Micro-, Meso- and Macro-Dynamics of the Brain

- Enriches understanding of the wide dynamic range of neural systems
- Illustrates the complete process how the brain orchestrates perceptions, thoughts, and actions from the activity of its neurons
- Presents an excellent synthesis of current thinking and work-in-progress on micro-, meso- and macro-dynamics of the brain

This book brings together leading investigators who represent various aspects of brain dynamics with the goal of presenting state-of-the-art current progress and address future developments. The individual chapters cover several fascinating facets of contemporary neuroscience from elementary computation of neurons, mesoscopic network oscillations, internally generated assembly sequences in the service of cognition, large-scale neuronal interactions within and across systems, the impact of sleep on cognition, memory, motor-sensory integration, spatial navigation, large-scale computation and consciousness. Each of these topics require appropriate levels of analyses with sufficiently high temporal and spatial resolution of neuronal activity in both local and global networks, supplemented by models and theories to explain how different levels of brain dynamics interact with each other and how the failure of such interactions results in neurologic and mental disease. While such complex questions cannot be answered exhaustively by a dozen or so chapters, this volume offers a nice synthesis of current thinking and work-in-progress on micro-, meso- and macro-dynamics of the brain.

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