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Book Review: *Computational Physics*

Computational Physics. Steven E. Koonin. The Benjamin/Cummings Pubishing Company, Inc. #35430, Paperback, 403 pp., $32.50.

Computational Physics presents an introduction to some of the most important numerical techniques used in contemporary physics. Each method is illustrated numerically and in various physical applications. The emphasis is always on the application rather than the technicalities of the particular algorithm which makes for a very readable book. Where more than one algorithm is available, e.g., for the solution of second-order differential equations, a comparison of the methods is made on the basis of a numerical example. The physical examples are not without interest in their own right and form a good extension of the usual physics curricula at the advanced undergraduate and beginning graduate level. Among the applications considered are: order and chaos in two-dimensional dynamical systems; the calculation of eigenfunctions of one dimensional quantum mechanical systems; atomic structure in the Hartree–Fock approximation; quantum scattering; nuclear charge densities; steady-state hydrodynamics in two dimensions; and Monte Carlo methods.

The book comes complete with a disk suitable for use on an IBM or similar personal computer. This disk contains some example programs (including graphics), which serve to illustrate the numerical techniques, as well as some codes which form part of suggested study projects. The programs are user friendly although not infallible against all erroneous input data. It is almost essential to compile the codes if one is to obtain reasonable execution speed.

In summary, *Computational Physics* is an interesting, clearly written book. It is not intended as a comprehensive review of numerical methods used in physics, but it does provide an excellent introduction to this subject.

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