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Titolo	Mean Field Theories and Dual Variation - Mathematical Structures of the Mesoscopic Model / / by Takashi Suzuki
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Descrizione fisica	1 online resource (450 p.)
Collana	Atlantis Studies in Mathematics for Engineering and Science, , 2467-9631 ; ; 11
Disciplina	510
Soggetti	Mathematical analysis Mathematical optimization Calculus of variations Mathematical physics Population genetics Biomathematics Analysis Calculus of Variations and Optimization Mathematical Physics Population Genetics Mathematical and Computational Biology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Chemotaxis -- Time Relaxation -- Toland Duality -- Phenomenology -- Phase Transition -- Critical Phenomena of Isolated Systems -- Self-Interacting Fluids -- Magnetic Fields -- Boltzmann-Poisson Equation -- Particle Kinetics -- Parabolic Equations -- Gauge Fields -- Higher-Dimensional Blowup.
Sommario/riassunto	Mean field approximation has been adopted to describe macroscopic phenomena from microscopic overviews. It is still in progress; fluid mechanics, gauge theory, plasma physics, quantum chemistry, mathematical oncology, non-equilibrium thermodynamics. spite of such a wide range of scientific areas that are concerned with the mean field theory, a unified study of its mathematical structure has not been

discussed explicitly in the open literature. The benefit of this point of view on nonlinear problems should have significant impact on future research, as will be seen from the underlying features of self-assembly or bottom-up self-organization which is to be illustrated in a unified way. The aim of this book is to formulate the variational and hierarchical aspects of the equations that arise in the mean field theory from macroscopic profiles to microscopic principles, from dynamics to equilibrium, and from biological models to models that arise from chemistry and physics.
