novice, made by *Computer Simulation of Liquids* is its clear and exhaustive description of the tricks of the trade. These include details of common pitfalls and recipes for avoiding them and for speeding up programs. Also included in an appendix are many programs and subroutines on microfiche, ranging from common Monte Carlo and molecular dynamics algorithms to routines for avoiding the "time-consuming" square-root operation, calculating fast Fourier transforms and performing Ewald sums.

The latter part of the book focuses briefly on some nonequilibrium aspects of molecular dynamics simulations, on Brownian dynamics and, most briefly, on quantum simulations. Overall, the book makes available sufficient information for a beginner to get started doing simulations. The book's principal weak point (probably deliberately) is the lack of a comprehensive description of the physics of liquids. However, a long list of pre-1987 references is included at the end of the book.

The book, though not suitable as a text, will be a valuable reference for those using the computer to perform simulations of liquids (or, indeed, of other systems) and especially for those entering this fast-growing field.

JAYANTH R. BANAVAR
Pennsylvania State University

Relaxation Phenomena in Condensed Matter Physics

Sushanta Dattagupta
Academic, San Diego, Calif., 1987. 309 pp.
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Sushanta Dattagupta's admirable *Relaxation Phenomena in Condensed Matter Physics* is similar in many respects to Dieter Forster's monograph *Hydrodynamic Fluctuations, Broken Symmetry, and Correlation Functions* (Benjamin–Cummings, Menlo Park, Calif., 1975). The main distinction between the two is that Dattagupta's book focuses on problems of concern to solid-state physicists while Forster's is mainly concerned with liquid-state problems. In addition, Forster's book is probably more profound because it stresses the hydrodynamical consequences of broken symmetries.

Relaxation Phenomena is broken up into two parts. In part A Dattagupta reviews how linear-response theory and correlation functions can be used to analyze various spectroscopy experiments. The nicest feature of his approach is that with a single, unified formalism Dattagupta analyzes an enormous number of experiments. Among many other topics, he considers magnetic, dielectric and anelastic relaxation; electron spin and nuclear magnetic resonances; and neutron and Raman scattering.

In part B of the book Dattagupta discusses the stochastic modeling correlation functions. After briefly discussing some of the basic ideas in the theory of stochastic processes, Dattagupta introduces random-walk methods, both discrete and continuous in time. The treatment here is very much in the style of the late Elliot Montroll. Again the author applies the ideas under consideration to a very large number of physical phenomena and to their phenomenological modeling. Next he uses Fokker-Planck and first-passage-time methods to treat activated barrier-crossing problems. The treatment here is competent, though not novel. Once again many physical examples are considered and discussed in detail.

The book concludes with chapters on relaxation in cooperative systems and relaxation in disordered systems. I was disappointed that more of the book was not devoted to these topics of current research interest. The first of these two chapters deals exclusively with Glauber dynamics in a regular Ising model. The focus is on approximate mean-field solutions. The bulk of the last chapter is on the dynamics in a disordered Ising chain and how it compares to the dynamics in a regular Ising model. Only a brief mention is made of the very general topic of relaxation in glassy systems.

In conclusion, I am happy to have this book on my shelf. Its main strength is the large number of interesting experimental situations and probes treated. For my taste its chief weakness is the overemphasis of stochastic modeling of physical situations. In addition, the book could use more graphs of real experimental data and a more lengthy discussion of cooperative effects in disordered systems.

THEODORE KIRKPATRICK
University of Maryland

Galactic and Extragalactic Radio Astronomy

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The revolution in observational astronomy since the Second World War