Numerous physical applications areas are presented in the book, mostly in fluid dynamics, but those range from oceanography to combustion. Research regarding the limiting behavior of numerical methods for singularly perturbed differential equations has been done in solid mechanics for some time and new results [3, 1] have recently appeared. In the area of neutral particle transport, studies of this kind have been carried out for many years and are continuing [2]. The growing interest (and success) in this type of research makes the book quite timely and easy to recommend strongly.

L. R. S.

1. I. Babuška and M. Suri, *On locking and robustness in the finite element method*, SIAM J. Numer. Anal. (to appear).

2. C. Börgers, E. W. Larsen, and M. L. Adams, *The asymptotic diffusion limit of a linear discontinuous discretization of a two-dimensional linear transport equation*, J. Comput. Phys. **98** (1992), 285–300.

3. S. C. Brenner and L.-Y. Sung, *Linear finite element methods for planar linear elasticity*, Math. Comp. **59** (1992), to appear.

20[65-04].—Julien C. Sprott, *Numerical Recipes—Routines and Examples in BASIC*, Cambridge Univ. Press, Cambridge, 1991, xi+398 pp., 23 cm. Price: Softcover $32.50.

This book contains translations into BASIC of the routines contained in [1] as well as of the demonstration routines in [2]. The author cautions the reader that the routines will run only on more advanced BASIC dialects, for example, without change, on Microsoft Corp.'s QuickBASIC 4.5 or later versions, and, with minor modifications, on Borland International's Turbo BASIC and its compatible successors.

W. G.

1. W. H. Press, B. P. Flannery, S. A. Teukolsky and W. T. Vetterling, *Numerical recipes—The art of scientific computing*, Cambridge Univ. Press, Cambridge, 1986. [Review **3**, Math. Comp. **50** (1988), 346–348.]

2. W. T. Vetterling, S. A. Teukolsky, W. H. Press, and B. P. Flannery, *Numerical recipes example book*, Cambridge Univ. Press, Cambridge, 1985. [Review **4**, Math. Comp. **50** (1988), 348–349.]

21[78-01, 78-04, 78-08].—Yves R. Crutzen, Giorgio Molinari & Guglielmo Rubinacci (Editors), *Industrial Application of Electromagnetic Computer Codes*, Computer and Information Science, Vol. 1, Kluwer, Dordrecht, 1990, v+263 pp., $24\frac{1}{2}$ cm. Price $94.00/Dfl.150.00.

This book is part of a series devoted to the publication of courses and educational seminars organized by the Joint Research Centre Ispra. It focuses on the underlying mathematical models and capabilities of current computer-aided design software tools for the computation of electromagnetic fields. The exposition is given from an engineering point of view.

Electromagnetic computer codes deal with the approximation of solutions to Maxwell's equations. The codes discussed are for magnetostatic field problems, eddy current problems and magneto-hydro-dynamic problems. These problems lead to static and transient nonlinear systems of partial differential equations developed from various vector and scalar potential descriptions of Maxwell's equations. Described are the different potential approaches and the resulting equations and boundary conditions on which the codes are based. From a mathematical point of view, the discussion presented is somewhat lacking. In most sections, systems of equations are written down without any regard for possible existence and uniqueness of solutions. In contrast, a section provided by J. C. Verite provides some indication that analytical work is being done on this class of problems.

In addition to the development of the differential systems, the book describes the discretization methods employed in the various codes. The most used technique for this class of problems is the finite element method. Integral and boundary element discretizations are discussed for some of the simpler applications as well. In most of this description, there is little concern for stability or error analysis.

The book also considers the basic software complexity issues associated with these problems. All of the applications in this area require meshing and description of rather complex geometrical devices. Thus, the codes are compared not only from an algorithmic point of view but also from a user interface perspective. Typically, geometrical specification is aided by a front-end code with extended graphics running on a workstation.

The book should be useful to industrial engineers who must solicit codes for supporting magnetic device design. Extensive description and comparison of the codes and the underlying mathematical models are given. The basic applications as well as typical application results are illustrated. The book may also be of interest to applied mathematicians in that it provides a class of differential formulations, which although not completely analyzed, appear to produce reliable results in practice.

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22[65-01, 65-04].—STEVEN E. KOONIN & DAWN C. MEREDITH, *Computational Physics—Fortran Version*, Addison-Wesley, Redwood City, CA, xvi+635 pp., 24 cm. Price $46.25.

This textbook is the Fortran language edition of a previous volume entitled *Computational Physics*. The authors mention that the texts in both editions are identical except for the computer examples in this edition which are written in Fortran whereas those in the previous edition are in BASIC.

The authors believe that the traditional university physics curriculum does not prepare students for doing physics on a computer. The purpose of this textbook is to improve the computational skills of physics students at the advanced undergraduate and beginning graduate levels.

The book is organized into eight chapters and a set of appendices. Each chapter presents a brief discussion of numerical techniques for solving a class of numerical problems. This is followed by applications of these techniques