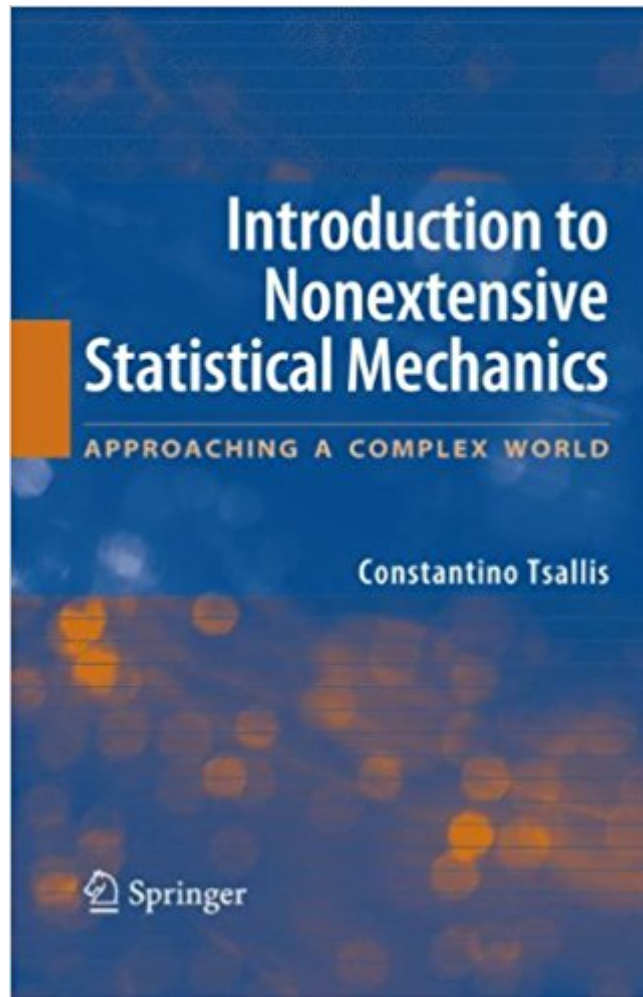


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Introduction To Nonextensive Statistical Mechanics: Approaching A Complex World



Synopsis

Metaphors, generalizations and unifications are natural and desirable ingredients of the evolution of scientific theories and concepts. Physics, in particular, obviously walks along these paths since its very beginning. This book focuses on nonextensive statistical mechanics, a current generalization of Boltzmann-Gibbs (BG) statistical mechanics, one of the greatest monuments of contemporary physics. Conceived more than 130 years ago by Maxwell, Boltzmann and Gibbs, the BG theory exhibits uncountable – some of them impressive – successes in physics, chemistry, mathematics, and computational sciences, to name a few. Presently, more than two thousand publications, by over 1800 scientists around the world, have been dedicated to the nonextensive generalization. Remarkable applications have emerged, and its mathematical grounding is by now relatively well established. A pedagogical introduction to its concepts – nonlinear dynamics, extensivity of the nonadditive entropy, global correlations, generalization of the standard CLTs, among others – is presented in this book as well as a selection of paradigmatic applications in various sciences together with diversified experimental verifications of some of its predictions. This is the first pedagogical book on the subject, written by the proponent of the theory. Presents many applications to interdisciplinary complex phenomena in virtually all sciences, ranging from physics to medicine, from economics to biology, through signal and image processing and others. Offers a detailed derivation of results, illustrations and for the first time detailed presentation of Nonextensive Statistical Mechanics.

Book Information

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Customer Reviews

The work is a must have for those interested in complex systems, particularly related to entropy computation and modelling. The book is written in a language suitable for those following a graduation course on statistical mechanics and/or information theoretical models.

The Tsallis book on generalized statistics I would recommend to buy to newbies in the field...

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