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Coagulation of aerosol particles in intermittent turbulent flows -- Chapter 17. Stokes flows under random boundary velocity excitations -- Bibliography -- Index

Sommario/riassunto

The book presents advanced stochastic models and simulation methods for random flows and transport of particles by turbulent velocity fields and flows in porous media. Two main classes of models are constructed: (1) turbulent flows are modeled as synthetic random fields which have certain statistics and features mimicing those of turbulent fluid in the regime of interest, and (2) the models are constructed in the form of stochastic differential equations for stochastic Lagrangian trajectories of particles carried by turbulent flows. The book is written for mathematicians, physicists, and engineers studying processes associated with probabilistic interpretation, researchers in applied and computational mathematics, in environmental and engineering sciences dealing with turbulent transport and flows in porous media, as well as nucleation, coagulation, and chemical reaction analysis under fluctuation conditions. It can be of interest for students and post-graduates studying numerical methods for solving stochastic boundary value problems of mathematical physics and dispersion of particles by turbulent flows and flows in porous media.