1. Record Nr. UNINA9910453771603321

Titolo	Models, simulations, and the reduction of complexity / / edited by Ulrich Gahde, Stephan Hartmann, and Jorn Henning Wolf
Pubbl/distr/stampa	Berlin ; ; Boston : , : De Gruyter, , [2013] ©2013
ISBN	3-11-031368-5
Descrizione fisica	1 online resource (284 p.)
Collana	Abhandlungen der Akademie der Wissenschaften in Hamburg, , 2193-1933 ; ; Band 4
Altri autori (Persone)	GahdeUlrich <1951-> HartmannStephan <1968-> WolfJorn Henning
Disciplina	501
Soggetti	Complexity (Philosophy) Science - Philosophy Electronic books.
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 indexes.
Nota di contenuto	Frontmatter -- Preface -- Contributors -- Content -- Introduction / Gähde, Ulrich / Hartmann, Stephan -- Cosmology - The Largest Possible Model? / Bartelmann, Matthias -- The Standard Model of Cosmology as a Tool for Interpretation and Discovery / Bartels, Andreas -- Patterns in Physical and Biological Systems / Golubitsky, Martin -- Symmetry and the Explanation of Organismal Form / Reydon, Thomas A. C. -- Pluralistic Modeling of Complex Systems / Helbing, Dirk -- The Methodological Challenges of Complex Systems / Hartmann, Stephan -- Contested Modeling: The Case of Economics / Mäki, Uskali -- Models, Representation, and Economic Practice / Reiss, Julian -- A Unifying Approach to High- and Low-Level Cognition / König, Peter / Kühnberger, Kai-Uwe / Kietzmann, Tim C. -- High- vs Low-Level Cognition and the Neuro- Emulative Theory of Mental Representation / Werning, Markus / Tacca, Michela C. / Mroczko-Wsowicz, Aleksandra -- Evaluating a Computational Model of Eye-Movement Control in Reading / Kliegl, Reinhold / Engbert, Ralf -- Considering Criteria for Model Modification and Theory Change in Psychology / Hoffmann,

Martin -- Identification of Kinetic Models by Incremental Refinement / Marquardt, Wolfgang -- Kinetics, Models, and Mechanism / Hendry, Robin Findlay -- Modeling Complexity: The Case of Climate Science / Lucarini, Valerio -- Chaos, Plurality, and Model Metrics in Climate Science / Betz, Gregor -- Subject Index -- Author Index

Sommario/riassunto

Modern science is, to a large extent, a model-building activity. But how are models contructed? How are they related to theories and data? How do they explain complex scientific phenomena, and which role do computer simulations play here? These questions have kept philosophers of science busy for many years, and much work has been done to identify modeling as the central activity of theoretical science. At the same time, these questions have been addressed by methodologically-minded scientists, albeit from a different point of view. While philosophers typically have an eye on general aspects of scientific modeling, scientists typically take their own science as the starting point and are often more concerned with specific methodological problems. There is, however, also much common ground in middle, where philosophers and scientists can engage in a productive dialogue, as the present volume demonstrates. To do so, the editors of this volume have invited eight leading scientists from cosmology, climate science, social science, chemical engeneering and neuroscience to reflect upon their modeling work, and eight philosophers of science to provide a commentary.