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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

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Chapter 1

Typesetting a Book in LaTeX2e Using the WSPC Book Style

1.1 Introduction

This article explains how to use World Scientific's ws-book9x6 Document Class written in LaTeX2e. Authors who use this system correctly should find that writing their books is comparatively easy, since the output will be in a form directly suitable for camera-ready copy. In addition, the book will be produced quicker, automatically fitting the in-house style by default. The article itself was typeset using `ws-book9x6.cls`. You can obtain these files from our web pages at: `http://www.worldscientific.com/page/authors/book-stylefiles` and `http://www.icpress.co.uk/authors/stylefiles.shtml#books`.

1.2 Using Other Packages

The class file loads the packages `amsmath, amsfonts, amssymb, graphicx, rotating, makeidx` at startup.

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

User-defined macros should be placed in the preamble of the chapter, and not at any other place in the document. Definitions made using the commands `\newcommand, \renewcommand, \newenvironment` or `\renewenvironment` should be used with great care. Restricted usage of such definitions is encouraged. Large macro packages and definitions that

are not used in the book should be avoided. Do not change existing environments, commands and other standard parts of LaTeX.

1.3 Input Used to Produce This Paper

An example of a master file for a book with 3 chapters and an appendix might be:

```
\documentclass{ws-book9x6}
\usepackage{ws-book-thm}
\usepackage{ws-book-har}

\title{My Book Title}

\makeindex

\begin{document}

\titlepages
\begin{dedication}
\large Dedication Page (optional)
\end{dedication}
\blankpage
\input preface.tex

\tableofcontents

\setcounter{page}{1}
\input chapter1.tex
\input chapter2.tex
\input chapter3.tex
\input appendix.tex

\bibliographystyle{ws-book-har}
\bibliography{ws-book-sample}
%\input bibliography.tex

\printindex
\end{document}
```

1.4 Layout

In order to facilitate our processing of your book, 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.

1.5 Master File

Chapters should be written in separate files rather than creating one long file. The complete book should be run from a master file which in turn calls all chapters or allows chapters that can be processed selectively using the `\input` command. Instructions for the preparation of the book, including notes on preparing text which comprises Parts; Chapters; Section headings; Lists; Floats that include Tables and Figures; Mathematics; and References are discussed in this chapter.

1.6 Subdocuments

1.6.1 *Parts*

The interior of a book usually comprises three major divisions: the *front matter*; the *text*; and the *back matter*. The three main divisions in turn, may comprise several parts. Each part (or chapters in the part) may be written by a single author or by several authors contributing to a volume. A part is then further subdivided into chapters and sections. A part heading always occurs on a right-hand, odd-numbered page (recto). It is mandatory to leave the following page blank. The part heading should be included in the file for the chapter following it. Care should be taken while setting the style file to avoid the running head on the blank page. The part title should be set in boldface. An example of the code for a part title "My Part Title" is `\part{My Part Title}`.

1.6.2 *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.

1.6.3 *Sectional Units*

Section headings may be numbered or unnumbered depending on user preference. Sectional units are done in the usual way, i.e. with the LaTeX instructions `\section`, `\subsection`, `\subsubsection`, `\paragraph` and `\section*`.

1.7 Major Headings

To get numbered section headings, the `\section[#1]{#2}` command is used. If the full version of the heading is too long to be used in the running head or contents, an edited short-form can be added in square brackets before the full title. Major headings should be typeset in boldface, with the first letter of important words capitalized.

1.7.1 *Subheadings*

Subheadings are created with `\subsection{#1}`. Subheadings should be typeset in bold italics, with the first letter of the first word capitalized and the section number in boldface.

1.7.1.1 *Sub-subheadings*

To get numbered sub-subsection headings, the `\subsubsection{#1}` command is used. Typeset in italics (section number in roman) and capitalize the first letter of the first word only.

Paragraph Para heads are created with `\paragraph{#1}`.

Unnumbered Section

This section is not numbered, and would not get listed in table of contents. Unnumbered sections are created with `\section*{#1}`.

1.8 Lists of Items

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

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

1.8.1 *Numbered and lettered lists*

(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{alphlist}[]` command is used for the alphabetical list (alphabetical characters appearing within parenthesis), e.g., (a), (b), etc.
(5) The `\begin{Alphlist}[]` 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, 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 Roman letters
    (b) second item.

1.8.2 *Bulleted and unnumbered lists*

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

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

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

- item one
- item two.

1.9 Mathematical Formulas

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

Displayed: For numbered displayed formulas use the `equation` environment `\begin{equation} ... \end{equation}`. And for unnumbered displayed formulas use `\[ ... \]`. For numbered displayed one-line formulas always use the equation environment. Do not use `$$ ... $$`. For example, the input for:

$$\mu(n,t) = \frac{\sum\limits^\infty_{i=1}1(d_i<t, N(d_i)=n)}{\int\limits^t_{\sigma=0}1\,(N(\sigma)=n)d\sigma}\,. \tag{1.1}$$

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{eq1.1}
\end{equation}
```

For displayed multi-line formulas use the `eqnarray` environment. For example,

```
\begin{eqnarray}
\zeta\mapsto\hat{\zeta}&=&a\zeta+b\eta\label{eq1.2}\\
\eta\mapsto\hat{\eta}&=&c\zeta+d\eta\label{eq1.3}
\end{eqnarray}
```

produces

$$\zeta \mapsto \hat{\zeta} = a\zeta + b\eta \tag{1.2}$$

$$\eta \mapsto \hat{\eta} = c\zeta + d\eta \tag{1.3}$$

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 π_{low} done by `\( \pi_{low} \)`.

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

1.10 Floats

Put 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. Do not put them at the end of the chapter.

1.10.1 *Tables*

Tables are numbered serially within each chapter following the corresponding chapter number and referred to in the text by number (Table 1.1, etc, **not** Tab. 1.1). Each table should have an explanatory caption, which should be as concise as possible. If a table is divided into parts, they should be labeled as (*a*), (*b*), (*c*), etc., but there should only be one caption for the whole table, and seldom separate ones for each part.

```
\begin{table}[t]
\tbl{Sample table caption.}
{\begin{tabular}{@{}cccc@{}} \toprule
Piston mass$^{\text a}$ & Analytical ...\\
& (Rad/s) & (Rad/s) \\ \colrule
1.0... \\
0.001...\\ \botrule
\end{tabular}}
\begin{tabnote}
$^{\text a}$Sample table footnote.
\end{tabnote}
\label{tbl1.1}
\end{table}
```

Table 1.1 Sample table caption.

Piston mass[a]	Analytical frequency (Rad/s)	TRIA6-S_1 model (Rad/s)	% Error[b]
1.000	281.0	280.81	0.07
0.100	876.0	875.74	0.03
0.010	2441.0	2441.00	0.00
0.001	4130.0	4129.30	0.16

[a]Sample table footnote.
[b]Another sample table footnote.

By using the `\tbl` command in the `table` environment, long captions will be justified to the table width while short or single-line captions will be centered: `\tbl{table caption}{tabular environment}`.

If we need a fixed width for the tables, the command is `\begin{tabular*}{#1}{@{}ll@{}}` and `\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}}ll@{}}`.

Headings which span more than one column should be set using `\multicolumn{#1}{#2}{#3}`, where `#1` is the number of columns to be spanned, and `#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. Use `c` for column heads as this is the WS style. `#3` is the argument for 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 a 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 notes, as a universal thumb-rule they should appear beneath the table set to its width and seldom at the foot of the page. For 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 the `\end{tabnote}}\end{table}` command.

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. @llll@. Please avoid vertical rules in tables. If you think the vertical rule is must, you can use the standard LaTeX `tabular` environment.

The tables are designed to have a uniform style throughout the whole book. WSPC prefers 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.

1.10.2 *Figures*

A figure is obtained with the following commands:

```
\begin{figure}[h]
\centerline{\includegraphics[width=4cm]{bk-fig1}}
\caption{Sample figure caption.}
\label{fig1.1}
\end{figure}
```

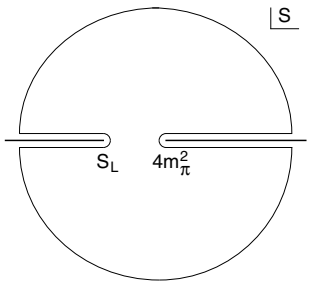


Fig. 1.1 Sample figure caption.

Adjust the scaling of the figure until it is correctly positioned, and remove the declarations of the lines and any anomalous spacing.

Here is an example of two figures appearing side-by-side:

```
\begin{figure}[ht]
\sidebyside
{
    \includegraphics[width=2in]{bk-fig2}
    \caption{Figure caption for left-side figure.}
    \label{fig1.2}
}{
    \includegraphics[width=2in]{bk-fig3}
    \caption{Figure caption for right-side figure.}
    \label{fig1.3}
}
\end{figure}
```

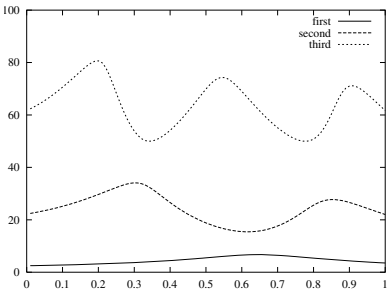


Fig. 1.2 Left-side figure caption.

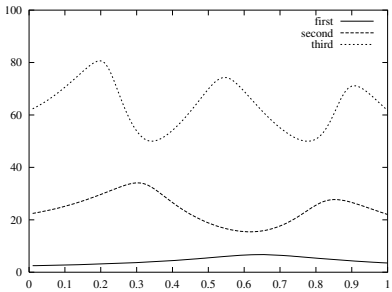
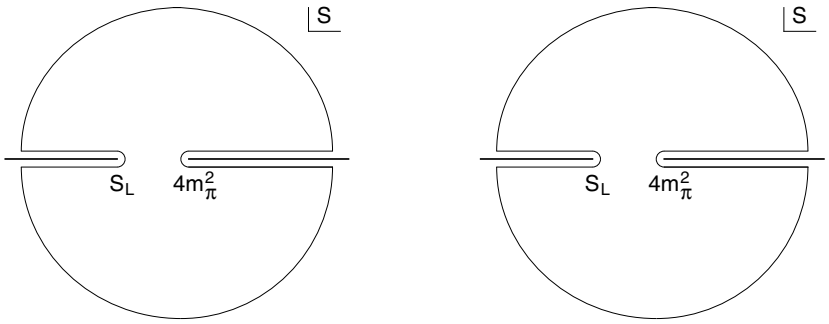


Fig. 1.3 Right-side figure caption.

Here is an example of two figures appearing side-by-side with single caption:

```
\begin{figure}[ht]
\sidebyside
{\includegraphics[width=1.8in]{bk-fig1}\\(a)}
{\includegraphics[width=1.8in]{bk-fig1}\\(b)}
\caption{Two figures side-by-side.
         (a) Figure caption for left-side figure.
         (b) Figure caption for right-side figure.}
\label{fig1.4}
\end{figure}
```



(a) (b)

Fig. 1.4 Two figures side-by-side. (a) Figure caption for left-side figure. (b) Figure caption for right-side figure.

Side-by-side figures Fig. 1.4(a) and Fig. 1.4(b) are referred with `Fig.~\ref{fig1.4}(a)` and `\fref{fig1.4}(b)` commands.

If instead you wish to use some other method, then it is very important to leave the right amount of vertical space in the figure declaration to accommodate your figure.

The preferred graphics formats are tiff and Encapsulated PostScript (eps), for any type of image. The WSPC 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.

Very large figures and tables should be placed on a page by themselves. Landscape tables and figures can be typeset with following environments:

- `sidewaystable` and
- `sidewaysfigure`.

Example:

```
\begin{sidewaysfigure}
\begin{center}
\includegraphics[height=4in]{bk-fig5}
\end{center}
\caption{Sample figure caption.}
\label{fig1.5}
\end{sidewaysfigure}
```

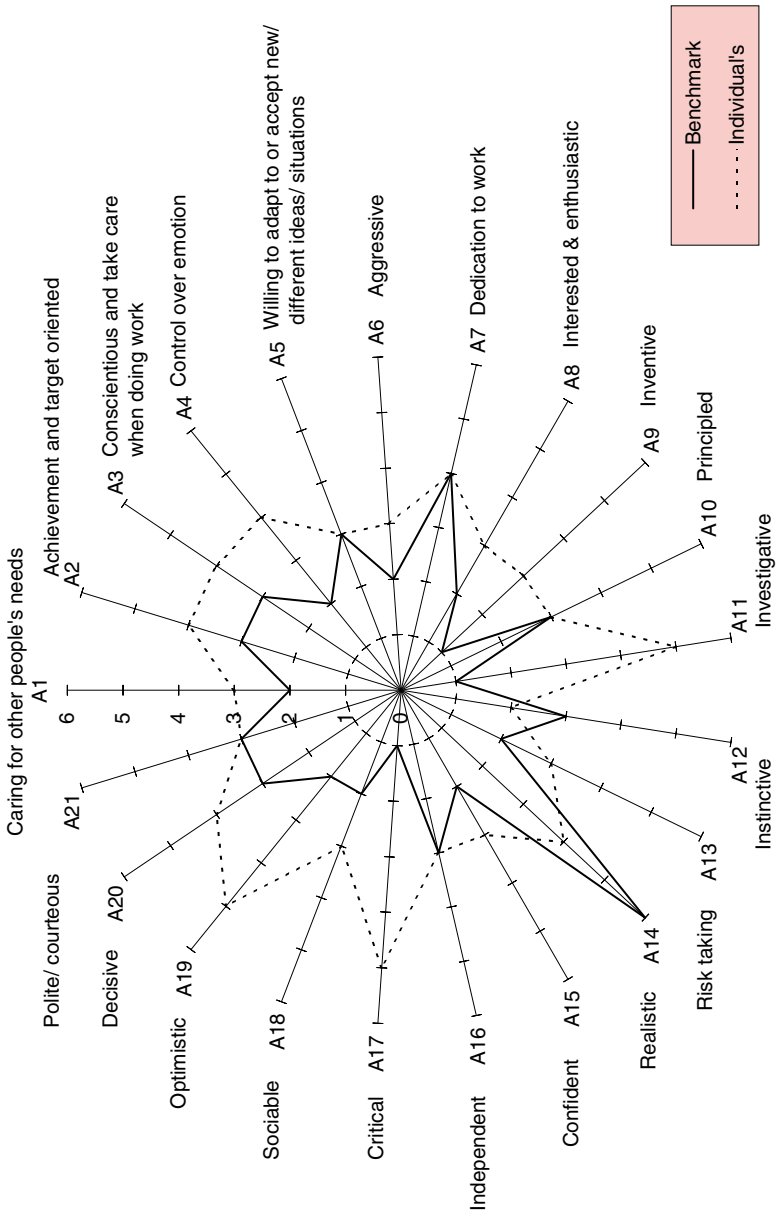


Fig. 1.5 Landscape figure.

Table 1.2 Landscape table.

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	—	—	—	—	—	—	—	—
0.1	0.1	2	1.667	1.1946	—	—	—	—	—	—
			0.806578	0.858211						
0.1	0.1	10	0.463679	0.465426	0.466489	0.466499	0.464947	0.45438	0.429651	0.35278
0.1	1	0.2	—	—	—	—	—	—	—	—
0.1	5	5	—	—	—	—	—	—	—	—
1	0.001	2	0.996033	0.968869	0.91379	0.848544	0.783787	0.669541	0.577489	—
			0.414324	0.41436	0.414412	0.414489	0.414605	0.415056	0.416214	
	0.001	0.2	0.316014	0.309739	—	—	—	—	—	—
			0.275327	0.275856						
	0.1	5	0.089435	0.089441	0.089435	0.089409	0.08935	0.089061	0.088347	0.084352
	1	3	0.128192	0.128966	0.19718	0.169063	0.142103	—	—	—
					0.41436	0.414412	0.414489			

1.11 Proofs

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

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

to produce

Proof. This is a test. □

If you want to display, 'Proof of Lemma', then write

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

to produce

Proof of Lemma. This is a test. □

1.12 Theorems and Definitions

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

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-book9x6}`.

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

produces

Theorem 1.1. *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...
\[
N = \{x \in N; T x = \gamma (x) T, T x^* = \gamma (x^*) T\}\,,
\]
and $E_\Xi (\cdot) = T^* \gamma (\cdot) T$ gives a conditional
expectation onto $N$.
\end{theorem}
```

generates

Theorem 1.2 (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.

The following environments are available by default with `ws-book-thm` package:

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

LaTeX 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}
```

(See the LaTeX user manual [Lamport (1994); $\mathcal{A}\mathcal{M}\mathcal{S}$ (2004)].)

1.13 Cross-referencing

Use `\label` and `\ref` for cross-referencing 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`, e.g.

```
\begin{equation}
\mu(n, t) = \frac{\sum\limits^\infty_{i=1}1 ...}
\label{eq1.1}
\end{equation}
```

With the instruction `\ref` one can refer to a numbered part that has been labelled, e.g. `..., see also Eq. (\ref{eq1.1})`.

Some useful shortcut commands.

Shortcut command	Equivalent TeX command	Output
In the middle of a sentence:		
`\eref{eq1.1}`	Eq. (`\ref{eq1.1}`)	Eq. (1.1)
`\sref{sec1.1}`	Sec. `\ref{sec1.1}`	Sec. 1.1
`\cref{ch1}`	Chap. `\ref{ch1}`	Chap. 1
`\fref{fig1.1}`	Fig. `\ref{fig1.1}`	Fig. 1.1
`\tref{tbl1.1}`	Table `\ref{tbl1.1}`	Table 1.1
At the starting of a sentence:		
`\Eref{eq1.1}`	Equation (`\ref{eq1.1}`)	Equation (1.1)
`\Sref{sec1.1}`	Section `\ref{sec1.1}`	Section 1.1
`\Cref{ch1}`	Chapter `\ref{ch1}`	Chapter 1
`\Fref{fig1.1}`	Figure `\ref{fig1.1}`	Figure 1.1
`\Tref{tbl1.1}`	Table `\ref{tbl1.1}`	Table 1.1

- The `\label` instruction should be typed immediately after (or one line below), but not inside the argument of a number-generating instruction such as `\section` or `\caption`, e.g.
  `\caption{ ... caption ... }\label{fig1.1}`
- but for chapters, label should be placed as
  `\chapter{Chapter Title\label{ch1}}`.
- labels should not be repeated.

1.14 Citations

World Scientific's preferred style for books is the Harvard (author-date) system, unless the text is very heavily referenced in which case the Vancouver (numbered) system may be more appropriate.

System	Package
Harvard (author-date)	`\usepackage{ws-book-har}`
Vancouver (numbered)	
• Bracketed [1]	`\usepackage{ws-book-van}`
• Superscript[1]	`\usepackage[super]{ws-book-van}`

1.14.1 *Harvard Style*

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

Basic citation commands available with the `ws-book-har` package:

`\citeauthor{weis94}`	⇒	Weiss
`\citeyear{weis94}`	⇒	1994
`\cite{weis94}`	⇒	[Weiss (1994)]
`\cite[Chap. 1]{weis94}`	⇒	[Weiss (1994), Chap. 1]
`\citet{weis94}`	⇒	Weiss (1994)
`\citep{weis94}`	⇒	(Weiss, 1994)
`\citep[Chap. 1]{weis94}`	⇒	(Weiss, 1994, Chap. 1)
`\citep[see][]{weis94}`	⇒	(see Weiss, 1994)
`\citep[see][Chap. 1]{weis94}`	⇒	(see Weiss, 1994, Chap. 1)
`\cite{best03,chur90}`	⇒	[Bestbury (2003); Churchill and Brown (1990)]
`\citet{best03,chur90}`	⇒	Bestbury (2003); Churchill and Brown (1990)
`\citep{best03,chur90}`	⇒	(Bestbury, 2003; Churchill and Brown, 1990)

- For a single author, use 'Weiss (1994) ...' or '... [Weiss (1994)]'

- For multiple citations, do not use `\cite{chur90}\cite{weis94}`, but use `\cite{chur90,weis94}` instead.
- If there are two authors, use [Churchill and Brown (1990)] or (Churchill and Brown, 1990)
- Add a, b, c, etc. to distinguish between two or more references with the same author name and year (e.g., Roitt 1999a,b)

1.14.2 *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

1.14.2.1 *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."

1.14.2.2 *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 proven[2] 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."

1.15 Footnote

Footnotes are denoted by Arabic number superscript in the text, e.g.,

Usage:

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

Output:
... in total.[1]

1.16 Running Heads

The WSPC prefers "Book Title" as even page header and "Chapter Title" as odd page header. However, authors can pick their required style by switching the class options while loading the `ws-book9x6` document class in the preamble.

Class options	Even page	Odd page
`\documentclass[acrhead]{ws-book9x6}`[a]	Author Name(s)	Chapter Title
`\documentclass[csrhead]{ws-book9x6}`	Chapter Title	Section Title
`\documentclass{ws-book9x6}`	Book Title	Chapter Title

[a]Author names are included with `\author{A. Author}` in multi-authored books.

1.17 Miscellaneous

1.17.1 *Quote*

Here is an example for the `quote` environment.

> This is an example for the `quote` environment. Quote text is indented by 1pc on the left and right sides. The point size for the quote text is 9/11pt.

[1]Sample footnote text.

1.18 Acknowledgments and Appendices

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}`.

1.19 Appendices

Appendices should be used only when absolutely necessary. They should come before the bibliography. Appendix A of this document has more details on appendices.

1.20 Bibliography

1.20.1 *BIBTEX users*

BIBTEX users should use our bibliography style file `ws-book-har.bst` for (author-date) references or `ws-book-van.bst` for (numbered) references. Chapter 2 of this document has more on BIBTEX.

1.20.2 *Non-BIBTEX users*

Non-BIBTEX users can follow the reference pattern as shown below.

Here is some sample coding for author-date references.

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

\bibitem[{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.
\end{thebibliography}
```

Here is some sample coding for numbered references.

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

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

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

The only difference between the codings of author-date references and numbered references is the argument of `\bibitem`.

Author-date	Numbered
`\bibitem[{\AmS(2004)}]{ams04}...`	`\bibitem{ams04}...`
`\bibitem[{Baker and Carter(1972)}]{bake72}...`	`\bibitem{bake72}...`
`\bibitem[{Bestbury(2003)}]{best03}...`	`\bibitem{best03}...`

1.21 Index

The index should be printed at the end of the book. Chapter 3 has more on indexing.

Chapter 2

BIBTEXing Using the WSPC BIBStyle

2.1 BIBTEX Database Entries

BIBTEX Database entry type	Sample citation
article	[Bestbury (2003); Deligne and Gross (2002)]
	[Beneke *et al.* (1997); Hopfield and Herz (1995); Yuan (2014)]
proceedings	[Weiss (1994)]
inproceedings	[Gupta and Senturia (1997)]
book	[Richardson (1960); Jarlskog (1988)]
edition	[Churchill and Brown (1990)]
editor	[Benhamou and Colmerauer (1993)]
series	[Baker and Carter (1972)]
tech report	[Hobby (1992); Kernighan (1984)]
unpublished	[Heard *et al.* (1994)]
phd thesis	[Brown (1988)]
masters thesis	[Lodha (1974)]
incollection	[Jones (1973)]
misc	(Davidsen, 1993, Theorem 2.1)

2.2 BIBTEX

If you use the BIBTEX program to maintain your bibliography, you do not use the `thebibliography` environment. Instead, you should include the lines

```
\bibliographystyle{ws-book-har}
\bibliography{ws-book-sample}
```

where `ws-book-har` refers to a file `ws-book-har.bst`, which defines how your references will look.

The argument to `\bibliography` refers to the file `ws-book-sample.bib`, which should contain your database in BIBTEX format. Only the entries referred to via `\cite` will be listed in the bibliography.

To complete the job, compile your file as follows:

(1) `latex ws-book9x6`
(2) `latex ws-book9x6`
(3) `bibtex ws-book9x6`
(4) `makeindex ws-book9x6`
(5) `latex ws-book9x6`
(6) `latex ws-book9x6`

Chapter 3

Indexing

3.1 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:	`\index{Alpha}`
Page viii:	`\index{alpha}`
Page ix:	`\index{alpha}`
Page 7:	`\index{gnat!size of}`
Page 8:	`\index{bites!animal!gnats}`
Page 10:	`\index{bites!animal!gnats}`
Page 10:	`\index{bites!animal!gnus}`
Page 12:	`\index{bites!vegetable}`
Page 22:	`\index{alpha}`
Page 32:	`\index{gnat}`
Page 35:	`\index{gnat!anatomy}`
	`\index{gnus!good}`
Page 38:	`\index{gnus!bad}`

Alpha, ii
alpha, viii, ix, 22
bites
    animal
        gnats, 8, 10
        gnus, 10
    vegetable, 12
gnat, 32
    anatomy, 35
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gnus
    bad, 38
    good, 35

You then run LaTeX on your entire document, causing it to generate the file `ws-book9x6.idx`. Next, run the `MakeIndex` program by typing the command, `makeindex ws-book9x6`. This produces the file `ws-book9x6.ind`. If `MakeIndex` generated no error messages, you can now rerun LaTeX on your document and the index will appear.

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 would like to have "general" and "author" indexes separately, please see Sec. 3.2. For more details on index generation, see [Lamport (1987)].

3.2 Multiple Indexes

To create a "general" and an "author" index, include the following lines:

```
...
\usepackage{ws-multind}
\makeindex{general}
\makeindex{authors}
...
\index{authors}{Fairbairns, R.} %\aindx{Fairbairns, R.}
...
\index{general}{FAQs}           %\gindx{FAQ}
...
\printindex{general}{GENERAL INDEX}
\printindex{authors}{AUTHOR INDEX}
```

To complete the job, compile your file as follows:

(1) latex ws-book9x6
(2) latex ws-book9x6
(3) bibtex ws-book9x6 (for bibtex users)
(4) makeindex general
(5) makeindex authors
(6) latex ws-book9x6
(7) latex ws-book9x6

Appendix A

Appendix

A.1 Appendices

Appendices should be used only when absolutely necessary. They should come before the References. Sectional units are obtained in the usual way, i.e. with the LaTeX instructions `\section`, `\subsection`. If there is more than one appendix, number them alphabetically. Number displayed equations occurring in the Appendix in this way, e.g. (A.1), (A.2), etc.

$$k_{n+1} = n^2 + k_n^2 - k_{n-1}\,. \tag{A.1}$$

Table A.1 Class options.[a]

Option	Purpose	
	Even page headers	Odd page headers
`acrhead`	Author Name(s)	Chapter Title
`csrhead`	Chapter Title	Section Title
`bcrhead` default	Book Title	Chapter Title
`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.	
`wsdraft`	To draw border line around text area.	
`bigtoc`	To align the table of contents for those books with more than 9 Chapters	

[a] Usage: `\documentclass[option]{ws-book9x6}`

Table A.2 Commonly used macros.

Macro/Environment name	Purpose
`\chapter[#1]{#2}`	Chapter title
`\section{#1}`	Section heading
`\subsection{#1}`	Subsection heading
`\subsubsection{#1}`	Subsubsection heading
`\section*{#1}`	Unnumbered Section head
`\begin{itemlist}`	Start bulleted lists
`\end{itemlist}`	End bulleted lists
`\begin{arabiclist}`	Start arabic lists (1, 2, 3...)
`\end{arabiclist}`	End arabic lists
`\begin{romanlist}`	Start roman lists (i, ii, iii...)
`\end{romanlist}`	End roman lists
`\begin{Romanlist}`	Start roman lists (I, II, III...)
`\end{Romanlist}`	End roman lists
`\begin{alphlist}`	Start alpha lists (a, b, c...)
`\end{alphlist}`	End alpha lists
`\begin{Alphlist}`	Start alpha lists (A, B, C...)
`\end{Alphlist}`	End alpha lists
`\begin{proof}`	Start of Proof
`\end{proof}`	End of Proof
`\begin{theorem}`	Start of Theorem
`\end{theorem}`	End of Theorem (see Page 15 for detailed list)
`\begin{appendix}`	Start Appendix
`\end{appendix}`	End Appendix
`\begin{thebibliography}{#1}`	Start of reference list
`\end{thebibliography}`	End of reference list
`\bibitem[{#1}]{#2}`	reference item in author-date style
`\bibitem{#1}`	reference item in numbered style
`\bibliographystyle{#1}`	To include BIBTEX style file
`\bibliography{#1}`	To include BIBTEX database
`\blankpage`	for blank page with no running heads
Macros available for Tables/Figures.	
`figure`	figures
`sidewaysfigure`	landscape figures
`table`	tables
`sidewaystable`	landscape tables
`\tbl{#1}{#2}`	#1 - table caption; #2 - tabular environment
Horizantal Rules for tables	
`\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

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