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of detailed balance; 7. Expansion in eigenfunctions; 8. The macroscopic equation; 9. The adjoint equation; 10. Other equations related to the master equation; Chapter VI. ONE-STEP PROCESSES; 1. Definition; the Poisson process; 2. Random walk with continuous time; 3. General properties of one-step processes; 4. Examples of linear one-step processes; 5. Natural boundaries; 6. Solution of linear one-step processes with natural boundaries; 7. Artificial boundaries; 8. Artificial boundaries and normal modes
 9. Nonlinear one-step processes Chapter VII. CHEMICAL REACTIONS; 1. Kinematics of chemical reactions; 2. Dynamics of chemical reactions; 3. The stationary solution; 4. Open systems; 5. Unimolecular reactions; 6. Collective systems; 7. Composite Markov processes; Chapter VIII. THE FOKKER-PLANCK EQUATION; 1. Introduction; 2. Derivation of the Fokker-Planck equation; 3. Brownian motion; 4. The Rayleigh particle; 5. Application to one-step processes; 6. The multivariate Fokker-Planck equation; 7. Kramers' equation; Chapter IX. THE LANGEVIN APPROACH; 1. Langevin treatment of Brownian motion
 2. Applications 3. Relation to Fokker-Planck equation; 4. The Langevin approach; 5. Discussion of the Ito-Stratonovich dilemma; 6. Non-Gaussian white noise; 7. Colored noise; Chapter X. THE EXPANSION OF THE MASTER EQUATION; 1. Introduction to the expansion; 2. General formulation of the expansion method; 3. The emergence of the macroscopic law; 4. The linear noise approximation; 5. Expansion of a multivariate master equation; 6. Higher orders; Chapter XI. THE DIFFUSION TYPE; 1. Master equations of diffusion type; 2. Diffusion in an external field; 3. Diffusion in an inhomogeneous medium
 4. Multivariate diffusion equation

Sommario/riassunto

The third edition of Van Kampen's standard work has been revised and updated. The main difference with the second edition is that the contrived application of the quantum master equation in section 6 of chapter XVII has been replaced with a satisfactory treatment of quantum fluctuations. Apart from that throughout the text corrections have been made and a number of references to later developments have been included. From the recent textbooks the following are the most relevant. C.W.Gardiner, Quantum Optics (Springer, Berlin 1991)D. T. Gillespie, Markov Processes (Academic Press, Sa
