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Titolo	Why We Live in Hierarchies? [[electronic resource]] : A Quantitative Treatise / / by Anna Zafeiris, Tamás Vicsek
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-70483-4
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (XIV, 110 p. 42 illus., 39 illus. in color.)
Collana	Understanding Complex Systems, , 2191-5326
Disciplina	621
Soggetti	Physics System theory Computational complexity Statistical physics Science—Social aspects Applications of Graph Theory and Complex Networks Complex Systems Complexity Statistical Physics and Dynamical Systems Societal Aspects of Physics, Outreach and Education
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- General considerations -- Motivation -- Hierarchical structures in space and in networks -- Definitions and Basic Concepts -- Describing hierarchical structures -- Visualization techniques -- Observations and measurements -- Animal groups -- Hierarchy in Humans -- Experiments on the emergence and function -- The Liskaland camp experiment -- Picturask -- Modelling emergence and control -- Emergence of hierarchy in model systems -- The complex efficiency landscape of hierarchical organizations -- Controlling hierarchical networks -- Conclusions -- General features of hierarchical structures -- Origins of flow hierarchy -- Emergence of hierarchy.
Sommario/riassunto	This book systematically interprets and documents new, unifying principles and basic laws describing the most relevant aspects of

hierarchy. To do so, it discusses recent experiments and models that are simple and realistic enough to reproduce the observations, and develops concepts for a better understanding of the complexity of systems consisting of many organisms. The book covers systems ranging from flocks of birds to groups of people. Although it focuses on hierarchical collective behavior in general, two aspects pop up in the majority of cases: collective motion and dynamically changing, partially directed networks (and the natural relation between the two). In addition, it offers a brief description of the most relevant definitions and concepts involved in the context of hierarchies, presenting both a review of the current literature and a number of new experimental and computational results in more detail. It is a valuable resource for students and scholars pursuing research on the structure of interactions within the collectives of animals and humans.