumngrid
1438 \newpage
1439 \thispagestyle{titlepage}%
1440 \c@page\z@% article sets this to one not zero???
1441 }{%
1442 \wastwocol@sw{\twocolumngrid}{\newpage}%
1443 }%
1444 \let\@fnsymbol@latex\@fnsymbol
1445 \let\@fnsymbol\@alph
1446 \def\adjust@abstractwidth{%
1447 \parindent1em\relax
1448 \advance\leftskip.5in\relax
1449 \@totalleftmargin\leftskip
1450 \preprintsty@sw{\rightskip.14\hsize\relax}
1451 \@afterheading\@afterindentfalse
1452 }%
1453 \def\frontmatter@abstractheading{%
1454 \def\frontmatter@abstractfont{%
1455 \adjust@abstractwidth
1456 }%
1457 \def\frontmatter@postabstractspace{1\baselineskip}
1458 \def\frontmatter@finalspace{\addvspace{28\p@}}
1459 \appdef\setup@hook{%
1460 \preprintsty@sw{%
1461 \@booleantrue\titlepage@sw
1462 \let\section\section@preprintsty
1463 \let\subsection\subsection@preprintsty
1464 \let\subsubsection\subsubsection@preprintsty
1465 }{}}%
1466 }%
1467 \def\frontmatter@@indent{%
1468 \skip@\@flushglue
1469 \preprintsty@sw{\@flushglue\z@ plus.3\hsize\relax}%
1470 {\@flushglue.14\hsize\relax}
1471 \raggedright
1472 \advance\leftskip.5in\relax
1473 \@totalleftmargin\leftskip
1474 \@flushglue\skip@
1475 }%
1476 \def\frontmatter@authorformat{%
1477 \frontmatter@@indent
1478 \sffamily
1479 }%
1480 \renewcommand*\email[1][Electronic mail: ]{\begingroup\sanitize@url\@email{#1}}%
1481 \def\frontmatter@above@affilgroup{\par\addvspace{6\p@}}%
1482 }%
1483 \def\frontmatter@above@affiliation@script{%
1484 \frontmatter@@indent

```

```

1485 }%
1486 \def\frontmatter@above@affiliation{%
1487 }%
1488 \def\frontmatter@affiliationfont{%
1489 \frontmatter@oindent
1490 \preprintsty@sw}{\small}%
1491 \it
1492 }%
1493 \def\frontmatter@collaboration@above{%
1494 }%
1495 \def\frontmatter@setup{%
1496 \normalfont
1497 }%
1498 \def\frontmatter@title@above{\advvspace{6\p@}}%
1499 \def\frontmatter@title@format{%
1500 \preprintsty@sw}{\Large}%
1501 \sffamily
1502 \bfseries
1503 \raggedright
1504 \parskip\z@skip
1505 }%
1506 \def\frontmatter@title@below{\advvspace{7.5\p@}}%
1507 \def\author@parskip{3\p@}%
1508 \booleanfalse\altaffilletter@sw
1509 \def\frontmatter@makefnmark{%
1510 \@textsuperscript{%
1511 \normalfont\@thefnmark%(
1512 )%
1513 }%
1514 }%
1515 \def\frontmatter@authorbelow{%
1516 \advvspace{3\p@}%
1517 }%
1518 \let\affil@cutoff\tw@
1519 \def\frontmatter@RRAP@format{%
1520 \advvspace{2\p@}%
1521 \raggedright
1522 \advance\leftskip.5in\relax
1523 \@totalleftmargin\leftskip
1524 \preprintsty@sw}{\advance\rightskip.14\hsize\relax}
1525 \everypar{%
1526 \hbox\bgroup(\@gobble@leavemode@uppercase%)
1527 }%
1528 \def\par{%
1529 \@ifvmode}{-}{(
1530 \unskip)\egroup\@par
1531 }%
1532 }%
1533 }%
1534 \def\punct@RRAP{;\egroup\ \hbox\bgroup}%
1535 \def\@gobble@leavemode@uppercase#1#2{\expandafter\MakeTextUppercase}%
1536 \def\frontmatter@PACS@format{%
1537 \advvspace{11\p@}%
1538 \adjust@abstractwidth

```

```

1539 \parskip\z@skip
1540 \samepage
1541 }%
1542 \def\frontmatter@keys@format{%
1543 \adjust@abstractwidth
1544 \samepage
1545 }%
1546 \def\ps@titlepage{%
1547 \def\@oddhead{%
1548 \@runningtitle
1549 \hfill
1550 \produce@preprints\@preprint
1551 }%
1552 \let\@evenhead\@oddhead
1553 \def\@oddfoot{%
1554 \hb@xt@\z@{\byrevtex\hss}%
1555 \hfil
1556 \preprintsty@sw{\thepage}{}%
1557 \quad\checkindate
1558 \hfil
1559 }%
1560 \let\@evenfoot\@oddfoot
1561 }%
1562 \def\byrevtex{\byrevtex@sw{Typeset by REV\TeX and AAPM}{}}%
1563 \def\produce@preprints#1{%
1564 \preprint@sw{%
1565 \vtop to \z@{%
1566 \def\baselinestretch{1}%
1567 \small
1568 \let\preprint\preprint@count
1569 \count@\z@#1\@ifnum{\count@>\tw@}{}%
1570 \hbox{%
1571 \let\preprint\preprint@hlist
1572 #1\setbox\z@\lastbox
1573 }%
1574 }{%
1575 \let\preprint\preprint@cr
1576 \halign{\hfil##\cr#1\crr}%
1577 \par
1578 \vss
1579 }%
1580 }%
1581 }{}%
1582 }%
1583 \def\preprint@cr#1{#1\cr}%
1584 \def\preprint@count#1{\advance\count@\@one}%
1585 \def\preprint@hlist#1{#1\hbox{, }}%
1586 \newenvironment{Lead@inParagraph}{%
1587 \par
1588 \bfseries
1589 \@afterheading\@afterindentfalse
1590 }{%
1591 \par
1592 \hb@xt@\hsize{\hfil\leaders\hrule\hfil\leaders\hrule\hfil\hfil}%

```

```

1593 }%
1594 \appdef\frontmatter@init{%
1595 \let@environment{quotation@ltx}{quotation}%
1596 \let@environment{quotation}{Lead@inParagraph}%
1597 }%
1598 \appdef\@startsection@hook{%
1599 \let@environment{quotation}{quotation@ltx}%
1600 }%
1601 \def\secnums@rtx{%
1602 \@ifxundefined\thepart{%
1603 \def\thepart {\Roman{part}}}%
1604 }{}%
1605 \@ifxundefined\thesection{%
1606 \def\thesection {\Roman{section}}}%
1607 \def\p@section {}%
1608 }{}%
1609 \@ifxundefined\thesubsection{%
1610 \def\thesubsection {\thesection.\Alph{subsection}}}%
1611 \def\p@subsection {}%
1612 }{}%
1613 \@ifxundefined\thesubsubsection{%
1614 \def\thesubsubsection {\thesubsection.\arabic{subsubsection}}}%
1615 \def\p@subsubsection {}%
1616 }{}%
1617 \@ifxundefined\theparagraph{%
1618 \def\theparagraph {\thesubsubsection.\alph{paragraph}}}%
1619 \def\p@paragraph {}%
1620 }{}%
1621 \@ifxundefined\thesubparagraph{%
1622 \def\thesubparagraph {\theparagraph.\arabic{subparagraph}}}%
1623 \def\p@subparagraph {}%
1624 }{}%
1625 }%
1626 \def\@secntformat#1{\csname the#1\endcsname.\hskip0.5em\relax}%
1627 \def\@hang@from#1#2#3{\#1#2#3}%
1628 \def\section{%
1629 \@startsection
1630 {section}%
1631 {1}%
1632 {\z@}%
1633 {1.5\baselineskip \@plus1ex \@minus .2ex}%
1634 {.5\baselineskip}%
1635 {}%
1636 \normalfont
1637 \sffamily
1638 \bfseries
1639 \raggedright
1640 }%
1641 }%
1642 \def\@hangfrom@section#1#2#3{\@hangfrom{#1#2}\MakeTextUppercase{#3}}%
1643 \def\@hangfroms@section#1#2{\#1\MakeTextUppercase{#2}}%
1644 \def\subsection{%
1645 \@startsection
1646 {subsection}%

```

```

1647     {2}%
1648     {\z@}%
1649     {1.5\baselineskip \@plus1ex \@minus .2ex}%
1650     {.5\baselineskip}%
1651     {%
1652     \normalfont
1653     \fontsize{9.5}{12}
1654     \sffamily
1655     \bfseries
1656     \raggedright
1657 }%
1658 }%
1659 \def\subsubsection{%
1660   \@startsection
1661     {subsubsection}%
1662     {3}%
1663     {\z@}%
1664     {1.5\baselineskip \@plus1ex \@minus .2ex}%
1665     {.5\baselineskip}%
1666     {%
1667     \normalfont
1668     \fontsize{9.5}{12}
1669     \sffamily
1670     \bfseries
1671     \itshape
1672     \raggedright
1673 }%
1674 }%
1675 \def\paragraph{%
1676   \@startsection
1677     {paragraph}%
1678     {4}%
1679     {\parindent}%
1680     {\z@}%
1681     {-1em}%
1682     {\normalfont\normalsize\itshape}%
1683 }%
1684 \def\subparagraph{%
1685   \@startsection
1686     {subparagraph}%
1687     {5}%
1688     {\parindent}%
1689     {3.25ex \@plus1ex \@minus .2ex}%
1690     {-1em}%
1691     {\normalfont\normalsize\bfseries}%
1692 }%
1693 \def\section@preprintsty{%
1694   \@startsection
1695     {section}%
1696     {1}%
1697     {\z@}%
1698     {0.8cm \@plus1ex \@minus .2ex}%
1699     {0.5cm}%
1700     {%

```

```

1701     \normalfont
1702     \bfseries
1703     \raggedright
1704     }%
1705 }%
1706 \def\subsection@preprintsty{%
1707   \@startsection
1708     {subsection}%
1709     {2}%
1710     {\z@}%
1711     {.8cm \@plus1ex \@minus .2ex}%
1712     {.5cm}%
1713     {}%
1714     \normalfont
1715     \bfseries
1716     \raggedright
1717     }%
1718 }%
1719 \def\subsubsection@preprintsty{%
1720   \@startsection
1721     {subsubsection}%
1722     {3}%
1723     {\z@}%
1724     {.8cm \@plus1ex \@minus .2ex}%
1725     {.5cm}%
1726     {}%
1727     \normalfont
1728     \itshape\bfseries
1729     \raggedright
1730     }%
1731 }%
1732 \let\frontmatter@footnote@produce\frontmatter@footnote@produce@endnote
1733 \def\@pnumwidth{1.55em}
1734 \def\@tocrmarg {2.55em}
1735 \def\@dotsep{2}
1736 \def\ltxu@dotsep{4.5pt}
1737 \setcounter{tocdepth}{3}
1738 \def\tableofcontents{%
1739   \addtocontents{toc}{\string\tocdepth@munge}%
1740   \print@toc{toc}%
1741   \addtocontents{toc}{\string\tocdepth@restore}%
1742 }%
1743 \def\tocdepth@munge{%
1744   \let\l@section@saved\l@section
1745   \let\l@section\@gobble@tw@
1746 }%
1747 \def\@gobble@tw@#1#2{%}
1748 \def\tocdepth@restore{%
1749   \let\l@section\l@section@saved
1750 }%
1751 \def\l@part#1#2{\addpenalty{\@secpenalty}}%
1752 \begingroup
1753   \set@tocdim@pagenum{#2}%
1754   \parindent \z@

```

```

1755 \rightskip\tocleft@pagenum plus 1fil\relax
1756 \skip@\parfillskip\parfillskip\z@
1757 \addvspace{2.25em plus\p@}%
1758 \large \bf %
1759 \leavevmode\ignorespaces#1\unskip\nobreak\hskip\skip@
1760 \hb@xt@\rightskip{\hfil\unhbox\z@}\hskip-\rightskip\hskip\z@skip
1761 \par
1762 \nobreak %
1763 \endgroup
1764 }%
1765 \def\tocleft@{\z@}%
1766 \def\tocdim@min{5\p@}%
1767 \def\l@section{%
1768 \l@sections{}{section}% Implicit #3#4
1769 }%
1770 \def\l@f@section{%
1771 \addpenalty{\@secpenalty}%
1772 \addvspace{1.0em plus\p@}%
1773 \bf
1774 }%
1775 \def\l@subsection{%
1776 \l@sections{section}{subsection}% Implicit #3#4
1777 }%
1778 \def\l@subsubsection{%
1779 \l@sections{subsection}{subsubsection}% Implicit #3#4
1780 }%
1781 \def\l@paragraph#1#2{%
1782 \def\l@subparagraph#1#2{%
1783 \let\toc@pre\toc@pre@auto
1784 \let\toc@post\toc@post@auto
1785 \def\listoffigures{\print@toc{lof}}%
1786 \def\l@figure{\@dottedtocline{1}{1.5em}{2.3em}}
1787 \def\listoftables{\print@toc{lot}}%
1788 \let\l@table\l@figure
1789 \def\figurename{\textsc{Fig.}}
1790 \def\tablename{\textsc{Table}}
1791 \long\def\@makecaption#1#2{%
1792 \par
1793 \vskip\abovcaptionskip
1794 \begingroup
1795 \preprintsty@sw{\small}{\footnotesize}\rmfamily
1796 \sbox\@tempboxa{%
1797 \let\\heading@cr
1798 \@make@capt@title{#1}{#2}%
1799 }%
1800 \@ifdim{\wd\@tempboxa >\hsize}{%
1801 \begingroup
1802 \samepage
1803 \flushing
1804 \let\footnote\@footnotemark@gobble
1805 \@make@capt@title{#1}{#2}\par
1806 \endgroup
1807 }{%
1808 \global \@minipagefalse

```

```

1809     \hb@xt@{hsize}{\hfil\unhbox\@tempboxa\hfil}%
1810   }%
1811   \endgroup
1812   \vskip\belowcaptionskip
1813 }%
1814 \def\caption@fignum@sep{\nobreak\hskip.5em plus.2em\ignorespaces}%
1815 \@booleanfalse\raggedcolumn@sw
1816 \def\table@hook{\preprintsty@sw{\small}{\footnotesize}}%
1817 \def\tableleft@skip@float{\z@ plus\hsize}%
1818 \def\tablemid@skip@float{\@flushglue}%
1819 \def\tableright@skip@float{\z@ plus\hsize}%
1820 \def\array@row@pre@float{\hline\hline\noalign{\vskip\doublerulesep}}%
1821 \def\array@row@pst@float{\noalign{\vskip\doublerulesep}\hline\hline}%
1822 \def\@makefntext#1{%
1823   \def\baselinestretch{1}%
1824   \leftskip1em%
1825   \parindent1em%
1826   \noindent
1827   \nobreak\hskip-\leftskip
1828   \hb@xt@\leftskip{%
1829     \hss\@makefnmark\ %
1830   }%
1831   #1%
1832   \par
1833 }%
1834 \prepdef\appendix{%
1835   \par
1836   \let\@hangfrom@section\@hangfrom@appendix
1837   \let\@sectioncntformat\@appendixcntformat
1838 }%
1839 \def\@hangfrom@appendix#1#2#3{%
1840   #1%
1841   \@ifempty{#2}{%
1842     #3%
1843   }{%
1844     #2\@ifempty{#3}{-:\ #3}%
1845   }%
1846 }%
1847 \def\@hangfroms@appendix#1#2{%
1848   #1#2%
1849 }%
1850 \def\@appendixcntformat#1{\appendixname\ \csname the#1\endcsname}%
1851 \def\pre@bibdata{\jobname\bibdata@app}%
1852 \def\refname{References}%
1853 \def\rtx@bibsection{%
1854   \@ifxempty\refname{%
1855     \par\vspace{6\p@ plus 6\p@}%
1856   }{%
1857     \expandafter\section\expandafter*\expandafter{\refname}%
1858     \@nobreaktrue
1859   }%
1860 }%
1861 \let\bibpreamble\@empty
1862 \appdef\setup@hook{%

```

```

1863 \bibsep\z@\relax
1864 }%
1865 \def\newblock{\ }%
1866 \appdef\setup@hook{%
1867 \def\bibfont{%
1868 \preprintsty@sw}{\footnotesize}%
1869 \@clubpenalty\clubpenalty
1870 \labelsep\z@
1871 }%
1872 }%
1873 \let\place@bibnumber\place@bibnumber@sup
1874 \newenvironment{theindex}{%
1875 \columnseprule \z@
1876 \columnsep 35\p@
1877 \c@secnumdepth-\maxdimen
1878 \onecolumngrid@push
1879 \section{\indexname}%
1880 \thispagestyle{plain}%
1881 \parindent\z@
1882 \parskip\z@ plus.3\p@\relax
1883 \let\item\@idxitem
1884 \onecolumngrid@pop
1885 }{%
1886 }%
1887 \def\@idxitem{\par\hangindent 40\p@}
1888 \def\subitem{\par\hangindent 40\p@ \hspace*{20\p@}}
1889 \def\subsubitem{\par\hangindent 40\p@ \hspace*{30\p@}}
1890 \def\indexspace{\par \vskip 10\p@ plus5\p@ minus3\p@\relax}
1891 \expandafter\def\csname rtx@aapm10pt\endcsname{%
1892 \let\@currname@class\@currname
1893 \def\@currname{aps10pt\substyle@post}%
1894 \class@info{Reading file \@currname.\substyle@ext}%
1895 \input{\@currname.\substyle@ext}%
1896 \let\@currname\@currname@class
1897 \class@info{Overriding 10pt}%
1898 \aapmpreprint
1899 }%
1900 \expandafter\def\csname rtx@aapm11pt\endcsname{\csname rtx@aapm12pt\endcsname}%
1901 \expandafter\def\csname rtx@aapm12pt\endcsname{%
1902 \let\@currname@class\@currname
1903 \def\@currname{aps12pt\substyle@post}%
1904 \class@info{Reading file \@currname.\substyle@ext}%
1905 \input{\@currname.\substyle@ext}%
1906 \let\@currname\@currname@class
1907 \class@info{Overriding 12pt}%
1908 \aapmpreprint
1909 }%
1910 \def\today{%
1911 \number\day\space
1912 \ifcase\month
1913 \or January\or February\or March\or April\or May\or June%
1914 \or July\or August\or September\or October\or November\or December%
1915 \fi\space
1916 \number\year

```

```

1917 }%
1918 \@booleantrue\groupauthors@sw
1919 \@booleanfalse\@affils@sw
1920 \@booleantrue\runinaddress@sw
1921 \def\@journal@default{mph}%
1922 \def\@pointsize@default{12}%
1923 \appdef\setup@hook{%
1924   \preprintsty@sw}{%
1925     \def\normalsize{%
1926       \@setfontsize\normalsize\@xpt{12}%
1927       \abovedisplayskip 6\p@ plus2\p@ minus5\p@
1928       \belowdisplayskip \abovedisplayskip
1929       \abovedisplayshortskip \abovedisplayskip
1930       \belowdisplayshortskip \abovedisplayskip
1931       \let\@listi\@listI
1932     }%
1933     \def\small{%
1934       \@setfontsize\small\@ixpt{11}%
1935       \abovedisplayskip 8.5\p@ \@plus3\p@ \@minus4\p@
1936       \belowdisplayskip \abovedisplayskip
1937       \abovedisplayshortskip \z@ \@plus2\p@
1938       \belowdisplayshortskip 4\p@ \@plus2\p@ \@minus2\p@
1939     \def\@listi{%
1940       \leftmargin\leftmargini
1941       \topsep 4\p@ \@plus2\p@ \@minus2\p@
1942       \parsep 2\p@ \@plus\p@ \@minus\p@
1943       \itemsep \parsep
1944     }%
1945     }%
1946     \def\Large{%
1947       \@setfontsize\Large\@xivpt{16pt}%
1948     }%
1949     \def\@listI{%
1950       \leftmargin\leftmargini
1951       \parsep 4\p@ plus2\p@ minus\p@
1952       \topsep 8\p@ plus2\p@ minus4\p@
1953       \itemsep\z@
1954     }%
1955     \textheight = 694.0\p@
1956   }%
1957 }%
1958 \def\rtx@aapmmph{%
1959   \typeout{Using journal substyle \@journal.}%
1960   \@booleanfalse\authoryear@sw%
1961   \input{fleqn.clo}%
1962   \PassOptionsToPackage{fleqn}{amsmath}%
1963   \AtBeginDocument{\mathindent12pt\relax}%
1964 }%
1965 \appdef\setup@hook{%
1966   \bibpunct{}{}{,}{s}{}{\textsuperscript{,}}%
1967   \let\onlinecite\rev@citalpnum
1968 }%
1969 \@booleantrue\footinbib@sw
1970 \let\place@bibnumber\place@bibnumber@sup

```

```

1971 \appdef\setup@hook{%
1972 \footinbib@sw{}}{%
1973 \class@warn{Citations are superscript numbers: footnotes must be endnotes; changing to tha
1974 \@booleantrue\footinbib@sw
1975 }%
1976 }%
1977 \def\present@bibnote#1#2{%
1978 \item[%
1979 \textsuperscript{%
1980 \normalfont%
1981 \Hy@raisedlink{\hyper@anchorstart{frontmatter.#1}\hyper@anchorend}}%
1982 \begingroup%
1983 \csname c@\@mpfn\endcsname#1\relax%
1984 \frontmatter@thefootnote%
1985 )\endgroup%
1986 }%
1987 ]#2\par%
1988 }%
1989 \def\make@footnote@endnote{%
1990 \footinbib@sw{%
1991 \ltx@footnote@push
1992 \def\thempfn{Note\thefootnote}%
1993 \let\ltx@footmark\rev@citemark
1994 \let\ltx@foottext\rev@endtext
1995 \appdef\class@enddocumenthook{\auto@bib}%
1996 \let\printendnotes\relax
1997 }{}%
1998 }%
1999 \def\aaampreprint{%
2000 }%
2001 \def\aaampreprint{%
2002 }%
2003 %</aaamp>

```

## 8 SOR: The Society Journals Style (jor substyle)

The file `sor.rtx` is read in by the `revtex4` document class for applying the journal specific changes. User should use `[sor,jor]` for applying the required updates.

```
2004 %<*sor>
```

Protect this file from being read in by anything but REVTeX.

```

2005 \ifx\undefined\substyle@ext
2006 \def\@tempa{%
2007 \endinput
2008 \GenericWarning{I must be read in by REVTeX! (Bailing out)}%
2009 }%
2010 \expandafter\else
2011 \def\@tempa{%
2012 \expandafter\fi\@tempa
2013 \class@info{RevTeX society AIP selected}%
2014 %%
2015 \DeclareOption{jor}{\change@journal{jor}}%

```

2016 \def\adv{AIP Advances}%  
2017 \def\ao{Appl.\ Opt.}%  
2018 \def\ap{Appl.\ Phys.}%  
2019 \def\apl{Appl.\ Phys.\ Lett.}%  
2020 \def\apm{Appl.\ Phys.\ Lett.\ Mater.}%  
2021 \def\apj{Astrophys.\ J.}%  
2022 \def\bell{Bell Syst.\ Tech.\ J.}%  
2023 \def\bmf{Biomicrofluidics}%  
2024 \def\cha{Chaos}%  
2025 \def\jqe{IEEE J.\ Quantum Electron.}%  
2026 \def\assp{IEEE Trans.\ Acoust.\ Speech Signal Process.}%  
2027 \def\aprop{IEEE Trans.\ Antennas Propag.}%  
2028 \def\mtt{IEEE Trans.\ Microwave Theory Tech.}%  
2029 \def\iovs{Invest.\ Ophthalmol.\ Vis.\ Sci.}%  
2030 \def\jcp{J.\ Chem.\ Phys.}%  
2031 \def\jap{J.\ Appl.\ Phys.}%  
2032 \def\jmp{j.\ Math.\ Phys.}%  
2033 \def\jmo{J.\ Mod.\ Opt.}%  
2034 \def\josa{J.\ Opt.\ Soc.\ Am.}%  
2035 \def\josaa{J.\ Opt.\ Soc.\ Am.\ A}%  
2036 \def\josab{J.\ Opt.\ Soc.\ Am.\ B}%  
2037 \def\jpp{J.\ Phys.\ (Paris)}%  
2038 \def\jpr{j.\ Phys.\ Chem.\ Ref.\ Data}%  
2039 \def\ltp{Low.\ Temp.\ Phys.}%  
2040 \def\nat{Nature (London)}%  
2041 \def\oc{Opt.\ Commun.}%  
2042 \def\ol{Opt.\ Lett.}%  
2043 \def\pl{Phys.\ Lett.}%  
2044 \def\pop{Phys.\ Plasmas}%  
2045 \def\pof{Phys.\ Fluids}%  
2046 \def\pra{Phys.\ Rev.\ A}%  
2047 \def\prb{Phys.\ Rev.\ B}%  
2048 \def\prc{Phys.\ Rev.\ C}%  
2049 \def\prd{Phys.\ Rev.\ D}%  
2050 \def\pre{Phys.\ Rev.\ E}%  
2051 \def\prl{Phys.\ Rev.\ Lett.}%  
2052 \def\rmp{Rev.\ Mod.\ Phys.}%  
2053 \def\rsi{Rev.\ Sci.\ Instrum.}%  
2054 \def\rse{J.\ Renewable Sustainable Energy}%  
2055 \def\pspie{Proc.\ Soc.\ Photo-Opt.\ Instrum.\ Eng.}%  
2056 \def\sjqe{Sov.\ J.\ Quantum Electron.}%  
2057 \def\vr{Vision Res.}%  
2058 \def\sd{Structural Dynamics}%  
2059 \def\jor{J.\ Rheol.}%  
2060 \def\cp{AIP\ Conference\ Proceedings}%  
2061 %%  
2062 \DeclareOption{author-numerical}{%  
2063 \@booleantrue\authoryear@sw  
2064 \@booleantrue\authornum@sw  
2065 }%  
2066 \DeclareOption{article-title}{%  
2067 \@booleanfalse\sor@jtitx@sw  
2068 }%  
2069 \@booleantrue\sor@jtitx@sw

```

2070 \@booleanfalse\authoryear@sw
2071 \@booleanfalse\authornum@sw
2072 \@booleanfalse\onecolumn@sw
2073 \@booleanfalse\newonecolumn@sw
2074 \appdef\@bibdataout@rev{\@bibdataout@sor}%
2075 \def\@bibdataout@sor{%
2076 \immediate\write\@bibdataout{%
2077 @CONTROL{%
2078 sor41Control%% TeXSupport: aip
2079 \longbibliography@sw{\true@sw}{\sor@jtitx@sw{\false@sw}{\true@sw}}%
2080 {%
2081 ,pages="1",title="0"%
2082 }{%
2083 ,pages="0",title=""%
2084 }%
2085 }%
2086 }%
2087 \if@filesw
2088 \immediate\write\@auxout{\string\citation{sor41Control}}% TeXSupport: aip
2089 \fi
2090 }%
2091 \@booleantrue\preprintsty@sw
2092 \@booleantrue\showPACS@sw
2093 \@booleantrue\showKEYS@sw
2094 %% TeXSupport
2095 \let\old@refname\refname
2096 \appdef\setup@hook{%
2097 \preprintsty@sw}{%
2098 \let\refname\@empty
2099 }%
2100 }%
2101 \appdef\setup@hook{%
2102 \preprintsty@sw{%
2103 \ps@preprint
2104 }{%
2105 \ps@article
2106 }%
2107 }%
2108 \def\ps@preprint{%
2109 \def\@oddhead{\@runningtitle\hfil}%
2110 \def\@evenhead{\@runningtitle\hfil}%
2111 \def\@oddfoot{\hfil\thepage\quad\checkindate\hfil}%
2112 \def\@evenfoot{\hfil\thepage\quad\checkindate\hfil}%
2113 \let\@mkboth\@gobbletwo
2114 \let\sectionmark\@gobble
2115 \let\subsectionmark\@gobble
2116 }%
2117 \def\ps@article{%
2118 \def\@evenhead{\let\\heading@cr\thepage\quad\checkindate\hfil\@runningtitle}%
2119 \def\@oddhead{\let\\heading@cr\@runningtitle\hfil\checkindate\quad\thepage}%
2120 \def\@oddfoot{}}%
2121 \def\@evenfoot{}}%
2122 \let\@mkboth\@gobbletwo
2123 \let\sectionmark\@gobble

```

```

2124 \let\subsectionmark\@gobble
2125 }%
2126 \def\@runningtitle{\@shorttitle}%
2127 \renewenvironment{titlepage}{%
2128 \let\wastwocol@sw\twocolumn@sw
2129 \onecolumngrid
2130 \newpage
2131 \thispagestyle{titlepage}%
2132 \c@page\z@% article sets this to one not zero???
2133 }{%
2134 \wastwocol@sw{\twocolumngrid}{\newpage}%
2135 }%
2136 \let\@fnsymbol@latex\@fnsymbol
2137 \let\@fnsymbol\@alph
2138 \def\adjust@abstractwidth{%
2139 \parindent1em\relax
2140 \advance\leftskip.5in\relax
2141 \@totalleftmargin\leftskip
2142 \@afterheading\@afterindentfalse
2143 }%
2144 \def\frontmatter@abstractheading{}%
2145 \def\frontmatter@abstractfont{%
2146 \adjust@abstractwidth
2147 }%
2148 \appdef\setup@hook{%
2149 \preprintsty@sw{%
2150 \@booleantrue\titlepage@sw
2151 \let\section\section@preprintsty
2152 \let\subsection\subsection@preprintsty
2153 \let\subsubsection\subsubsection@preprintsty
2154 }{}}%
2155 }%
2156 \def\frontmatter@@indent{%
2157 \skip@\@flushglue
2158 \@flushglue\z@ plus.3\hsize\relax
2159 \raggedright
2160 \advance\leftskip.5in\relax
2161 \@totalleftmargin\leftskip
2162 \@flushglue\skip@
2163 }%
2164 \def\frontmatter@authorformat{%
2165 \frontmatter@@indent
2166 \sfamily
2167 }%
2168 \renewcommand*{email}[1][Electronic mail: ]{\begingroup\sanitize@url\@email{#1}}%
2169 \def\frontmatter@above@affilgroup{%
2170 }%
2171 \def\frontmatter@above@affiliation@script{%
2172 \frontmatter@@indent
2173 }%
2174 \def\frontmatter@above@affiliation{%
2175 }%
2176 \def\frontmatter@affiliationfont{%
2177 \frontmatter@@indent

```

```

2178 \preprintsty@sw}{\small}%
2179 \it
2180 }%
2181 \def\frontmatter@collaboration@above{%
2182 }%
2183 \def\frontmatter@setup{%
2184 \normalfont
2185 }%
2186 \def\frontmatter@title@above{\addvspace{6\p@}}%
2187 \def\frontmatter@title@format{%
2188 \preprintsty@sw}{\Large}%
2189 \sffamily
2190 \bfseries
2191 \raggedright
2192 \parskip\z@skip
2193 }%
2194 \def\frontmatter@title@below{\addvspace{3\p@}}%
2195 \def\@author@parskip{3\p@}%
2196 \@booleantrue\altaffilletter@sw
2197 \def\frontmatter@makefnmark{%
2198 \@textsuperscript{%
2199 \normalfont\@thefnmark%(
2200 )%
2201 }%
2202 }%
2203 \def\frontmatter@authorbelow{%
2204 \addvspace{3\p@}%
2205 }%
2206 \let\affil@cutoff\tw@
2207 \def\frontmatter@RRAP@format{%
2208 \addvspace{5\p@}%
2209 \small
2210 \raggedright
2211 \advance\leftskip.5in\relax
2212 \@totalleftmargin\leftskip
2213 \everypar{%
2214 \hbox\bgroup(\@gobble@leavemode@uppercase%)
2215 }%
2216 \def\par{%
2217 \@ifvmode{}{%(
2218 \unskip)\egroup\@par
2219 }%
2220 }%
2221 }%
2222 \def\punct@RRAP{;\egroup\ \hbox\bgroup}%
2223 \def\@gobble@leavemode@uppercase#1#2{\expandafter\MakeTextUppercase}%
2224 \def\frontmatter@PACS@format{%
2225 \addvspace{11\p@}%
2226 \adjust@abstractwidth
2227 \parskip\z@skip
2228 \samepage
2229 }%
2230 \def\frontmatter@keys@format{%
2231 \adjust@abstractwidth

```

```

2232 \samepage
2233 }%
2234 \def\ps@titlepage{%
2235 \def\@oddhead{%
2236 \@runningtitle
2237 \hfill
2238 \produce@preprints\@preprint
2239 }%
2240 \let\@evenhead\@oddhead
2241 \def\@oddfoot{%
2242 \hb@xt@\z@\byrevtex\hss}%
2243 \hfil
2244 \preprintsty@sw{\thepage}{}%
2245 \quad\checkindate
2246 \hfil
2247 }%
2248 \let\@evenfoot\@oddfoot
2249 }%
2250 \def\byrevtex{\byrevtex@sw{Typeset by REV\TeX and AIP}{}}%
2251 \def\produce@preprints#1{%
2252 \preprint@sw{%
2253 \vtop to \z@{%
2254 \def\baselinestretch{1}%
2255 \small
2256 \let\preprint\preprint@count
2257 \count@\z@#1\@ifnum{\count@>\tw@}{%
2258 \hbox{%
2259 \let\preprint\preprint@hlist
2260 #1\setbox\z@\lastbox
2261 }%
2262 }-%
2263 \let\preprint\preprint@cr
2264 \halign{\hfil##\cr#1\cr}%
2265 \par
2266 \vss
2267 }%
2268 }%
2269 }-%
2270 }%
2271 \def\preprint@cr#1{#1\cr}%
2272 \def\preprint@count#1{\advance\count@\@ne}%
2273 \def\preprint@hlist#1{#1\hbox{, }}%
2274 \newenvironment{Lead@inParagraph}{%
2275 \par
2276 \bfseries
2277 \@afterheading\@afterindentfalse
2278 }-%
2279 \par
2280 \hb@xt@\hsize{\hfil\leaders\hrule\hfil\leaders\hrule\hfil\hfil}%
2281 }%
2282 \appdef\frontmatter@init{%
2283 \let\@environment{quotation@ltx}{quotation}%
2284 \let\@environment{quotation}{Lead@inParagraph}%
2285 }%

```

```

2286 \appdef\@startsection@hook{%
2287 \let@environment{quotation}{quotation@ltx}%
2288 }%
2289 \def\@secntformat#1{\csname the#1\endcsname.\quad}%
2290 \def\@hang@from#1#2#3{#1#2#3}%
2291 \def\section{%
2292 \@startsection
2293 {section}%
2294 {1}%
2295 {\z@}%
2296 {0.8cm \@plus1ex \@minus .2ex}%
2297 {0.5cm}%
2298 {}%
2299 \normalfont
2300 \small
2301 \sffamily
2302 \bfseries
2303 \raggedright
2304 }%
2305 }%
2306 \def\@hangfrom@section#1#2#3{\@hangfrom{#1#2}\MakeTextUppercase{#3}}%
2307 \def\@hangfroms@section#1#2{#1\MakeTextUppercase{#2}}%
2308 \def\subsection{%
2309 \@startsection
2310 {subsection}%
2311 {2}%
2312 {\z@}%
2313 {.8cm \@plus1ex \@minus .2ex}%
2314 {.5cm}%
2315 {}%
2316 \normalfont
2317 \small
2318 \sffamily
2319 \bfseries
2320 \raggedright
2321 }%
2322 }%
2323 \def\subsubsection{%
2324 \@startsection
2325 {subsubsection}%
2326 {3}%
2327 {\z@}%
2328 {.8cm \@plus1ex \@minus .2ex}%
2329 {.5cm}%
2330 {}%
2331 \normalfont
2332 \small
2333 \sffamily
2334 \bfseries
2335 \itshape
2336 \raggedright
2337 }%
2338 }%
2339 \def\paragraph{%

```

```

2340 \@startsection
2341   {paragraph}%
2342   {4}%
2343   {\parindent}%
2344   {\z@}%
2345   {-1em}%
2346   {\normalfont\normalsize\itshape}%
2347 }%
2348 \def\subparagraph{%
2349   \@startsection
2350   {subparagraph}%
2351   {5}%
2352   {\parindent}%
2353   {3.25ex \@plus1ex \@minus .2ex}%
2354   {-1em}%
2355   {\normalfont\normalsize\bfseries}%
2356 }%
2357 \def\section@preprintsty{%
2358   \@startsection
2359   {section}%
2360   {1}%
2361   {\z@}%
2362   {0.8cm \@plus1ex \@minus .2ex}%
2363   {0.5cm}%
2364   {%
2365     \normalfont
2366     \bfseries
2367     \raggedright
2368   }%
2369 }%
2370 \def\subsection@preprintsty{%
2371   \@startsection
2372   {subsection}%
2373   {2}%
2374   {\z@}%
2375   {.8cm \@plus1ex \@minus .2ex}%
2376   {.5cm}%
2377   {%
2378     \normalfont
2379     \bfseries
2380     \raggedright
2381   }%
2382 }%
2383 \def\subsubsection@preprintsty{%
2384   \@startsection
2385   {subsubsection}%
2386   {3}%
2387   {\z@}%
2388   {.8cm \@plus1ex \@minus .2ex}%
2389   {.5cm}%
2390   {%
2391     \normalfont
2392     \itshape\bfseries
2393     \raggedright

```

```

2394 }%
2395 }%
2396 \let\frontmatter@footnote@produce\frontmatter@footnote@produce@footnote
2397 \def\@pnumwidth{1.55em}
2398 \def\@tocrmarg {2.55em}
2399 \def\@dotsep{2}
2400 \def\ltxu@dotsep{4.5pt}
2401 \setcounter{tocdepth}{3}
2402 \def\tableofcontents{%
2403 \addtocontents{toc}{\string\tocdepth@munge}%
2404 \print@toc{toc}%
2405 \addtocontents{toc}{\string\tocdepth@restore}%
2406 }%
2407 \def\tocdepth@munge{%
2408 \let\l@section@saved\l@section
2409 \let\l@section\@gobble@tw@
2410 }%
2411 \def\@gobble@tw@#1#2{%}
2412 \def\tocdepth@restore{%
2413 \let\l@section\l@section@saved
2414 }%
2415 \def\l@part#1#2{\addpenalty{\@secpenalty}}%
2416 \begingroup
2417 \set@tocdim@pagenum{#2}%
2418 \parindent \z@
2419 \rightskip\tocleft@pagenum plus 1fil\relax
2420 \skip@parfillskip\parfillskip\z@
2421 \addvspace{2.25em plus\p@}%
2422 \large \bf %
2423 \leavevmode\ignorespaces#1\unskip\nobreak\hskip\skip@
2424 \hb@xt@\rightskip{\hfil\unhbox\z@}\hskip-\rightskip\hskip\z@skip
2425 \par
2426 \nobreak %
2427 \endgroup
2428 }%
2429 \def\tocleft@{\z@}%
2430 \def\tocdim@min{5\p@}%
2431 \def\l@section{%
2432 \l@@sections{section}% Implicit #3#4
2433 }%
2434 \def\l@f@section{%
2435 \addpenalty{\@secpenalty}%
2436 \addvspace{1.0em plus\p@}%
2437 \bf
2438 }%
2439 \def\l@subsection{%
2440 \l@@sections{section}{subsection}% Implicit #3#4
2441 }%
2442 \def\l@subsubsection{%
2443 \l@@sections{subsection}{subsubsection}% Implicit #3#4
2444 }%
2445 \def\l@paragraph#1#2{%}
2446 \def\l@subparagraph#1#2{%}
2447 \let\toc@pre\toc@pre@auto

```

```

2448 \let\toc@post\toc@post@auto
2449 \def\listoffigures{\print@toc{lof}}%
2450 \def\l@figure{\@dottedtocline{1}{1.5em}{2.3em}}
2451 \def\listoftables{\print@toc{lot}}%
2452 \let\l@table\l@figure
2453 \@booleanfalse\raggedcolumn@sw
2454 \def\tableleft@skip@float{\z@ plus\hsize}%
2455 \def\tablemid@skip@float{\@flushglue}%
2456 \def\tableright@skip@float{\z@ plus\hsize}%
2457 \def\array@row@pre@float{\hline\hline\noalign{\vskip\doublerulesep}}%
2458 \def\array@row@pst@float{\noalign{\vskip\doublerulesep}\hline\hline}%
2459 \def\@makefntext#1{%
2460 \def\baselinestretch{1}%
2461 \leftskip1em%
2462 \parindent1em%
2463 \noindent
2464 \nobreak\hskip-\leftskip
2465 \hb@xt@\leftskip{%
2466 \hss\@makefnmark\ %
2467 }%
2468 #1%
2469 \par
2470 }%
2471 \prepdef\appendix{%
2472 \par
2473 \let\@hangfrom@section\@hangfrom@appendix
2474 \let\@sectioncntformat\@appendixcntformat
2475 }%
2476 \def\@hangfrom@appendix#1#2#3{%
2477 #1%
2478 \@ifempty{#2}{%
2479 #3%
2480 }{%
2481 #2\@ifempty{#3}{\ #3}%
2482 }%
2483 }%
2484 \def\@hangfroms@appendix#1#2{%
2485 #1#2%
2486 }%
2487 \def\@appendixcntformat#1{\appendixname\ \csname the#1\endcsname}%
2488 \def\pre@bibdata{\jobname\bibdata@app}%
2489 \def\refname{References}%
2490 \def\rtx@bibsection{%
2491 \@ifxempty\refname{%
2492 \par\vspace{6\p@ plus 6\p@}%
2493 }{%
2494 \expandafter\section\expandafter*\expandafter{\refname}%
2495 \@nobreaktrue
2496 }%
2497 }%
2498 \let\bibpreamble\@empty
2499 \appdef\setup@hook{%
2500 \bibsep\z@\relax
2501 }%

```

```

2502 \def\newblock{\ }%
2503 \appdef\setup@hook{%
2504 \def\bibfont{%
2505 \preprintsty@sw}{\footnotesize}%
2506 \@clubpenalty\clubpenalty
2507 \labelsep\z@
2508 }%
2509 }%
2510 \let\place@bibnumber\place@bibnumber@sup
2511 \newenvironment{theindex}{%
2512 \columnseprule \z@
2513 \columnsep 35\p@
2514 \c@secnumdepth-\maxdimen
2515 \onecolumngrid@push
2516 \section{\indexname}%
2517 \thispagestyle{plain}%
2518 \parindent\z@
2519 \parskip\z@ plus.3\p@\relax
2520 \let\item\@idxitem
2521 \onecolumngrid@pop
2522 }{%
2523 }%
2524 \def\@idxitem{\par\hangindent 40\p@}
2525 \def\subitem{\par\hangindent 40\p@ \hspace*{20\p@}}
2526 \def\subsubitem{\par\hangindent 40\p@ \hspace*{30\p@}}
2527 \def\indexspace{\par \vskip 10\p@ plus5\p@ minus3\p@\relax}
2528 \expandafter\def\csname rtx@sor10pt\endcsname{%% TeXSupport: aip
2529 \let\@currname@class\@currname
2530 \def\@currname{aps10pt\substyle@post}%
2531 \class@info{Reading file \@currname.\substyle@ext}%
2532 \input{\@currname.\substyle@ext}%
2533 \let\@currname\@currname@class
2534 \class@info{Overriding 10pt}%
2535 \sorreprint
2536 }%
2537 \expandafter\def\csname rtx@sor11pt\endcsname{\csname rtx@sor12pt\endcsname}%
2538 \expandafter\def\csname rtx@sor12pt\endcsname{%
2539 \let\@currname@class\@currname
2540 \def\@currname{aps12pt\substyle@post}%
2541 \class@info{Reading file \@currname.\substyle@ext}%
2542 \input{\@currname.\substyle@ext}%
2543 \let\@currname\@currname@class
2544 \class@info{Overriding 12pt}%
2545 \sorpreprint
2546 }%
2547 \def\today{%
2548 \number\day\space
2549 \ifcase\month
2550 \or January\or February\or March\or April\or May\or June%
2551 \or July\or August\or September\or October\or November\or December%
2552 \fi\space
2553 \number\year
2554 }%
2555 \clo@superscriptaddress

```

```

2556 \def\@journal@default{cha}%
2557 \def\@pointsize@default{12}%
2558 \@booleanfalse\pagerrestrict@sw%
2559 %%
2560 \def\rtx@sorjor{%
2561 \typeout{Using journal substyle \@journal.}%
2562 \@booleantrue\authoryear@sw%
2563 \@booleantrue\twoside@sw\@mparswitchfalse%
2564 }%
2565 %%
2566 \@booleantrue\footinbib@sw
2567 \let\old@place@bibnumber\place@bibnumber
2568 \let\place@bibnumber\place@bibnumber@sup
2569 \appdef\setup@hook{%
2570 \authoryear@sw{%
2571 \sor@jtitx@sw{%
2572 \def\@bibstyle{aipauth\substyle@post}%
2573 }{%
2574 \def\@bibstyle{aipauth\substyle@post}%
2575 }%
2576 \authornum@sw{%
2577 \bibpunct{}{}{,}{s}{}{\textsuperscript{,}}%
2578 \let\onlinecite\rev@citealpnum
2579 }{%
2580 \bibhang10\p@
2581 \bibpunct{(%
2582 )}{%
2583 )}{; }{a}{,}{,}{,}%
2584 \@booleanfalse\footinbib@sw
2585 \let\NAT@mcite\@ne
2586 \let\NAT@sort\z@
2587 \def\NAT@cmprs{\z@}%
2588 \let\NAT@def@citea\rtx@def@citea
2589 \let\NAT@def@citea@close\rtx@def@citea@close
2590 }%
2591 }{%
2592 \sor@jtitx@sw{%
2593 \def\@bibstyle{sornum\substyle@post}%
2594 }{%
2595 \def\@bibstyle{sornum\substyle@post}%
2596 }%
2597 \bibpunct{}{}{,}{s}{}{\textsuperscript{,}}%
2598 \let\onlinecite\rev@citealpnum
2599 }%
2600 }%
2601 \def\make@footnote@endnote{%
2602 \footinbib@sw{%
2603 \authoryear@sw{\authornum@sw{\false@sw}{\true@sw}}{\false@sw}%
2604 }{%
2605 \ltx@footnote@push
2606 \def\thempfn{Note\thefootnote}%
2607 \let\ltx@footmark\rev@citemark
2608 \let\ltx@foottext\rev@endtext
2609 \appdef\class@enddocumenthook{\auto@bib}%

```

```

2610 \let\printendnotes\relax
2611 }%
2612 }{}%
2613 }%
2614 \def\sorreprint{%
2615 }%
2616 \def\sorreprint{%
2617 }%
2618 %%
2619 \xdef\t@talAU{0}% TeXSupport
2620 \def\frontmatter@author@produce@script{%
2621 \begingroup
2622 \let\@author@present\@author@present@script
2623 \frontmatterverbose@sw{\typeout{\string\frontmatter@author@produce@script:}\say\@AAC@lis
2624 \let\AU@temp@empty
2625 \@tempcnta\z@
2626 \let\AF@opr \@gobble
2627 \def\AU@opr{\@author@count\@tempcnta}%
2628 \def\CO@opr{\@collaboration@count\AU@temp\@tempcnta}%
2629 \@AAC@list%
2630 \xdef\t@talAU{\the\@tempcnta}% TeXSupport
2631 \expandafter\CO@opr\@author@cleared
2632 \begingroup
2633 \frontmatter@authorformat
2634 \let\AF@opr \@affilID@def
2635 \let\AU@opr \@author@present
2636 \def\CO@opr{\@collaboration@present\AU@temp}%
2637 \set@listcomma@list\AU@temp
2638 \@AAC@list
2639 \unskip\unskip
2640 \par
2641 \endgroup
2642 \begingroup
2643 \frontmatter@above@affiliation@script
2644 \let\AFF@opr \@affil@script
2645 \@AFF@list
2646 \frontmatter@footnote@produce
2647 \par
2648 \endgroup
2649 \endgroup
2650 }%
2651 \def\doauthor#1#2#3{% TeXSupport
2652 \ignorespaces#1\unskip\@listcomma
2653 \begingroup
2654 \ifnum\t@talAU=1\else\ifnum\c@affil=\@ne\relax\else#3\fi\fi% TeXSupport
2655 \@ifempty{#2}{\endgroup{}}{\endgroup{\ifnum\t@talAU=1\else\ifnum\c@affil=\@ne\relax\els
2656 \space \@listand
2657 }%
2658 %%
2659 \appdef\rtx@require@packages{%
2660 %%
2661 %%
2662 %% Journal of Rheology (jor)
2663 %%

```

```

2664 \def\jnl@jor{jor}%
2665 \preprintsty@sw{}%
2666 {\ifx\@journal\jnl@jor%
2667   \typeout{SUR Info: \@journal\space journal style Single column, 2013/10/24}%
2668 \@booleanfalse\twocolumn@sw%
2669 \appdef\setup@hook{%
2670   \twoside@sw{%
2671     \oddsidemargin 28pt%
2672     \evensidemargin 28pt%
2673     \marginparwidth 30pt%
2674   }%
2675   \oddsidemargin 28pt
2676   \evensidemargin 0pt
2677   \marginparwidth 44pt
2678 }%
2679 }%
2680 \marginparsep 10pt
2681 \topmargin -17pt
2682 \headheight 12pt
2683 \headsep 25pt
2684 \topskip 10pt
2685 \splittopskip\topskip
2686 \footskip 30pt
2687 \textheight=53.5pc
2688 \textwidth 33pc
2689 \columnsep 10pt
2690 \def\title@column#1{%
2691   \minipagefootnote@init
2692   \begingroup
2693     \let\@footnotetext\frontmatter@footnotetext
2694     \ltx@no@footnote
2695     #1%
2696   \endgroup
2697   \minipagefootnote@foot
2698 }%
2699 \def\frontmatter@title@format{%
2700   \preprintsty@sw{ }\Large}%
2701   \sfamily%
2702   \bfseries%
2703   \leftskip0pt plus1fill%
2704   \rightskip0pt plus1fill%
2705   \parindent\z@%
2706   %% \raggedright%
2707   \parskip\z@skip%
2708 }%
2709 \def\frontmatter@@indent{%
2710   \skip@\@flushglue
2711   \@flushglue\z@ plus.3\hsize\relax
2712   \leftskip0pt plus1fill%
2713   \rightskip0pt plus1fill%
2714   \parindent\z@%
2715   %% \raggedright
2716   %% \advance\leftskip.5in\relax
2717   \@totalleftmargin\leftskip

```

```

2718 \@flushglue\skip@
2719 }%
2720 %% \def\frontmatter@authorformat{%
2721 %% \frontmatter@indent
2722 %% \sffamily
2723 %% }%
2724 \def\frontmatter@RRAP@format{%
2725 \addvspace{5\p@}%
2726 \small
2727 \leftskip0pt plus1fill%
2728 \rightskip0pt plus1fill%
2729 \parindent\z@%
2730 %%\raggedright
2731 %\advance\leftskip.5in\relax
2732 \@totalleftmargin\leftskip
2733 \everypar{%
2734 \hbox\bgroup(\@gobble@leavemode@uppercase%)
2735 }%
2736 \def\par{%
2737 \@ifvmode{}{%(
2738 \unskip)\egroup\@par
2739 }%
2740 }%
2741 }%
2742 \def\frontmatter@abstractfont{}%
2743 \def\frontmatter@abstractwidth{\textwidth}
2744 \def\abstractname{Synopsis}
2745 \def\frontmatter@abstractheading{%
2746 \begingroup
2747 \centering\large
2748 {\bfseries\abstractname}
2749 \par\vskip.25\baselineskip
2750 \endgroup
2751 }%
2752 \appdef\setup@hook{%
2753 \preprintsty@sw{}%
2754 \let\refname\old@refname%\@empty
2755 }%
2756 }%
2757 %
2758 \def\ps@article{%
2759 \def\@evenhead{\let\\\heading@cr\sffamily\thepage\quad\checkindate\hfil\@runningtitle\hfil}
2760 \def\@oddhead{\let\\\heading@cr\hfil\sffamily\@runningtitle\hfil\checkindate\quad\thepage}
2761 \def\@oddfoot{}%
2762 \def\@evenfoot{}%
2763 \let\@mkboth\@gobbletwo
2764 \let\sectionmark\@gobble
2765 \let\subsectionmark\@gobble
2766 }%
2767 \def\@make@capt@title#1#2{%
2768 \@ifx@empty\float@link{\@firstofone}{\expandafter\href\expandafter{\float@link}}%
2769 {{\bfseries#1}}\@caption@fignum@sep#2%
2770 }%
2771 \def\@caption@fignum@sep{{\bfseries.} }%

```

```
2772 %%  
2773 \fi%  
2774 }  
2775 }%  
2776 %</sor>
```

Here ends the programmer's documentation.

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