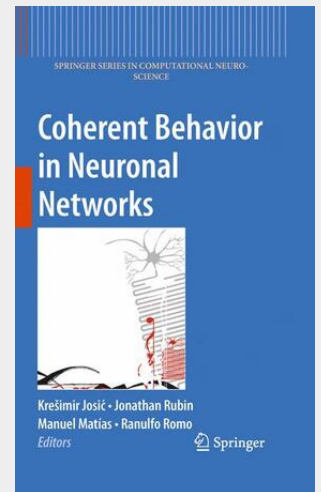


Coherent Behavior in Neuronal Networks

Recent experimental research advances have led to increasingly detailed descriptions of how networks of interacting neurons process information. With these developments, it has become clear that dynamic network behaviors underlie information processing, and that the observed activity patterns cannot be fully explained by simple concepts such as synchrony and phase locking. These new insights raise significant challenges and offer exciting opportunities for experimental and theoretical neuroscientists. *Coherent Behavior in Neuronal Networks* features a review of recent research in this area from some of the world's foremost experts on systems neuroscience. The book presents novel methodologies and interdisciplinary perspectives, and will serve as an invaluable resource to the research community. Highlights include the results of interdisciplinary collaborations and approaches as well as topics, such as the interplay of intrinsic and synaptic dynamics in producing coherent neuronal network activity and the roles of globally coherent rhythms and oscillations in the coordination of distributed processing, that are of significant research interest but have been underrepresented in the review literature. With its cutting-edge mathematical, statistical, and computational techniques, this volume will be of interest to all researchers and students in the field of systems neuroscience.

Recent experimental research advances have led to increasingly detailed descriptions of how networks of interacting neurons process information. With these developments, it has become clear that dynamic network behaviors underlie information processing, and that the observed activity patterns cannot be fully explained by simple concepts such as synchrony and phase locking. These new insights raise significant challenges and offer exciting opportunities for experimental and theoretical neuroscientists. *Coherent Behavior in Neuronal Networks* features a review of recent research in this area from some of the world's foremost experts on systems neuroscience. The book presents novel methodologies and interdisciplinary perspectives, and will serve as an invaluable resource to the research community. Highlights include the results of interdisciplinary collaborations and approaches as well as topics, such as the interplay of intrinsic and synaptic dynamics in producing coherent neuronal network activity and the roles of globally coherent rhythms and oscillations in the coordination of distributed processing, that are of significant research interest but have been underrepresented in the review literature. With its cutting-edge mathematical, statistical, and computational techniques, this volume will be of interest to all researchers and students in the field of systems neuroscience. About the Editors: Krešimir Josic works in different areas of mathematical biology and applied dynamics, with a particular interest in understanding how information is represented in neuronal networks. He is an associate professor at the University of Houston and a member of the steering committees of the Gulf Coast Consortium for Theoretical and Computational Neuroscience, and the Center for the Mathematical Biosciences in Houston. Jonathan Rubin is a Professor of Mathematics at the University of Pittsburgh, with research interests in nonlinear dynamics and mathematical biology, particularly neuroscience. He is affiliated with the Center for Neuroscience at University of Pittsburgh, the Pitt/Carnegie Mellon University Center for the Neural Basis of Cognition and Computational Biology program, and the McGowan Institute for Regenerative Medicine. Manuel Matías is a Senior Faculty Research Scientist of the Spanish National Research Council (CSIC) working at the Institute for Cross-Disciplinary Physics and Complex Systems (IFISC) in Palma de Mallorca, Spain. Ranulfo Romo is Professor of Neuroscience at the Instituto de Fisiología Celular-Neurociencias, National Autonomous University of Mexico (UNAM). He is a member of the Neurosciences Research Program, and a foreign associate of the U.S. National Academy of Sciences.



213,99 €

199,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9781461424475

Medium: Buch

ISBN: 978-1-4614-2447-5

Verlag: Springer

Erscheinungstermin: 25.02.2012

Sprache(n): Englisch

Auflage: 2009

Serie: Springer Series in Computational Neuroscience

Produktform: Kartoniert

Gewicht: 482 g

Seiten: 304

Format (B x H): 155 x 235 mm

