



# Elements of Scientific Computing (Texts in Computational Science and Engineering)

By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai

Download now

Read Online 

**Elements of Scientific Computing (Texts in Computational Science and Engineering)** By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai

Science used to be experiments and theory, now it is experiments, theory and computations. The computational approach to understanding nature and technology is currently flowering in many fields such as physics, geophysics, astrophysics, chemistry, biology, and most engineering disciplines. This book is a gentle introduction to such computational methods where the techniques are explained through examples. It is our goal to teach principles and ideas that carry over from field to field. You will learn basic methods and how to implement them. In order to gain the most from this text, you will need prior knowledge of calculus, basic linear algebra and elementary programming.

 [Download Elements of Scientific Computing \(Texts in Computational Science and Engineering\).pdf](#)

 [Read Online Elements of Scientific Computing \(Texts in Computational Science and Engineering\).pdf](#)

# Elements of Scientific Computing (Texts in Computational Science and Engineering)

By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai

**Elements of Scientific Computing (Texts in Computational Science and Engineering)** By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai

Science used to be experiments and theory, now it is experiments, theory and computations. The computational approach to understanding nature and technology is currently flowering in many fields such as physics, geophysics, astrophysics, chemistry, biology, and most engineering disciplines. This book is a gentle introduction to such computational methods where the techniques are explained through examples. It is our goal to teach principles and ideas that carry over from field to field. You will learn basic methods and how to implement them. In order to gain the most from this text, you will need prior knowledge of calculus, basic linear algebra and elementary programming.

**Elements of Scientific Computing (Texts in Computational Science and Engineering) By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai Bibliography**

- Sales Rank: #3679885 in Books
- Published on: 2010-09-28
- Original language: English
- Number of items: 1
- Dimensions: 9.20" h x 1.10" w x 6.10" l, 1.72 pounds
- Binding: Hardcover
- 468 pages



[Download Elements of Scientific Computing \(Texts in Compu ...pdf](#)



[Read Online Elements of Scientific Computing \(Texts in Compu ...pdf](#)

## Download and Read Free Online Elements of Scientific Computing (Texts in Computational Science and Engineering) By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai

---

### Editorial Review

#### Review

From the reviews:

“This gentle introduction to scientific computing aims to convey the basic ideas, principles and techniques of computational science to undergraduates in mathematics, science and engineering. ... The real strength of the text is its adroit mix of analytical and numerical, theoretical and practical. ... This is a top-notch book on scientific computing written with clarity ... and a good sense of what students need to learn. It is among the best books in this area that I have seen.” (William J. Satzer, The Mathematical Association of America, February, 2011)

“The text flows nicely, and Tveito (Simula Research Laboratory, Norway) and colleagues thoroughly explain different subjects in meaningful steps. In addition to exercises at the end of each chapter, an instructive ‘Projects’ section allows readers to practice new concepts. ... Overall, this textbook is a welcome addition to a small set of books currently available in scientific computing, an expanding area for undergraduate course development in many US colleges. Summing Up: Recommended. Lower-division undergraduates through researchers/faculty.” (D. Papamichail, Choice, Vol. 48 (9), May, 2011)

“This book is part of Springer’s Texts in Computational Science and Engineering series, so it is written for students. ... chapters more or less serve as a limited introduction to computational mathematics: they cover basic algorithms in numerical integration, initial-value problems for scalar ODEs, initial-value problems for two-component ODEs, rootfinding in one or two dimensions, and least squares approximations using constants, lines, and parabolas.” (Toby Driscoll, SIAM Review, Vol. 53 (4), 2011)

“In this appealing book the authors introduce to basic principles of numerical calculations which every engineer or scientist working with computers should be familiar with. ... a very good selection of topics treated and presented important methods in a gentle style ... .” (Rudolf Gorenflo, Zentralblatt MATH, Vol. 1220, 2011)

#### About the Author

Professor Aslak Tveito is the managing director of Simula Research Laboratory. His research is focused on computing the electrical activity in the heart. Tveito is the co-author of more than 60 papers published in international peer-reviewed journals, and one textbook introducing partial differential equations. Tveito has also edited four books published internationally. Professor Hans Petter Langtangen is the director of Center for Biomedical Computing, a Norwegian Center of Excellence at Simula Research Laboratory, and a professor of computer science at the University of Oslo. His research concerns numerical methods and software tools for continuum mechanical problems. Langtangen has published more than 40 journal papers, and more than 50 peer-reviewed contributions to conference proceedings and books. He is the author of three textbooks and an a co-editor of three books. Langtangen has been an active developer of open source and commercial software systems for computational sciences. He is a member of the European Academy of Sciences and serves on the editorial board of five leading international journals. Dr. Nielsen is a research scientist at Simula Research Laboratory where he investigates whether it is possible to compute the position and size of heart infarctions from ECG recordings. He has published a number of papers on computational mathematics and during his years at Norwegian Computing Center he solved many scientific computing

problems for the Norwegian oil industry. The research interests of Professor Xing Cai center around parallel numerical methods and software for solving partial differential equations. He has more than 50 peer-reviewed publications in international journals and conference proceedings.

## **Users Review**

### **From reader reviews:**

#### **Deanna Stewart:**

Do you have something that suits you such as book? The guide lovers usually prefer to decide on book like comic, quick story and the biggest the first is novel. Now, why not seeking Elements of Scientific Computing (Texts in Computational Science and Engineering) that give your entertainment preference will be satisfied by reading this book. Reading habit all over the world can be said as the opportunity for people to know world considerably better than how they react toward the world. It can't be explained constantly that reading behavior only for the geeky individual but for all of you who wants to end up being success person. So, for all of you who want to start looking at as your good habit, it is possible to pick Elements of Scientific Computing (Texts in Computational Science and Engineering) become your own starter.

#### **Mario Rice:**

Your reading sixth sense will not betray an individual, why because this Elements of Scientific Computing (Texts in Computational Science and Engineering) reserve written by well-known writer whose to say well how to make book which might be understand by anyone who all read the book. Written within good manner for you, still dripping wet every ideas and publishing skill only for eliminate your current hunger then you still uncertainty Elements of Scientific Computing (Texts in Computational Science and Engineering) as good book but not only by the cover but also with the content. This is one book that can break don't ascertain book by its handle, so do you still needing an additional sixth sense to pick this particular!? Oh come on your studying sixth sense already told you so why you have to listening to yet another sixth sense.

#### **Arthur Johnson:**

On this era which is the greater person or who has ability in doing something more are more precious than other. Do you want to become considered one of it? It is just simple method to have that. What you have to do is just spending your time not very much but quite enough to get a look at some books. One of several books in the top collection in your reading list is definitely Elements of Scientific Computing (Texts in Computational Science and Engineering). This book which can be qualified as The Hungry Hillsides can get you closer in turning into precious person. By looking upward and review this reserve you can get many advantages.

#### **May Davidson:**

Do you like reading a guide? Confuse to looking for your favorite book? Or your book was rare? Why so many question for the book? But almost any people feel that they enjoy to get reading. Some people likes reading, not only science book but novel and Elements of Scientific Computing (Texts in Computational

Science and Engineering) or maybe others sources were given know-how for you. After you know how the truly great a book, you feel desire to read more and more. Science publication was created for teacher or maybe students especially. Those ebooks are helping them to increase their knowledge. In other case, beside science publication, any other book likes Elements of Scientific Computing (Texts in Computational Science and Engineering) to make your spare time much more colorful. Many types of book like this.

**Download and Read Online Elements of Scientific Computing  
(Texts in Computational Science and Engineering) By Aslak Tveito,  
Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai  
#H2YU0G81LPM**

# **Read Elements of Scientific Computing (Texts in Computational Science and Engineering) By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai for online ebook**

Elements of Scientific Computing (Texts in Computational Science and Engineering) By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Elements of Scientific Computing (Texts in Computational Science and Engineering) By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai books to read online.

## **Online Elements of Scientific Computing (Texts in Computational Science and Engineering) By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai ebook PDF download**

**Elements of Scientific Computing (Texts in Computational Science and Engineering) By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai Doc**

**Elements of Scientific Computing (Texts in Computational Science and Engineering) By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai MobiPocket**

**Elements of Scientific Computing (Texts in Computational Science and Engineering) By Aslak Tveito, Hans Petter Langtangen, Bjørn Frederik Nielsen, Xing Cai EPub**