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2.4 Problems for Chapter 2; 3 General Properties of Time-Correlation Functions; 3.1 Fluctuation-Dissipation Theorem; 3.2 Symmetry Properties of Correlation Functions; 3.3 Analytic Properties of Response Functions
3.4 Symmetries of the Complex Response Function3.5 The Harmonic Oscillator; 3.6 The Relaxation Function; 3.7 Summary of Correlation Functions; 3.8 The Classical Limit; 3.9 Example: The Electrical Conductivity; 3.10 Nyquist Theorem; 3.11 Dissipation; 3.12 Static Susceptibility (Again); 3.13 Sum Rules; 3.14 References and Notes; 3.15 Problems for Chapter 3; 4 Charged Transport; 4.1 Introduction; 4.2 The Equilibrium Situation; 4.3 The Nonequilibrium Case; 4.3.1 Setting up the Problem; 4.3.2 Linear Response; 4.4 The Macroscopic Maxwell Equations; 4.5 The Drude Model; 4.5.1 Basis for Model
4.5.2 Conductivity and Dielectric Function4.5.3 The Current Correlation Function; 4.6 References and Notes; 4.7 Problems for Chapter 4; 5 Linearized Langevin and Hydrodynamical Description of Time-Correlation Functions; 5.1 Introduction; 5.2 Spin Diffusion in Itinerant Paramagnets; 5.2.1 Continuity Equation; 5.2.2 Constitutive Relation; 5.2.3 Hydrodynamic Form for Correlation Functions; 5.2.4 Green-Kubo Formula; 5.3 Langevin Equation Approach to the Theory of Irreversible Processes; 5.3.1 Choice of Variables; 5.3.2 Equations of Motion; 5.3.3 Example: Heisenberg Ferromagnet
5.3.4 Example: Classical Fluid5.3.5 Summary; 5.3.6 Generalized Langevin Equation; 5.3.7 Memory-Function Formalism; 5.3.8 Memory-Function Formalism: Summary; 5.3.9 Second Fluctuation-Dissipation Theorem; 5.4 Example: The Harmonic Oscillator; 5.5 Theorem Satisfied by the Static Part of the Memory Function; 5.6 Separation of Time Scales: The Markoff Approximation; 5.7 Example: Brownian Motion; 5.8 The Plateau-Value Problem; 5.9 Example: Hydrodynamic Behavior; Spin-Diffusion Revisited; 5.10 Estimating the Spin-Diffusion Coefficient; 5.11 References and Notes; 5.12 Problems for Chapter 5
6 Hydrodynamic Spectrum of Normal Fluids

Sommario/riassunto

The present text offers a graduate level treatment of time dependent phenomena in condensed matter physics. Conventional ideas of linear response theory and kinetic theory are treated in detail. The general emphasis, however, in on the development of generalized Langevin equations for treating nonlinear behaviour in a wide variety of systems. A full treatment is given for the underpinnings of hydrodynamics for fluids.This is the third volume of a four volume set of texts by the same author, two of which have already been published (""Fluctuations, Order, and Defects"" 0-471-32840-5, ""