

1. Record Nr.	UNINA9910454310403321
Autore	Coffey William <1948->
Titolo	The Langevin equation [[electronic resource]] : with applications to stochastic problems in physics, chemistry, and electrical engineering / W.T. Coffey, Yu. P. Kalmykov, J.T. Waldron
Pubbl/distr/stampa	Singapore ; ; River Edge, N.J., : World Scientific, c2004
ISBN	1-281-93552-2 9786611935528 981-279-509-X
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (704 p.)
Collana	Series in contemporary chemical physics ; ; v. 14
Altri autori (Persone)	KalmykovYu. P WaldronJ. T
Disciplina	519.2 530.475
Soggetti	Langevin equations Brownian motion processes Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Contents ; Preface to the Second Edition ; Preface to the First Edition ; Chapter 1 Historical Background and Introductory Concepts ; 1.1 Brownian Motion ; 1.2 Einstein's Explanation of the Brownian Movement ; 1.3 The Langevin Equation ; 1.4 Einstein's Method 1.5 Necessary Concepts of Statistical Mechanics 1.6 Probability Theory ; 1.7 Application to the Langevin Equation ; 1.8 Wiener Process ; 1.9 The Fokker-Planck Equation ; 1.10 Drift and Diffusion Coefficients ; 1.11 Solution of the One-Dimensional Fokker-Planck Equation 1.12 The Smoluchowski Equation 1.13 Escape of Particles over Potential Barriers - Kramers' Escape Rate Theory ; 1.14 Applications of the Theory of Brownian Movement in a Potential ; 1.15 Rotational Brownian Motion - Application to Dielectric Relaxation

1.16 Superparamagnetism - Magnetic After-Effect
 1.17 Brown's Treatment of Neel Relaxation
 ; 1.18 Asymptotic Expressions for the Neel Relaxation Time
 ; 1.19 Ferrofluids ; 1.20 Depletion Effect in a Biased
 Bistable Potential ; 1.21
 Stochastic Resonance ; 1.22 Anomalous Diffusion
 References Chapter 2 Langevin Equations and Methods of
 Solution ; 2.1 Criticisms of the
 Langevin Equation ; 2.2 Doob's
 Interpretation of the Langevin Equation
 ; 2.3 Nonlinear Langevin Equation with a Multiplicative Noise Term: Ito
 and Stratonovich Rules
 2.4 Derivation of Differential-Recurrence Relations from the One-
 Dimensional Langevin Equation

Sommario/riassunto

This volume is the second edition of the first-ever elementary book on
 the Langevin equation method for the solution of problems involving
 the Brownian motion in a potential, with emphasis on modern
 applications in the natural sciences, electrical engineering and so on. It
 has been substantially enlarged to cover in a succinct manner a number
 of new topics, such as anomalous diffusion, continuous time random
 walks, stochastic resonance etc, which are of major current interest in
 view of the large number of disparate physical systems exhibiting these
 phenomena. The book has been written in suc
