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Autore	Lefebvre, Arthur H.
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2. Record Nr.	UNINA9910157842503321
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Nota di contenuto

Basics of statistical mechanics of short-range interacting systems -- Equilibrium statistical mechanics of long-range interactions -- The large deviations method and its applications -- Solutions of mean field models -- Beyond mean-field models -- Quantum long-range systems -- BBGKY hierarchy, kinetic theories and the Boltzmann equation -- Kinetic theory of long-range systems: Klimontovich, Vlasov and Lenard-Balescu equations -- Out-of-equilibrium dynamics and slow relaxation -- Gravitational systems -- Two-dimensional and geophysical fluid mechanics -- Cold coulomb systems -- Hot plasma -- Wave-particles interaction -- Dipolar systems -- Appendixes: A. Features of the main models studied throughout the book -- B. Evaluation of the laplace integral outside the analyticity strip -- C. The equilibrium form of the one-particle distribution function in short-range interacting systems -- D. The differential cross-section of a binary collision -- E. Autocorrelation of the fluctuations of the one-particle density -- F. Derivation of the Fokker-Planck coefficients.

Sommario/riassunto

This title deals with an important class of many-body systems: those where the interaction potential decays slowly for large inter-particle distance. In particular, systems where the decay is slower than the inverse inter-particle distance raised to the dimension of the embedding space. Gravitational and Coulomb interactions are the most prominent examples. However, it has become clear that long-range interactions are more common than previously thought. This has stimulated a growing interest in the study of long-range interacting systems, with a better understanding of the many peculiarities in their behaviour.
