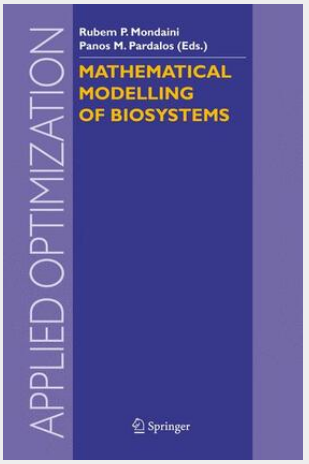
Pardalos / Mondaini

Mathematical Modelling of Biosystems



This volume is an interdisciplinary book which introduces, in a very readable way, state-of-the-art research in the fundamental topics of mathematical modelling of Biosystems. In short, the book offers an overview of mathematical and computational modelling of biosystems including biological phenomena in general. There is also a special introduction to Protein Physics which aims to explain the all-or-none first order phase transitions from native to denatured states.

The ?rst idea for organizing this book was to collect some state of art c- tributions to the literature on mathematical modelling of biosystems written by representatives of research groups in the Americas. We have also invited a contribution from the Russian Federation written by A. Finkelstein. The importance of an interdisciplinary approach to this ?eld of knowledge or of a biologically-inspired treatment of mathematical structures inherent to - ture,derivesfromthebestinsightsprofessedinthelastcenturyby researchers likeD'arcyThompson,Rashevsky,Schroedinger,UlamandFeynman. This- ready traditional avenue of Science in Latin America is now being followed by many multidisciplinary conferences all over the world and we think that in orderto enhancetheparticipationof youngscientistsonthem, a bookwritten by invited experts with many years of engagement on these interdisciplinary scienti?c activities was strictly necessary. We have chosen nine main themes to be addressed by these scientists as chapters of the present book. Each of them isaimedto correspondto a freshstartofthe study ofthe selectedtheme at the level of ?rst-year graduate students. The ?rst chapter by A. Goriely and collaborators of his research group from University of Arizona at Tucson, USA, emphasizes the mechanism of - ological growth. The developments are based on insights aimed to generalize the classical theory of exact elasticity from observations of changes of geo- try due to thedynamics ofmechanicalquantities during growth.

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