Joseph Fourier, is an example of physical diffusion. By contrast, the diffusion equation for a probability, developed by Pierre Simon Laplace, results in the continuum limit of a random walk. Einstein's theory, which essentially unified the two approaches in the context of Brownian motion, is covered in chapters 3 and 4.

In chapter 5, the authors, by discretizing the diffusion equation, prepare the foundation for Markov jump processes; in chapter 6, they derive the corresponding master equations. In that chapter, readers also get a firsthand introduction to the powerful numerical technique called Gillespie's algorithm. The book's first author developed it many years ago for exact numerical simulations of the trajectories that follow from the master equation.

Three years after Einstein developed his theory of Brownian motion, Paul Langevin formulated an alternative approach based on a stochastic differential equation that extends Newton's deterministic equation. The logical foundation of Langevin's theory and its implications are discussed in chapters 8 and 9.

Chapter 10 presents, at an elementary level, the extension of the equations for diffusion in the presence of a time-independent conservative external force—in the chapter, the authors work out the example of a constant force. It is a pity, however, that the chapter only mentions in a footnote Kramers's diffusion model of chemical reactions, which treats the decay of a metastable state.

Simple Brownian Diffusion will certainly be used to form the core content of my senior undergraduate course on diffusion and related phenomena. However, I would hesitate to recommend this excellent exposition as a standalone textbook for two main reasons: Few examples are explicitly worked out, and no exercises are given. Nevertheless, I do recommend this book to all serious students who seek to have a thorough understanding of the conceptual subtleties in the theory of diffusion. The authors emphasize that "developing that understanding is the limited aim of this book." In that endeavor they have been remarkably successful.

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