1. Record Nr. UNINA9910972713303321

Titolo	Complex systems : task group summaries ; Conference, Arnold and Mabel Beckman Center, Irvine, California, November 13-15, 2008 / / The National Academies Keck Futures Initiative
Pubbl/distr/stampa	Washington, D.C., : National Academies Press, 2009
ISBN	9786612130281 9780309177504 0309177502 9781282130289 1282130285 9780309137263 0309137268
Edizione	[1st ed.]
Descrizione fisica	1 online resource (121 p.)
Disciplina	620.0011
Soggetti	Biological systems - Computer simulation Biocomplexity - Simulation methods Computational complexity
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"National Academies Keck Futures Initiative Conference on Complex Systems"--T.p. verso.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- The National Academies Keck Futures Initiative -- Preface -- Contents -- General Summary -- Task Group Summary 1--How would you design the acquisition and organization of the data required to completely model human biology? -- Task Group Summary 2--What does it take to achieve a sustainable future? The problem of the commons: achieving a sustainable quality of life. -- Task Group Summary 3--How can we enhance the robustness via interconnectivity? -- Task Group Summary 4--Can engineering systems and control approaches generate new strategies for altering imbalanced macrophage profiles in human disease? -- Task Group Summary 5--How can social networks aid our understanding of complexity? -- Task Group Summary 6--The brain is the epitome of complexity. How will understanding the complex, linked interactions among the many types

of neurons in the brain lead to knowing how the brain contributes to normal function and susceptibility to neuropsychiatric disease? -- Task Group Summary 7--How can we enhance robustness of engineered systems, and how can the methods of engineering analysis be extended to address issues of complexity and management in other fields? -- Task Group Summary 8--Ecological robustness: Is the biosphere sustainable? -- Task Group Summary 9--Can one control flow and transport in complex systems? -- Appendixes -- Preconference Webcast Tutorials -- Agenda -- Participant List.

Sommario/riassunto

The National Academies Keck Futures Initiative was launched in 2003 to stimulate new modes of scientific inquiry and break down the conceptual and institutional barriers to interdisciplinary research. At the Conference on Complex Systems, participants were divided into twelve interdisciplinary working groups. The groups spent nine hours over two days exploring diverse challenges at the interface of science, engineering, and medicine. The groups included researchers from science, engineering, and medicine, as well as representatives from private and public funding agencies, universities, businesses, journals, and the science media. The groups needed to address the challenge of communicating and working together from a diversity of expertise and perspectives as they attempted to solve complicated, interdisciplinary problems in a relatively short time. The summaries contained in this volume describe the problem and outline the approach taken, including what research needs to be done to understand the fundamental science behind the challenge, the proposed plan for engineering the application, the reasoning that went into it and the benefits to society of the problem solution.