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Titolo	Active Particles, Volume 2 [[electronic resource]] : Advances in Theory, Models, and Applications / / edited by Nicola Bellomo, Pierre Degond, Eitan Tadmor
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Collana	Modeling and Simulation in Science, Engineering and Technology, , 2164-3679
Disciplina	570.15118
Soggetti	Mathematical models System theory Statistical physics Dynamical systems Mathematical Modeling and Industrial Mathematics Complex Systems Statistical Physics and Dynamical Systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
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Nota di contenuto	Kinetic and moment models for cell motion in fiber structures -- Kinetic models for pattern formation in animal aggregations: a symmetry and bifurcation approach -- Aggregation-diffusion equations: dynamics, asymptotics, and singular limits -- High-resolution positivity and asymptotic preserving Numerical methods for chemotaxis and related models -- Control strategies for the dynamics of large particle systems -- Kinetic equations and self-organized band formations -- Singular Cucker-Smale dynamics -- A stochastic-statistical residential burglary model with finite size effects.
Sommario/riassunto	This volume compiles eight recent surveys that present state-of-the-art results in the field of active matter at different scales, modeled by agent-based, kinetic, and hydrodynamic descriptions. Following the previously published volume, these chapters were written by leading experts in the field and accurately reflect the diversity of subject matter

in theory and applications. Several mathematical tools are employed throughout the volume, including analysis of nonlinear PDEs, network theory, mean field approximations, control theory, and flocking analysis. The book also covers a wide range of applications, including: Biological network formation Social systems Control theory of sparse systems Dynamics of swarming and flocking systems Stochastic particles and mean field approximations Mathematicians and other members of the scientific community interested in active matter and its many applications will find this volume to be a timely, authoritative, and valuable resource.