

**10[65-02, 65C05, 65C10].**—ISTVÁN DEÁK, *Random Number Generators and Simulation*, Mathematical Methods of Operations Research, Vol. 4, Akadémiai Kiadó, Budapest, 1990, 342 pp., 24½ cm. Price \$46.00.

Several books on random number generation and simulation methods have appeared in recent years, so the potential reader of this one will want to know, first of all, what distinguishes it from the rest of the crowd. A prominent feature of this monograph is certainly the strong emphasis on computational and algorithmic aspects. All algorithms for random number and random variate generation and other computational procedures are carefully described in terms of step-by-step prescriptions and are often followed by examples with illustrative numerical data. Furthermore, the multivariate case receives a more thorough treatment in this book than is customary. In view of the current trend towards parallelization in simulation methods, this is definitely a very useful and timely feature. The reader will also find some well-chosen practical examples of simulation methods, such as the optimal water level regulation of a lake which is modeled by a stochastic programming problem.

The book starts out with providing background on probability theory and statistics in Chapter 1. The next chapter is mainly devoted to uniform pseudorandom numbers, but there is also a brief discussion of quasi-Monte Carlo methods and quasirandom points. Chapter 3 turns to general methods for random variate generation, both for continuous and for discrete distributions. A detailed treatment of random variate generation for special classes of distributions, such as normal distributions, exponential distributions, and beta distributions, is given in Chapter 4. Methods for random vector generation, including methods for generating uniformly distributed points in special domains such as simplices, balls, and spheres, are discussed in Chapter 5. Chapter 6 contains the basics of the Monte Carlo method as well as special sampling techniques and methods for variance reduction, while Chapter 7 describes several Monte Carlo techniques developed by the author for computing the distribution function of multivariate normal distributions. The last chapter offers a cross section of various types of applications of simulation methods, ranging from large systems of linear equations to simulated annealing.

With its ample supply of examples and its many useful hints for actually carrying out simulations, the book is geared towards the practitioner. The author takes great care to lead the applications-oriented reader to a stage where he/she can implement simulation methods concretely. The underlying theory is treated only to the extent that is necessary to understand the algorithms.

H. N.

**11[68-01, 68Q40].**—F. BRACKX & D. CONSTALES, *Computer Algebra with LISP and REDUCE: An Introduction to Computer-Aided Pure Mathematics*, Mathematics and Its Applications, Vol. 72, Kluwer, Dordrecht, 1991, xii + 264 pp., 24½ cm. Price \$54.00/Dfl.160.00.

The REDUCE Computer Algebra system has a long history of wide distribution on a variety of computers. Its international community continues to use and improve the program, under the coordination of its original author, A. C. Hearn at the RAND Corp.