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Preface

The primary motivation for adaptive memory programming, therefore, is to group and unify all these emerging optimization techniques for enhancement of the computational capabilities that they offer to combinatorial problems which are encountered in real life in the area of production planning and control.

We confront this pitfall technically, by introducing explicit remarks about the generality of results at appropriate places; methodologically, by accumulating enough applications for every major idea to make its validity and generality stand out; and philosophically, observing that physics moves forward most of its ideas by analogies to cleverly chosen simple systems for which profound intuitions have been formed.

Special attention has also been paid to the wave-current interaction problems. Several models are evaluated by comparing the numerical results with laboratory data. It is quite clear that these higher-order modified equations are adequate for modeling the wave propagation from deep water to shallow water. However, to apply these models in the surf zone further study of breaking waves and the proper parameterization of wave breaking processes are essential.

One of most surprising findings is coastal engineering research in the last two decades is the robustness of the shallow-water equation models in calculating the wave runup in swash zone. Although the wave breaking process is usually not considered in the shallow-water equations, with a proper tuning of the numerical dissipation as well as the bottom friction, these models can predict the time history of runup heights for various types of incident waves with impressive accuracy. These models have also been extended to examine the interactions between water waves and coastal structures, which are either impermeable or protected by a layer.

The second order wave theory must be employed to include the effects of wave drift forces and springing since they are caused by the quadratic nonlinearity. To consider ringing and wave slamming, cubic nonlinearity and higher order nonlinearity must be included in the formulation.

The factors which have contributed most towards this are the growth of the uranium industry, the acceptance of solvent extraction as a process suitable for industrial use on a large scale, the development of techniques of leaching and reduction at temperatures up to 240°C at moderate pressures, and the demand for numerous less-common metals and other elements.

To model wave slamming and ringing as mentioned above and other nonlinear phenomenon, it is necessary to undertake fully nonlinear transient analyses, usually involving numerical time marching. At present many such numerical models exist. One of common difficulties faced by these models is the procedure to track the location of free surface, especially in the case of wave breaking. Different applications associated with each method, especially in wave hydrodynamics are discussed. More than one hundred references are cited in the paper.

T. M. Chan

Contents

<i>Preface</i>	v
1. Using World Scientific's Review Volume Master File <i>F. Author</i>	1
2. Using World Scientific's Review Volume Document Style <i>F. Author and S. Author</i>	5
3. BIBTEXing in WSPC BIBStyle <i>F. Author, S. Author and T. Author</i>	27
4. Single and Multiple Indexing <i>A. Author</i>	31

Chapter 1

Using World Scientific's Review Volume Master File

First Author

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`ws-rv975x65.tex` is the master file to input all the chapters. Option `master` is used to integrate all the chapters, e.g. `\documentclass[master]{ws-rv975x65}`.

Contents

1. Master File	1
2. Combining the Chapters Using Master File	2
3. Pagination	3
4. Compiling the Master File in L ^A T _E X2e	4
References	4

1. Master File

You can obtain these files from our web pages at:

http://www.wspc.com.sg/style/review_style.shtml and
<http://www.icpress.co.uk/authors/stylefiles.shtml#review>.

The class file, `ws-rv975x65.cls` provides the following options:

- `master` To combine all chapters
- `onethmnum` To number all theorem-like objects in a single sequence, e.g. Theorem 1, Definition 2, Lemma 3, etc.
Default: individual numbering on different theorem-like objects, e.g. Theorem 1, Definition 1, Lemma 1, etc.
- `addchapnum` Appends chapter number, e.g. 1.1. Section, Theorem 1.1., Table 1.1., etc
Default: 1. Section, Theorem 1., Table 1., etc.,
- `draft` To draw border line around text area.
Default: no border line around text area.

Apart from the packages mentioned in Sec 1, the following inhouse packages are used for customizing the Citations/References.

Vancouver (numbered)	
<code>\usepackage{ws-rv-van}</code>	– Superscript ¹ (Default style)
<code>\usepackage[square]{ws-rv-van}</code>	– Bracketed [1]
Harvard (author-date)	
<code>\usepackage{ws-rv-har}</code>	– (Author, 1994)

If the managing editor is using the master file to compile all the chapters, he/she must decide on which style to use for theorems, citations and references, and inform the contributors to use the chosen style.

2. Combining the Chapters Using Master File

The following highlighted changes should be made in all the contributions provided by the individual contributors before including them in the master document.

Contribution provided by an individual contributor:	Modified contribution, ready to get included in the master document:
<code>\documentclass{ws-rv975x65}</code>	<code>%\documentclass{ws-rv975x65}</code>
<code>\usepackage{ws-rv-van}</code>	<code>%\usepackage{ws-rv-van}</code>
<code>\begin{document}</code>	<code>%\begin{document}</code>
<code>\chapter[Short]{Full Title}</code>	<code>\chapter[Short]{Full Title}</code>
<code>\author[F. Author]{First ...}</code>	<code>\author[F. Author]{First ...}</code>
	<code>\index[author]{Author, F.}</code>
<code>\address{World Scientific ...}</code>	<code>\address{World Scientific ...}</code>
<code>\begin{abstract}</code>	<code>\begin{abstract}</code>
The abstract should ...	The abstract should ...
<code>\end{abstract}</code>	<code>\end{abstract}</code>
	<code>\smalltoc</code>
	<code>\tableofcontents</code>
<code>\body</code>	<code>\body</code>
<code>\section{Using Other Packages}</code>	<code>\section{Using Other Packages}</code>
The class file has...	The class file has...
<code>\begin{appendix}[Optional Title]</code>	<code>\begin{appendix}[Optional Title]</code>
<code>\section{Sample Appendix}</code>	<code>\section{Sample Appendix}</code>
Text...	Text...
<code>\end{appendix}</code>	<code>\end{appendix}</code>
<code>%\begin{thebibliography}{9}</code>	<code>%\begin{thebibliography}{9}</code>
<code>%\bibitem{jarl88} ...</code>	<code>%\bibitem{jarl88} ...</code>
<code>%\end{thebibliography}</code>	<code>%\end{thebibliography}</code>

```

\bibliographystyle{ws-rv-van}      \bibliographystyle{ws-rv-van}
\bibliography{ws-rv-sample}       \bibliography{ws-rv-sample}
\end{document}                    %\end{document}

```

All the chapters are arranged in this master file in the following sequence:

```

\documentclass[master]{ws-rv975x65}
\usepackage{ws-index}             % multiple indexes
\usepackage{ws-rv-van}           % numbered citation/references
\makeindex
\newindex{aindx}{adx}{and}{Author Index}      % author index
\renewindex{default}{idx}{ind}{Subject Index} % subject index
\begin{document}
\titlepages                % please do not remove this line
\preface                   % requires preface.tex
\mastertoc                 % combined toc
%\part{My Part Title}{}    % optional divider page
\include{ch1}
\include{ch2}
\include{ch3}
\include{ch4}
\printindex[aindx]         % to print author index
\printindex                % to print subject index
\end{document}

```

3. Pagination

Pages i–iv are always the same and are prepared by the publisher. The pagination of the rest of the front matter depends on the length of the various sections (preface, contents). Each front matter section should start on an odd right-hand page. The following is an example of review volume pagination:

(i) Front matter:

- page i — half-title page, prepared by publisher
- page ii — blank page
- page iii — full-title page, prepared by publisher
- page iv — copyright page, prepared by publisher
- pages v–ix — preface text
- page xi — contents text (TOC)

The first available front matter page is page v.

(ii) Body text:

- odd page — First article, followed by remaining articles

(iii) Back matter (optional):

- odd page — combined index

If the organization of the contributors' manuscripts is different from the above pagination guidelines, please e-mail the respective desk-editor for advice.

4. Compiling the Master File in L^AT_EX2e

To complete the job, compile your file as follows:

- (1) latex ws-rv975x65
- (2) latex ws-rv975x65
- (3) bibtex ch2 % Chapters using BIBT_EX database should
- (4) bibtex ch3 % be compiled individually in 'bibtex'.
- (5) makeindex ws-rv975x65 % general index
- (6) makeindex -o ws-rv975x65.and ws-rv975x65.adx % author index
- (7) latex ws-rv975x65
- (8) latex ws-rv975x65

References

1. L. Lamport, *L^AT_EX, A Document Preparation System*. (Addison-Wesley, Reading, MA, 1994), 2nd edition.

Chapter 2

Using World Scientific's Review Volume Document Style

First Author and Second Author*

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The abstract should summarize the context, content and conclusions of the paper in less than 200 words. It should not contain any references or displayed equations. Typeset the abstract in 9 pt Times roman with baselineskip of 11 pt, making an indentation of 1.5 pica on the left and right margins.

Contents

1. Using Other Packages	6
2. Layout	6
3. User Defined Macros	6
4. Using ws-rv975x65	6
4.1. Input used to produce a chapter	7
5. Chapters	7
6. Sectional Units	7
7. Section	7
7.1. Subsection	8
8. Lists of Items	8
8.1. Numbered and lettered list	8
8.2. Bulleted and unnumbered list	9
8.3. Proofs	9
9. Theorems and Definitions	10
10. Mathematical Formulas	11
11. Floats	12
11.1. Figures	12
11.2. Tables	14
12. Cross-references	18
13. Citations	19
13.1. Vancouver Style	20
13.2. Harvard Style	21
14. Footnote	21
15. Acknowledgments	21
16. Appendix	21
17. Bibliography	21
17.1. BIB _{TEX} users	22

*Author footnote.

[†]Affiliation footnote.

17.2. Non-BIB \TeX users	22
Appendix A. Appendix Title	23
A.1. Appendices	23
A.1.1. Appendix sectional units	24
References	25

1. Using Other Packages

The WSPC class file has already loaded the packages `amsfonts`, `amsmath`, `amssymb`, `epsfig`, `rotating`, and `url` at the startup. `Check.tex` is an utility to test for all the files required by World Scientific review volume project are available in your present \LaTeX installation. **Usage:** `latex check.tex`

Please try to limit your use of additional packages. They frequently introduce incompatibilities. This problem is not specific to the WSPC styles, it is a general \LaTeX problem. Check this manual whether the required functionality is already provided by the WSPC class file. If you do need third-party packages, send them along with the paper. In general, you should use standard \LaTeX commands as much as possible.

2. Layout

In order to facilitate our processing of your article, please give easily identifiable structure to the various parts of the text by making use of the usual \LaTeX commands or by your own commands defined in the preamble, rather than by using explicit layout commands, such as `\hspace`, `\vspace`, `\large`, `\centering`, etc. Also, do not redefine the page-layout parameters. For more information on layout and font specifications please refer our **Layout Guide**.

3. User Defined Macros

User defined macros should be placed in the preamble of the article, and not at any other place in the document. Such private definitions, i.e. definitions made using the commands `\newcommand`, `\renewcommand`, `\newenvironment` or `\renewenvironment`, should be used with great care. Sensible, restricted usage of private definitions is encouraged. Large macro packages and Definitions that are not used in the article should be avoided. Do not change existing environments, commands and other standard parts of \LaTeX .

4. Using ws-rv975x65

You can obtain these files from our web pages at:

http://www.wspc.com.sg/style/review_style.shtml and

<http://www.icpress.co.uk/authors/stylefiles.shtml#review>.

4.1. *Input used to produce a chapter*

```

\documentclass{ws-rv975x65}
\usepackage{ws-rv-van}
\begin{document}
\chapter[Short Title]{Full Title}
\author[F. Author]{First Author}
\address{World Scientific Publishing...}
\begin{abstract}
The abstract should ...
\end{abstract}
\body
\section{Using Other Prepackages}
The class file has...
\begin{appendix}[Optional Appendix Title]
\section{Sample Appendix}
Text...
\end{appendix}
%\begin{thebibliography}{9}
%\bibitem{ams04} \AmS, \emph{\AmS-\LaTeX{}} ...
%\end{thebibliography}
\bibliographystyle{ws-rv-van} %for BIBTeX users
\bibliography{ws-rv-sample}
\end{document}

```

5. Chapters

Each chapter should normally be in a separate file. The chapter title is typeset by using the `\chapter[#1]{#2}` command, where `#1` is an optional short title to be used as a running head if the title is too long and `#2` is the full title of the chapter. The short, edited version of the title appears in the table of contents and running head. The chapter title should be typed in a way such that only the initial character is in upper case and the rest is in lower case.

6. Sectional Units

Sectional units are obtained in the usual way, i.e. with the \LaTeX instructions `\section`, `\subsection`, `\subsubsection`, and `\paragraph`.

7. Section

Text...

7.1. Subsection

Text...

7.1.1. Subsubsection

Text...

Paragraph Text...

Unnumbered Section

Unnumbered sections can be obtained by `\section*`.

8. Lists of Items

Lists are broadly classified into four major categories that can randomly be used as desired by the author:

- (a) Numbered list.
- (b) Lettered list.
- (c) Unnumbered list.
- (d) Bulleted list.

8.1. Numbered and lettered list

- (1) The `\begin{arabiclist}[]` command is used for the arabic number list (arabic numbers appearing within parenthesis), e.g., (1), (2), etc.
- (2) The `\begin{romanlist}[]` command is used for the roman number list (roman numbers appearing within parenthesis), e.g., (i), (ii), etc.
- (3) The `\begin{Romanlist}[]` command is used for the capital roman number list (capital roman numbers appearing within parenthesis), e.g., (I), (II), etc.
- (4) The `\begin{alphalist}[]` command is used for the alphabetical list (alphabetical characters appearing within parenthesis), e.g., (a), (b), etc.
- (5) The `\begin{Alphalist}[]` command is used for the capital alphabetical list (capital alphabetical characters appearing within parenthesis), e.g., (A), (B), etc.

Note: For all the above mentioned lists (with the exception of alphabetic list), it is obligatory to enter the last entry's number in the list within the square bracket, to enable unit alignment.

Items numbered with lowercase Roman numerals:

- (i) item one
- (ii) item two

- (a) lists within lists can be numbered with lowercase alphabets
- (b) second item.
- (iii) item three.

8.2. *Bulleted and unnumbered list*

The `\begin{itemlist}` command is used for the bulleted list.

The `\begin{unnumlist}` command is used for creating the unnumbered list with the turnovers hanging by 1 pica.

Lists may be laid out with each item marked by a dot:

- item one
- item two
- item three.

8.3. *Proofs*

The WSPC document styles also provide a predefined proof environment for proofs. The proof environment produces the heading 'Proof' with appropriate spacing and punctuation. A 'Q.E.D.' symbol, \square , can be appended at the end of a proof with the command `\qed`, e.g.,

```
\begin{proof}
This is to test.
\end{proof}
```

produces

Proof. This is to test.

\square

The proof environment takes an argument in curly braces, which allows you to substitute a different name for the standard 'Proof'. If you want to display, 'Proof of Lemma', then write

```
\begin{proof}[Proof of Lemma]
This is to test.
\end{proof}
```

produces

Proof of Lemma. This is to test.

\square

9. Theorems and Definitions

The WSPC document styles contain a set of pre-defined environments for theorems, definitions, proofs, remarks etc.

The following environments are available by default with WSPC document styles:

Environment	Heading
<code>algorithm</code>	Algorithm
<code>answer</code>	Answer
<code>assertion</code>	Assertion
<code>assumption</code>	Assumption
<code>case</code>	Case
<code>claim</code>	Claim
<code>comment</code>	Comment
<code>condition</code>	Condition
<code>conjecture</code>	Conjecture
<code>convention</code>	Convention
<code>corollary</code>	Corollary
<code>criterion</code>	Criterion
<code>definition</code>	Definition
<code>example</code>	Example
<code>lemma</code>	Lemma
<code>notation</code>	Notation
<code>note</code>	Note
<code>observation</code>	Observation
<code>problem</code>	Problem
<code>proposition</code>	Proposition
<code>question</code>	Question
<code>remark</code>	Remark
<code>solution</code>	Solution
<code>step</code>	Step
<code>summary</code>	Summary
<code>theorem</code>	Theorem

All theorem-like objects use individual numbering scheme by default. To number them in a single sequence, load the class option `onethmnum` in the preamble, e.g., `\documentclass[onethmnum]{ws-rv975x65}`.

```
\begin{theorem}
We have  $\# H^2(M \supset N) < \infty$  for an inclusion  $M \supset N$ 
of factors of finite index.
\end{theorem}
```

produces

Theorem 1. *We have $\# H^2(M \supset N) < \infty$ for an inclusion $M \supset N$ of factors of finite index.*

```

\begin{theorem}[Longo, 1998]
For a given  $Q$ -system...
\[
N = \{x \in N; Tx = \gamma(x)T, Tx^* = \gamma(x^*)T\},
\]
and  $E_{\Xi}(\cdot) = T^* \gamma(\cdot) T$  gives ...
\end{theorem}

```

generates

Theorem 2 (Longo, 1998). *For a given Q -system...*

$$N = \{x \in N; Tx = \gamma(x)T, Tx^* = \gamma(x^*)T\},$$

and $E_{\Xi}(\cdot) = T^* \gamma(\cdot) T$ gives a conditional expectation onto N .

L^AT_EX provides `\newtheorem` to create new theorem environments. To add a new theorem-type environments to a chapter, use

```

\newtheorem{example}{Example}[section]
\let\Examplefont\upshape
\def\Exampleheadfont{\bfseries}

```

10. Mathematical Formulas

Inline: For in-line formulas use `\(... \)` or `$... $`. Avoid built-up constructions, for example fractions and matrices, in in-line formulas. Fractions in inline can be typed with a solidus e.g. `x+y/z=0`.

Display: For numbered display formulas use the `displaymath` environment `\begin{equation}...\end{equation}`.

And for unnumbered display formula use `\[... \]`. For numbered displayed one line formulas always use the `equation` environment. Do not use `$$... $$`. For example, the input for:

$$\mu(n, t) = \frac{\sum_{i=1}^{\infty} 1(d_i < t, N(d_i) = n)}{\int_{\sigma=0}^t 1(N(\sigma) = n) d\sigma}. \quad (1)$$

is:

```

\begin{equation}
\mu(n, t) = \frac{\sum\limits^{\infty}_{i=1} 1(d_i < t, N(d_i) = n)}
{\int\limits^t_{\sigma=0} 1(N(\sigma)=n)d\sigma},. \label{ra_eq1}
\end{equation}

```

For displayed multi-line formulas use the `eqnarray` environment `\begin{eqnarray}...\end{eqnarray}`.

```
\begin{eqnarray}
\zeta\mapsto\hat{\zeta}&=&a\zeta+b\eta\label{ra_eq2}\\
\eta\mapsto\hat{\eta}&=&c\zeta+d\eta\label{ra_eq3}
\end{eqnarray}
```

$$\zeta \mapsto \hat{\zeta} = a\zeta + b\eta \quad (2)$$

$$\eta \mapsto \hat{\eta} = c\zeta + d\eta \quad (3)$$

Superscripts and subscripts that are words or abbreviations, as in π_{low} , should be typed as roman letters; this is done as `\(\pi_{\mathrm{low}}\)` instead of `\pi_{low}` done by `\(\pi_{\text{low}}\)`.

For geometric functions, e.g. `exp`, `sin`, `cos`, `tan`, etc. please use the macros `\sin`, `\cos`, `\tan`. These macros gives proper spacing in mathematical formulas.

It is also possible to use the $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX package,¹ which can be obtained from the $\mathcal{A}\mathcal{M}\mathcal{S}$, from various \TeX archives.

11. Floats

11.1. Figures

A figure is obtained with the following commands

```
\begin{figure}
\psfig{file=filename.eps}
\caption{ ... caption here ... }
\label{ra_fig1}
\end{figure}
```

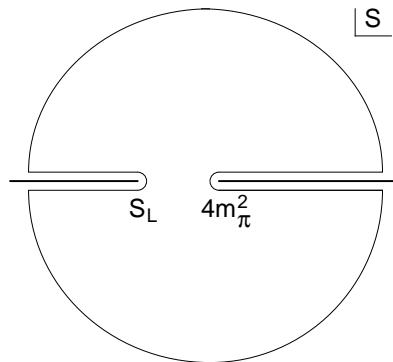


Fig. 1. ... caption here ...

The preferred graphics are tiff and Encapsulated PostScript, eps in short, for any type of graphic. Our \TeX installation requires eps, but we can easily convert tiff to eps. Many other formats, e.g. pict (Macintosh), wmf (Windows) and various proprietary formats, are not suitable. Even if we can read such files, there is no guarantee that they will look the same on our systems as on yours.

Next adjust the scaling of the figure until it's correctly positioned, and remove the declarations of the lines and any anomalous spacing.

If instead you wish to use some other method, then it's most important to leave the right amount of vertical space in the figure declaration to accommodate your figure (i.e. remove the lines and change the space in the example).

Sub-figures are obtained with the following commands

```
\begin{figure}[ht]
\centerline{
\subfigure[]
{\epsfig{figure=rv-fig2a.eps,width=2.4in}\label{ra_fig2a}}
\hspace*{4pt}
\subfigure[Optional subcaption]
{\epsfig{figure=rv-fig2b.eps,width=2.4in}\label{ra_fig2b}}
}
\caption{Common caption here.}
\label{ra_fig2} % common label
\end{figure}
```

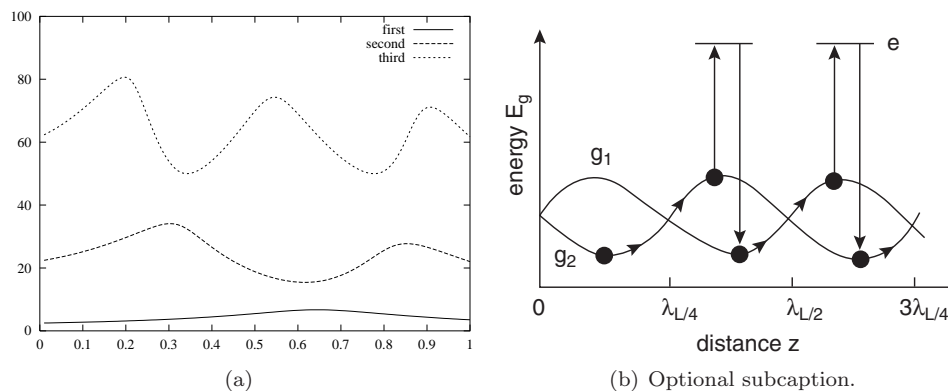


Fig. 2. Common caption here.

Sub-figures Fig. 2(a) and Fig. 2(b) are referred with `\fref{ra_fig2a}` and `\fref{ra_fig2b}` commands.

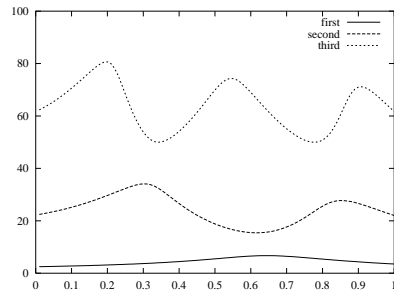


Fig. 3. Sample caption.

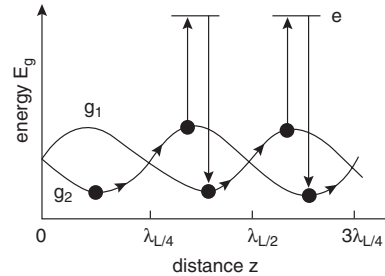


Fig. 4. Sample caption.

Side-by-side figures Fig. 3 and Fig. 4 are obtained with `\minifigure` commands.

```
\begin{figure}[ht]
\centerline{
\minifigure[Sample caption.]
{\epsfig{figure=rv-fig2a.eps,width=2in}\label{ra_fig3}}
\hspace*{4pt}
\minifigure[Sample caption.]
{\epsfig{figure=rv-fig2b.eps,width=2in}\label{ra_fig4}}
}
\end{figure}
```

11.2. Tables

Put the tables and figures in the text with the table and figure environments, and position them near the first reference of the table or figure in the text. Please avoid long caption texts in figures and tables. Do not put them at the end of the article.

```
\begin{table}[h]
\tbl{Sample table caption.}
{\begin{tabular}{@{}cccc@{}} \toprule
Piston mass$\sim$ \text a)$ & Analytical & ...\\
& (Rad/s) & (Rad/s) & \\ \colrule
1.000 & ...\\
0.010 & ...\\
0.001 & ...\\ \botrule
\end{tabular}}
\begin{tabnote}
$\sim$ \text a)$ Sample table footnote.
\end{tabnote}\label{ra_tbl1}
\end{table}
```

Table 1. Sample table caption.

Piston mass ^a	Analytical frequency (Rad/s)	TRIA6- S_1 model (Rad/s)	% Error
1.000	281.0	280.81	0.07
0.010	2441.0	2441.00	0.00
0.001	4130.0	4129.30	0.16

^aSample table footnote.

Landscape tables and figures can be typeset with following environments:

- `sidewaystable` and
- `sidewaysfigure`.

Example:

```
\begin{sidewaystable}
\tbl{Positive values of ...}
{\begin{tabular}{@{}ccccccccc@{}}
\toprule\\
$f_0$ & $\lambda_0$ & $\alpha_0$...
...\\ \botrule
\end{tabular}}
\label{ra_tbl2}
\end{sidewaystable}

\begin{sidewaysfigure}
\begin{center}
\psfig{file=rv-fig3.eps,width=6.6in}
\end{center}
\caption{The bifurcating response ...}
\label{ra_fig5}
\end{sidewaysfigure}
```

For most tables, the horizontal rules are obtained by:

toprule one rule at the top

colrule one rule separating column heads from data cells

botrule one bottom rule

Hline one thick rule at the top and bottom of the tables with multiple column heads

To avoid the rules sticking out at either end of the table add `@{}` before the first and after the last descriptors, e.g. `@lll@`. Please avoid vertical rules in tables. But if you think the vertical rule is must, you can use the standard \LaTeX `tabular` environment.

Table 2. Positive values of X_0 by eliminating Q_0 from Eqs. (15) and (16) for different values of the parameters f_0 , λ_0 and α_0 in various dimension.

f_0	λ_0	α_0	Positive roots (X_0)									
			4D	5D	6D	7D	8D	10D	12D	16D		
-0.033	0.034	0.1	6.75507,	4.32936,	3.15991,	2.44524,	1.92883,	0.669541,	—	—		
			1.14476	1.16321	1.1879	1.22434	1.29065	0.415056				
-0.1	0.333	0.2	3.15662,	1.72737,	—	—	—	—	—	—		
			1.24003	1.48602								
-0.301	0.302	0.001	2.07773,	—	—	—	—	—	—	—		
			1.65625									
-0.5	0.51	0.001	—	—	—	—	—	—	—	—		
			1.667,	1.1946	—	—	—	—	—	—		
0.1	0.1	2	0.806578	0.858211								
			0.463679	0.465426	0.466489	0.466499	0.464947	0.45438	0.429651	0.35278		
0.1	1	0.2	—	—	—	—	—	—	—	—		
			0.996033,	0.968869,	0.91379,	0.848544,	0.783787,	0.669541,	0.577489,	—		
1	0.001	2	0.414324	0.41436	0.414412	0.414489	0.414605	0.415056	0.416214	—		
			0.316014,	0.309739,	—	—	—	—	—	—		
	0.001	0.2	0.275327	0.275856								
			0.089435	0.089441	0.089435	0.089409	0.08935	0.089061	0.088347	0.084352		
0.1	1	3	0.128192	0.128966	0.19718,	0.169063,	0.142103,	—	—	—		
					0.41436	0.414412	0.414489					

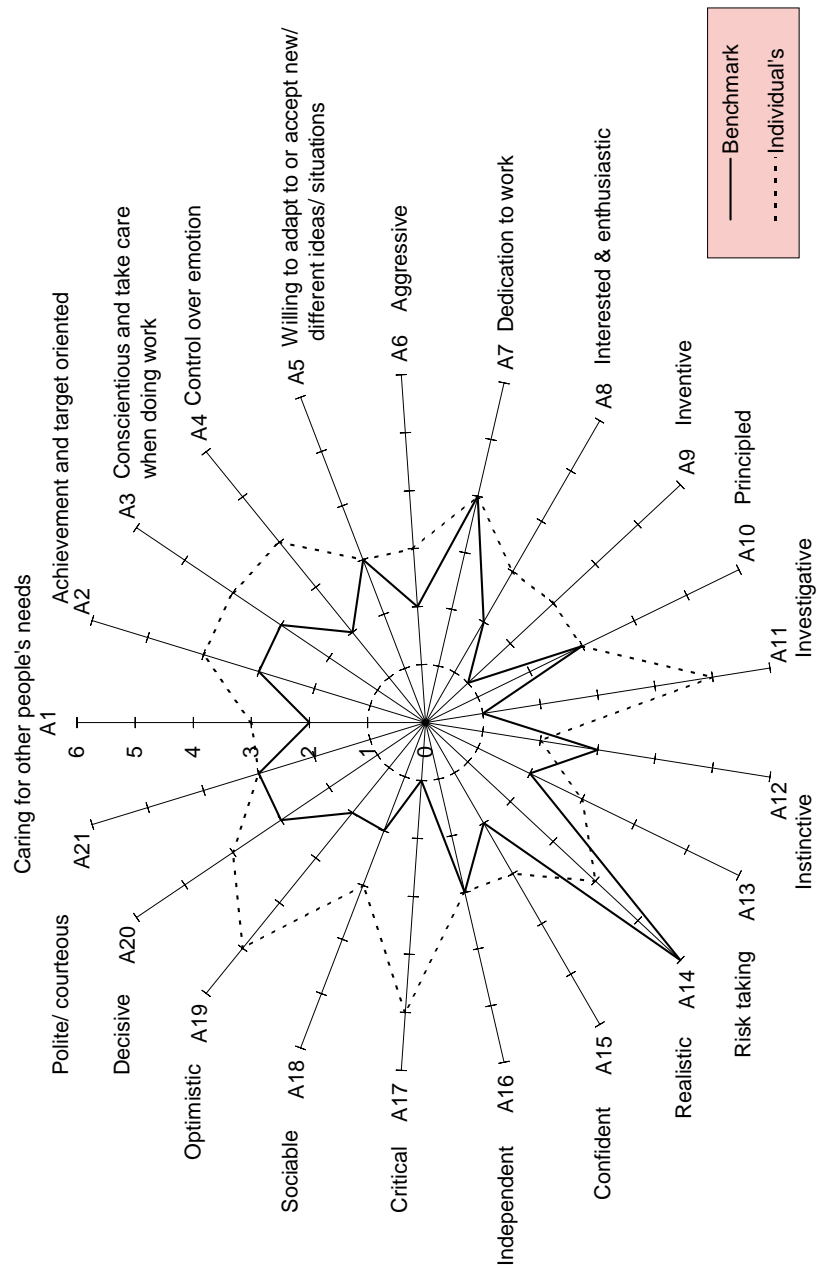


Fig. 5. Very large figures and tables should be placed on a page by themselves..

By using `\tbl` command in table environment, long captions will be justified to the table width while the short or single line captions are centered. `\tbl{table caption}{tabular environment}`. If we need the fixed width for the tables, the command is `\begin{tabular*}{#1}{@{}l@{}}\end{tabular*}`. In the argument `#1` the width of the table has to be given. For example if we need the table to be of 25pc width, then the command is `\begin{tabular*}{25pc}{@{\extracolsep{fill}}l@{}}`.

Headings which span for more than one column should be set using `\multicolumn{#1}{#2}{#3}` where `#1` is the number of columns to be spanned, `#2` is the argument for the alignment of the column head which may be either `c` — for center alignment; `l` — for left alignment; or `r` — for right alignment, as desired by the users. Use `c` for column heads as this is the WS style and `#3` is the heading. A simplified alternative version is `\centre{#1}{#2}` where `#1` is the number of columns to be spanned and `#2` the heading. There should be a rule spanning the same columns below the heading. Termed as spanner or bridge rule, it is generated using the command `\cline{n-m}` where `n` is the number of the first spanned column and `m` that of the last spanned column. `\cline` should not be part of a row but follow immediately after a `\\`.

If a table contains note(s), as a universal thumb-rule they should appear beneath the table set to its width and seldom at the foot of the page. For the footnotes in the table environment the command is `{\begin{tabnote}<text>\end{tabnote}}`. Appropriate symbols should be included in the body of the table matching their corresponding symbols in the footnotes where the footnotes are to be placed immediately after the `{\begin{tabnote}` command and terminated before `\end{tabnote}}\end{table}` command.

The tables are designed to have a uniform style throughout the whole book. We prefer the border lines to be of the style as shown in our sample Tables. For the inner lines of the table, it looks better if they are kept to a minimum.

12. Cross-references

Use `\label` and `\ref` for cross-references to equations, figures, tables, sections, subsections, etc., instead of plain numbers. Every numbered part to which one wants to refer, should be labelled with the instruction `\label`. For example:

```
\begin{equation}
\mu(n, t) = \frac{\sum\limits^{\infty}_{i=1}1
(d_i < t, N(d_i) = n)}{\int\limits^t_{\sigma=0}1
(N(\sigma)=n)d\sigma}\,,.\label{ra_eq1}
\end{equation}
```

With the instruction `\ref` one can refer to a numbered part that has been labelled:

..., see also Eq. (`\ref{ra_eq1}`)

- The `\label` instruction should be typed immediately after (or one line below), e.g., `\caption{ ... caption ... }\label{ra_fig_1}`. Labels should not be typed inside the argument of a number-generating instruction such as `\section` or `\caption`,
- For chapters, labels should be placed inside `\chapter`, e.g., `\chapter{Chapter Title\label{ch2}}`.
- labels should not be repeated.

Some useful shortcut commands.

Shortcut command	Equivalent \TeX command	Output
In the middle of a sentence:		
<code>\eref{ra_eq1}</code>	Eq. (<code>\ref{ra_eq1}</code>)	Eq. (1)
<code>\sref{ra_sec1}</code>	Sec. <code>\ref{ra_sec1}</code>	Sec. 1
<code>\cref{ra_ch2}</code>	Chap. <code>\ref{ch2}</code>	Chap. 2
<code>\fref{ra_fig1}</code>	Fig. <code>\ref{ra_fig1}</code>	Fig. 1
<code>\tref{ra_tbl1}</code>	Table <code>\ref{ra_tbl1}</code>	Table 1
At the starting of a sentence:		
<code>\Eref{ra_eq1}</code>	Equation (<code>\ref{ra_eq1}</code>)	Equation (1)
<code>\Sref{ra_sec1}</code>	Section <code>\ref{ra_sec1}</code>	Section 1
<code>\Cref{ra_ch2}</code>	Chapter <code>\ref{ra_ch2}</code>	Chapter 2
<code>\Fref{ra_fig1}</code>	Figure <code>\ref{ra_fig1}</code>	Figure 1
<code>\Tref{ra_tbl1}</code>	Table <code>\ref{ra_tbl1}</code>	Table 1

13. Citations

World Scientific's preferred style for Review Volume is the Vancouver (numbered) system, unless if the text is not very heavily referenced in which case the Harvard (author-date) system may be used.

System	Package
Vancouver (numbered)	
• Bracketed [1]	<code>\usepackage[square]{ws-rv-van}</code>
• Superscript ¹	<code>\usepackage{ws-rv-van}</code> (Default style)
Harvard (author-date)	<code>\usepackage{ws-rv-har}</code>

Citations in the text use the labels defined in the bibitem declaration, for example, the first paper by Jarlskog² is cited using the command `\cite{jarl88}`. The bibitem labels should not be repeated. For multiple citations do not use `\cite{1}\cite{2}`, but use `\cite{1,2}` instead. When superscripted citations are used, there should not be a space before `\cite{key}`, e.g.,

citation: see`\cite{zipf}`
 \uparrow
 no character space here

Reference:

`\bibitem{zipf}` E. Zipf, `{\it Bull. Am. Phys.Soc.}` `{\bf 15}`, 418 (1970).

Output:

citation: ...text.¹

...

Reference

1. E. C. Zipf, *Bull. Am. Phys. Soc.* **15**, 418 (1970).

13.1. Vancouver Style

Reference citations in the text are to be numbered consecutively in Arabic numerals, in the order of first appearance. The numbered citations can appear in two ways:

- (i) bracketed
- (ii) superscript (default style)

13.1.1. Bracketed

References cited in the text are within square brackets, e.g.,

- (1) ‘‘One can deduce from Ref.~\cite{benh93} that...’’
‘‘One can deduce from Ref. [3] that...’’
- (2) ‘‘See Refs.~\cite{ams04,bake72,benh93,brow88} and
~\cite{davi93} for more details.’’
‘‘See Refs. [1–3, 5] and [7] for more details.’’

13.1.2. Superscript

References cited in the text appear as superscripts, e.g.,

- (1) ‘‘...in the statement.\cite{ams04}’’
‘‘...in the statement.¹’’
- (2) ‘‘...have proven\cite{bake72} that this equation...’’
‘‘...have proven² that this equation...’’

When the reference forms part of the sentence, it should appear with ‘‘Reference’’ or ‘‘Ref.’’, e.g.,

- (1) ‘‘One can deduce from Ref.~\refcite{benh93} that...’’
‘‘One can deduce from Ref. 3 that...’’
- (2) ‘‘See Refs.~\refcite{ams04}--\refcite{benh93},
~\refcite{brow88} and ~\refcite{davi93} for more details.’’
‘‘See Refs. 1–3, 5 and 7 for more details.’’

13.2. *Harvard Style*

Citations in the text use the labels defined in the `\bibitem` declaration, for example, the first paper by [Jarlskog (1988)] is cited using the command `\cite{jarl88}`. See Sec. 17 for more details on coding references in Vancouver and Harvard style.

14. Footnote

Footnotes are denoted by a Roman letter superscript in the text. Footnotes can be used as

```
... total.\footnote{Sample footnote text.}
```

Output:

... in total.^a

15. Acknowledgments

Acknowledgments to funding bodies etc. may be placed in a separate section at the end of the text, before the Appendices. This should not be numbered so use `\section*{Acknowledgements}`.

16. Appendix

Appendices should be used only when absolutely necessary. They should come before the References.

```
\begin{appendix}[Optional Appendix Title]
\section{Sample Appendix}
Text...
\subsection{Appendix subsection}
Text...
\begin{equation}
\mu(n, t) = ... \label{ra_appen1}
\end{equation}
\section{Sample Head}
Text...
\end{appendix}
```

17. Bibliography

Use `\bibitem` to produce the bibliography. The `\bibitem` labels should not be repeated.

^aSample footnote text.

17.1. *BIB_TE_X users*

BIB_TE_X users should use our bibliography style file `ws-rv-van.bst` or `ws-rv-har.bst`. Chapter 3 of this document has more on BIB_TE_X.

17.2. *Non-BIB_TE_X users*

For Vancouver (numbered) style users, references are to be listed in the order cited in the text. Use the style shown in the following examples.

```
\begin{thebibliography}{9}
\bbitem{ams04}
\AmS, \emph{\AmS-\LaTeX{} Version 2 User's Guide}.
(American Mathematical Society, Providence, 2004).
\url{http://www.ams.org/tex/amslatex.html}.

\bbitem{jarl88}
C.~Jarlskog, \emph{CP Violation}. (World Scientific, Singapore, 1988).

\bbitem{best03}
B.~W. Bestbury, {\$R\$}-matrices and the magic square,
\emph{J. Phys. A}. {\bf 36} (7), 1947--1959, (2003).

\bbitem{pier02}
P.~X. Deligne and B.~H. Gross, On the exceptional series,
and its descendants, \emph{C. R. Math. Acad. Sci. Paris}.
{\bf 335} (11), 877--881, (2002).
\bbitem{bake72}
D.~W. Baker and N.~L. Carter, \emph{Seismic Velocity Anisotropy
Calculated for Ultramafic Minerals and Aggregates}, In eds. H.~C.
Heard, I.~V. Borg, N.~L. Carter, and C.~B. Raleigh, \emph{Flow and
Fracture of Rocks}, vol.~16, \emph{Geophys. Mono.}, pp. 157--166.
\end{thebibliography}
```

For Harvard (author-date) style users, the references are to be listed in alphabetical order according to the surname of the first author. Use the style shown in the following examples.

```
\begin{thebibliography}{9}
\bbitem[{Baker and Carter(1972)}]{bake72}
Baker, D.~W. and Carter, N.~L. (1972). \emph{Seismic Velocity
Anisotropy Calculated for Ultramafic Minerals and Aggregates},
\emph{Geophys. Mono.}, Vol.~16 (Am. Geophys. Union), pp. 157--166.
```

```

\bibitem[Benhamou and Colmerauer(1993)]{benh93}
Benhamou, F. and Colmerauer, A. (eds.) (1993). \emph{Constraint
  Logic Programming, Selected Research} (MIT Press).

\bibitem[Bestbury(2003)]{best03}
Bestbury, B.~W. (2003). {\$R\$}-matrices and the magic
  square, \emph{J. Phys. A} \textbf{36}, 7, pp. 1947--1959.

\bibitem[Brown(1988)]{brow88}
Brown, M.~E. (1988). \emph{An Interactive Environment for Literate
  Programming}, Ph.D. thesis, Texas A\&M University, TX, USA.

\bibitem[Churchill and Brown(1990)]{chur90}
Churchill, R.~V. and Brown, J.~W. (1990). \emph{Complex Variables
  and Applications}, 5th edn. (McGraw-Hill).
\end{thebibliography}

```

Appendix A. Appendix Title

A.1. Appendices

Appendices should be used only when absolutely necessary. They should come before the References. If there is more than one appendix, number them alphabetically. Sectional units are obtained in the usual way, i.e. with the \LaTeX instructions `\section`, `\subsection`.

Table A.1. Macros available for Tables/Figures.

Environment name	Purpose
<code>figure</code>	figures
<code>sidewaysfigure</code>	landscape figures
<code>table</code>	tables
<code>sidewaystable</code>	landscape tables
<code>\tbl{#1}{#2}</code>	#1 - table caption; #2 - tabular environment
Horizontal Rules for tables	
<code>\toprule</code>	one rule at the top
<code>\colrule</code>	one rule separating column heads from data cells
<code>\botrule</code>	one bottom rule
<code>\Hline</code>	one thick rule at the top and bottom of the tables with multiple column heads

Table A.2. Commonly used macros.

Macro name	Purpose
<code>\chapter{#1}{#2}</code>	Chapter title
<code>\author{#1}{#2}</code>	Author Name(S)
<code>\address{#1}</code>	Address
<code>\begin{abstract}</code>	Start Abstract
<code>\end{abstract}</code>	End Abstract
<code>\bigtoc</code>	For longer TOCs (e.g. 1.99. Section Title)
<code>\smalltoc</code>	For smaller TOCs (e.g. 1.9. Section Title)
<code>\tableofcontents</code>	Table of Contents
<code>\body</code>	Start Body Text
<code>\section{#1}</code>	Section heading
<code>\subsection{#1}</code>	Subsection heading
<code>\subsubsection{#1}</code>	Subsubsection heading
<code>\section*{#1}</code>	Unnumbered Section head
<code>\begin{itemlist}</code>	Start bulleted lists
<code>\end{itemlist}</code>	End bulleted lists
<code>\begin{arabiclist}</code>	Start arabic lists (1, 2, 3...)
<code>\end{arabiclist}</code>	End arabic lists
<code>\begin{romanlist}</code>	Start roman lists (i, ii, iii...)
<code>\end{romanlist}</code>	End roman lists
<code>\begin{Romanlist}</code>	Start roman lists (I, II, III...)
<code>\end{Romanlist}</code>	End roman lists
<code>\begin{alphalist}</code>	Start alpha lists (a, b, c...)
<code>\end{alphalist}</code>	End alpha lists
<code>\begin{Alphalist}</code>	Start alpha lists (A, B, C...)
<code>\end{Alphalist}</code>	End alpha lists
<code>\begin{proof}</code>	Start of Proof
<code>\end{proof}</code>	End of Proof
<code>\begin{theorem}</code>	Start of Theorem
<code>\end{theorem}</code>	End of Theorem (see Page 10 for detailed list)
<code>\begin{appendix}[#1]</code>	Start Appendix
<code>\end{appendix}</code>	End Appendix
<code>\begin{thebibliography}{#1}</code>	Start of reference list
<code>\end{thebibliography}</code>	End of reference list
<code>\bibitem[{#1}]{#2}</code>	reference item in author-date style
<code>\bibitem{#1}</code>	reference item in numbered style
<code>\bibliographystyle{#1}</code>	To include BIBTEX style file
<code>\bibliography{#1}</code>	To include BIBTEX database

A.1.1. Appendix sectional units

Number displayed equations occurring in the Appendix in this way, e.g. (A.1), (A.2), etc.

$$\mu(n, t) = \frac{\sum_{i=1}^{\infty} 1(d_i < t, N(d_i) = n)}{\int_{\sigma=0}^t 1(N(\sigma) = n) d\sigma}. \quad (\text{A.1})$$

References

1. $\mathcal{A}\mathcal{M}\mathcal{S}$, $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{L}\mathcal{T}\mathcal{E}\mathcal{X}$ Version 2 User's Guide. (American Mathematical Society, Providence, 2004). <http://www.ams.org/tex/amslatex.html>.
2. C. Jarlskog, *CP Violation*. (World Scientific, Singapore, 1988).

Chapter 3

BIB_TE_Xing in WSPC BIBStyle

F. Author, S. Author and T. Author
University Department, University Name, Address
City, State ZIP/Zone, Country
firstauthor_id@domain_name

The abstract should summarize the context, content and conclusions of the paper in less than 200 words. It should not contain any references or displayed equations.

Contents

1. BIB _T E _X	27
2. Citations	28
References	28

1. BIB_TE_X

If you use the BIB_TE_X program to maintain your bibliography, you don't use the `thebibliography` environment. Instead, you include the lines

```
\bibliographystyle{ws-rv-van}
\bibliography{bibfile}
```

where `ws-rv-van` refers to a file `ws-rv-van.bst`, which defines how your references will look. The argument to `\bibliography` refers to the file `bibfile.bib`, which should contain your database in BIB_TE_X format. Only the entries referred to via `\cite` will be listed in the bibliography. `\usepackage{ws-rv-van}` is used in the preamble. To complete the job, compile your file as follows:

- (1) `latex ws-rv975x65`
- (2) `latex ws-rv975x65`
- (3) `bibtex chapter2` % individually run bibtex on those
- (4) `bibtex chapter3` % chapters which uses BIB_TE_X database
- (5) `makeindex ws-rv975x65`
- (6) `latex ws-rv975x65`
- (7) `latex ws-rv975x65`

2. Citations

BIB _T E _X Database entry type	Sample citation
article	... text. ^{1,2}
proceedings	... text. ³
inproceedings	... text. ⁴
book	... text. ^{5,6}
edition	... text. ⁷
editor	... text. ⁸
series	... text. ⁹
tech report	... text. ^{10,11}
unpublished	... text. ¹²
phd thesis	... text. ¹³
masters thesis	... text. ¹⁴
incollection	... text. ¹⁵
misc	... text. ¹⁶

When the reference forms part of the sentence, it should not be typed in superscripts, e.g.: “One can show from Ref. 12 that ...”, “See Refs. 15 and 16 for more details.” This is done using the LaTeX command: “Ref. \refcite{name}”.

To use Harvard (author-date) system `ws-rv-van.bst` is used with `\usepackage{ws-rv-har}`.

References

1. B. W. Bestbury, *R*-matrices and the magic square, *J. Phys. A.* **36**(7), 1947–1959, (2003). ISSN 0305-4470.
2. P. X. Deligne and B. H. Gross, On the exceptional series, and its descendants, *C. R. Math. Acad. Sci. Paris.* **335**(11), 877–881, (2002). ISSN 1631-073X.
3. G. H. Weiss, Ed. *Contemporary Problems in Statistical Physics*, (1994). SIAM, Philadelphia.
4. R. K. Gupta and S. D. Senturia. Pull-in time dynamics as a measure of absolute pressure. In *Proc. IEEE Int. Workshop on Microelectromechanical Systems (MEMS'97)*, pp. 290–294, Nagoya, Japan (Jan., 1997).
5. L. F. Richardson, *Arms and Insecurity*. (Boxwood, Pittsburg, 1960).
6. C. Jarlskog, *CP Violation*. (World Scientific, Singapore, 1988).
7. R. V. Churchill and J. W. Brown, *Complex Variables and Applications*. (McGraw-Hill, 1990), 5th edition.
8. F. Benhamou and A. Colmerauer, Eds., *Constraint Logic Programming, Selected Research*. (MIT Press, 1993).
9. D. W. Baker and N. L. Carter, *Seismic Velocity Anisotropy Calculated for Ultramafic Minerals and Aggregates*, In eds. H. C. Heard, I. V. Borg, N. L. Carter, and C. B. Raleigh, *Flow and Fracture of Rocks*, vol. 16, *Geophys. Mono.*, pp. 157–166. Am. Geophys. Union, (1972).
10. J. D. Hobby. A User's Manual for MetaPost. Technical Report 162, AT&T Bell Laboratories, Murray Hill, New Jersey (apr, 1992).

11. B. W. Kernighan. PIC—A graphics language for typesetting. Computing Science Technical Report 116, AT&T Bell Laboratories, Murray Hill, New Jersey, (1984).
12. H. C. Heard, I. V. Borg, N. L. Carter, and C. B. Raleigh. VoQS: Voice Quality Symbols. Revised to 1994, (1994).
13. M. E. Brown. *An Interactive Environment for Literate Programming*. PhD thesis, Texas A&M University, TX, USA (aug, 1988).
14. G. S. Lodha. Quantitative interpretation of airborne electromagnetic response for a spherical model. Master's thesis, University of Toronto, Canada, (1974).
15. D. Jones. The term 'phoneme'. In eds. W. E. Jones and J. Laver, *Phonetics in Linguistics: A Book of Reading*, pp. 187–204. Longman, London, (1973).
16. B. Davidsen. Netpbm, (1993). <ftp://ftp.wustl.edu/graphics/graphics/packages/NetPBM>.

Chapter 4

Single and Multiple Indexing

An Author

*University Department, University Name, Address
City, State ZIP/Zone, Country
firstauthor_id@domain_name*

The abstract should summarize the context, content and conclusions of the paper in less than 200 words.

Contents

1. Single Indexing	31
2. Multiple Indexes	32
References	33

1. Single Indexing

The first step in producing the index is to put the necessary `\index` commands in your document. The following example shows some simple `\index` commands and the index entries that they produce.

Page ii: <code>\index{Alpha}</code>	Alpha, ii
Page viii: <code>\index{alpha}</code>	alpha, viii, ix, 22
Page ix: <code>\index{alpha}</code>	bites
Page 7: <code>\index{gnat!size of}</code>	animal
Page 8: <code>\index{bites!animal!gnats}</code>	gnats, 8, 10
Page 10: <code>\index{bites!animal!gnats}</code>	gnus, 10
Page 10: <code>\index{bites!animal!gnus}</code>	vegetable, 12
Page 12: <code>\index{bites!vegetable}</code>	gnat, 32
Page 22: <code>\index{alpha}</code>	anatomy, 35
Page 32: <code>\index{gnat}</code>	size of, 7
Page 35: <code>\index{gnat!anatomy}</code>	gnus
<code>\index{gnus!good}</code>	bad, 38
Page 38: <code>\index{gnus!bad}</code>	good, 35

You then run \LaTeX on your entire document, causing it to generate the file `ws-rv975x65.idx`. Next, run the `MakeIndex` program by typing the command, `makeindex ws-rv975x65`. This produces the file `ws-rv975x65.ind`. If `MakeIndex` generated no error messages, you can now rerun \LaTeX on your document and the

index will appear.

Compile your file as follows:

- (1) latex ws-rv975x65
- (2) latex ws-rv975x65
- (3) bibtex ch2 % individually run bibtex on those
- (4) bibtex ch3 % chapters which uses BIB_{TEX} database
- (5) makeindex ws-rv975x65
- (6) latex ws-rv975x65
- (7) latex ws-rv975x65

Reading the index, you may discover mistakes, which should be corrected by changing the appropriate `\index` commands in the document and regenerating the `ind` file. If there are problems that cannot be corrected in this way, you can edit the `ind` file directly. However, such editing is to be avoided because it must be repeated every time you generate a new version of the index.

If you are making changes in the `.toc` or `.ind` files directly, then include `\nofiles` before `\begin{document}` to avoid overwriting. However, the command `\nofiles` should be used as the last option.

2. Multiple Indexes

To create a “subject” and an “author” index, the following packages and declarations should be included in the master `TEX` file:

```
...
\usepackage{ws-index}
\makeindex
\newindex{aindx}{adx}{and}{Author Index}      % author index
\renewindex{default}{idx}{ind}{Subject Index} % subject index
...
\printindex[aindx]                            % to print author index
\printindex                                  % to print subject index
```

In text, the subject or default index entries are tagged with `\index{entry}`, and the author index entries are marked with `\index[aindx]{entry}` or `\aindx{entry}`.

```
\index[aindx]{Author, F.}
% or \aindx{Author, F.}
...
\index{FAQ}
```

To complete the job, compile your file as follows:

- (1) latex ws-rv975x65
- (2) latex ws-rv975x65
- (3) bibtex ch2 % individually run bibtex on those
- (4) bibtex ch3 % chapters which uses BIBTeX database
- (5) makeindex ws-rv975x65
- (6) makeindex -o ws-rv975x65.and ws-rv975x65.adx
- (7) latex ws-rv975x65
- (8) latex ws-rv975x65

For more details on index generation, see.^{1,2}

References

1. L. Lamport, *Make Index: An Index Processor For LaTeX*, (1987).
2. D. K. Jones, *A new implementation of L^AT_EX's indexing commands*, (1995). <ftp://theory.lcs.mit.edu/pub/tex/index/>

Author Index

Author, A., 31
Author, F., 1, 5, 27
Author, S., 5, 27
Author, T., 27

Subject Index

- appendix, 21, 23
- theorems, 10
- bibliography, 21
- BIBTeX, 22, 27
- citation, 19
 - author-date, 21
 - numbered, 20
 - bracketed, 20
 - superscript, 20
- equations
 - display, 11
 - inline, 11
- floats, 12
 - figures, 12
 - tables, 14
 - landscape, 15
 - rules, 15
- index, 31
 - multiple indexes, 32
- lists, 8
 - bulleted and unnumbered, 9
 - numbered and lettered, 8
 - Alphabetical (A, B, C...), 8
 - alphabetical (a, b, c...), 8
 - arabic (1, 2, 3...), 8
 - Roman (I, II, III...), 8
 - roman (i, ii, iii...), 8