

## Preface to the Second Edition

The excellent reception of the first edition by the reader community worldwide makes it imperative for a new edition. Many subtle changes have taken place in scientific computation in the time interval. Most of these are driven by the tremendous increase in computational power available to the individual user, making it possible to carry out work almost unthinkable a little while ago and there is every indication that the trend will continue in the near future. As a result, computational techniques become even more indispensable to engineers and scientists than ever before. At the same time, the convenience of communication through internet is also having an impact on how computers are used and how some of the computations are carried out these days.

The main changes in the second edition include the addition of a chapter on finite element methods. The growth of available computing power makes it more and more attractive to solve many complicated differential equations numerically and a different approach from the traditional finite difference methods is getting increasing attention, especially in the physics community. In order to keep the volume from expanding into unmanageable size, some sacrifices have to be made. These include introductory chapters on graphics and computer algebra and a couple of sections on topics that are less popular. Some derivations that can be left to references are also omitted. In order to accommodate these changes, most of chapters have been substantially rewritten. The end result is a volume that is more ideal in size both for the classroom and on the desk.

Many valuable suggestions have been received from readers and they have been incorporated, as far as possible, into the new edition. The author is greatly indebted to colleagues for caring to communicate and share their thoughts. The strong encouragement and support from World Scientific also form an essential ingredient in making the decision to finish on the second edition.

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