
Description: Computational techniques have become indispensable tools in solving complex problems in transport phenomena. This book, first published in 1997, provides a clear, user-oriented introduction to the subject. Each self-contained chapter includes a detailed worked example and a discussion of the problem system equations. Also included are the numerical methods used; computer code for the solution of the problem system equations; discussion of the numerical solution with emphasis on physical interpretation; and when appropriate, a comparison of the numerical solution with an analytical solution or a discussion of how the numerical solution goes beyond what can be done analytically, especially for nonlinear problems. Intended for students and a broad range of scientists and engineers, the book includes computer code written in transportable Fortran so that readers can produce the numerical solutions and then extend them to other cases. The programs are also available on the author’s web site at http://www.lehigh.edu/~wes1/wes1.html.

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2. Unsteady laminar flow in a circular tube; M
3. Nonlinear, front-sharpening convective systems; H
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