《现代物理学中的计算/COMPUTATIO》

图书基本信息

书名：《现代物理学中的计算/COMPUTATION IN MODERN PHYSICS》

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内容概要

The use of computers to solve modern scientific problems is very widespread. The impact of the improvement of our techniques for the solution of complex problems is difficult to overstate. Even our approach to most problems has been changed. Solutions to problems once thought intractable are being routinely secured. Instead of using oversimplified models, as has been the practice for the treatment of scientific systems in the past, the entire problem can now be attacked.The second edition of Computation in Modern Physics develops and presents algorithms for the solution of many types of mathematical systems, some dating as far as the last few centuries, but also quite a number that have been developed within the last 10-50 years.In this last category, close attention is paid to the rapidly developing area of Monte Carlo techniques where new conceptual views of physics problems are being brought into play. With this method, problems in a large number of dimensions can be solved through the introduction of a modern method for the representation of multidimensional functions.This book is suitable for two different levels in computational physics. The first part is an advanced introductory level and is appropriate for good students with no previous experience in computational methods or any student with some experience. Here the student is introduced to integral and differential techniques, Monte Carlo integration, basic computer architecture, methods of linear algebra, finite element techniques, digital signal processing and chaos.The second part of the book is more specialized for problems in strong interaction with emphasis on solutions to many-body scattering problems andseveral-body bound state calculations with Monte Carlo techniques. It also contains a chapter dealing with techniques for the summation of divergent series.

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书籍目录

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精彩书评

1、我看的是第三版，World Scientific。面铺的有点广，窃以为不太有必要，特别是介绍汇编语言更是没必要。线性代数部分也不太有必要，因为这是个水很深的问题，很难写出特色。一些比较有特色的内容：An Inverse Problem with Monte Carlo，介绍积分方程的反问题的随机处理，这个在其余参考书上没见到过。薛定谔方程与N体问题也写的不错，有深度。但我最喜欢的还是divergent series一章，介绍级数的重新求和技巧，这个在粒子物理和凝聚态场论中是比较有用的技巧，我对这本书的好评主要来自这里。

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