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Autore	Shvydkoy Roman
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Soggetti	Mathematical models Models matemàtics Equacions en derivades parcials Llibres electrònics
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Nota di contenuto	Emergent phenomena and overview of existing models -- Agent-based alignment systems -- Forced systems -- Kinetic models -- Macroscopic description. Hydrodynamic limit -- Euler Alignment System -- Local well-posedness and continuation criteria -- One-dimensional theory -- Global solutions to multi-dimensional systems.
Sommario/riassunto	This book introduces a class of alignment models based on the so-called Cucker-Smale system as well as its kinetic and hydrodynamic counterparts. Cutting edge research in the area of collective behavior is presented, including emerging techniques from fluid mechanics, fractional analysis, and kinetic theory. Analytical aspects are highlighted throughout, such as regularity theory and long time behavior of solutions. Featuring open problems, readers will be motivated to apply these breakthrough methods to future research. The chapters offer an overview of state of the art research with introductions to core concepts. Chapter One introduces the central focus of the book: The agent-based Cucker-Smale system. Further agent-based systems and alignment systems are covered in chapters Two and Three. Following this are chapters covering the kinetic and hydrodynamic variants of the Cucker-Smale system. The core well-

posedness theory of both smooth and singular models is then presented. Chapter Eight discusses the fully developed one-dimensional theory. The final chapter presents some of the known partial results concerning the regularity of multidimensional Euler Alignment systems. Dynamics and Analysis of Alignment Models of Collective Behavior is ideal for graduate students and researchers studying PDEs, especially those interested in the active areas of collective behavior and alignment models.