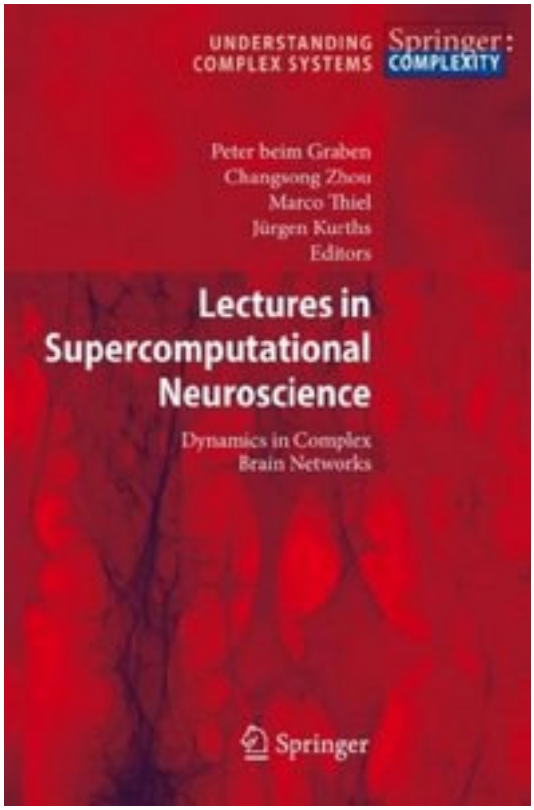
Lectures in Supercomputational Neuroscience



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著者:Thiel, Marco 编

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Computational Neurosciences is a burgeoning field of research where only the combined effort of neuroscientists, biologists, psychologists, physicists, mathematicians, computer scientists, engineers and other specialists, e.g. from linguistics and medicine, seem to be able to expand the limits of our knowledge. The present volume is an introduction, largely from the physicists' perspective, to the subject matter with in-depth contributions by system neuroscientists. A conceptual model for complex networks of neurons is introduced that incorporates many

important features of the real brain, such as various types of neurons, various brain areas, inhibitory and excitatory coupling and the plasticity of the network. The computational implementation on supercomputers, which is introduced and discussed in detail in this book, will enable the readers to modify and adapt the algortihm for their own research. Worked-out examples of applications are presented for networks of Morris-Lecar neurons to model the cortical connections of a cat's brain, supported with data from experimental studies. This book is particularly suited for graduate students and nonspecialists from related fields with a general science background, looking for a substantial but a oehands-ona introduction to the subject matter.

作者介绍:

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