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ESSENTIALS OF ECONOPHYSICS MODELLING

Frantisek Slanina

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This book is a review of methods and models used in physics and used in modelling economic and social phenomena. It covers the discipline of econophysics, which studies an interface between physics and economics. Inside the main theme, it focuses on the theory of complex networks and models of social phenomena in general.

After a brief historical introduction, the book starts with a lot of basic empirical data and proceeds to the development of models. Many of the models are based on principles of the behaviour of simplified agents. These models comprise strategic thinking, imitation, herding, and the game of strategists, the so-called minority game. At the same time, many other models view the economic process as interaction of interacting particles. Here, the methods of physics are especially useful. Examples of systems modelled in such a way include books of stock market values, and redistribution of wealth among individuals. Network effects are investigated in the interaction of economic agents. The book also describes how to model phenomena like cooperation and emergence of consensus.

The book will be of interest to graduate students and researchers in both physics and economics.

FRANTIŠEK SLANINA is a Researcher at the Institute of Physics, Academy of Sciences of the Czech Republic, Prague.

František Slanina's monograph is the first up-to-date account of econophysics. This makes it a clear, yet deep and complex view of the subject in conceptual and methodical foundations, its past success, and its future outlook. It is a way for anyone interested in understanding or participating in the momentous current development of new interdisciplinary methods for the study of economic phenomena.

David Bohm, Czech Institute of Physics, Charles University of Prague

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