1. Record Nr. UNINA9910139144803321

Titolo	Criticality in neural systems / / edited by Dietmar Plenz, Ernst Niebur ; contributors Lucilla de Arcangelis [and fifty eight others]
Pubbl/distr/stampa	Weinheim, Germany : , : Wiley-VCH, , 2014 ©2014
ISBN	3-527-65102-0 3-527-65100-4 3-527-65103-9
Descrizione fisica	1 online resource (592 p.)
Collana	Annual Reviews of Nonlinear Dynamics and Complexity
Disciplina	612.8
Soggetti	Neurosciences Nervous system Neurophysiology Biocomplexity
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Criticality in Neural Systems; Contents; List of Contributors; Chapter 1 Introduction; 1.1 Criticality in Neural Systems; Chapter 2 Criticality in Cortex: Neuronal Avalanches and Coherence Potentials; 2.1 The Late Arrival of Critical Dynamics to the Study of Cortex Function; 2.1.1 Studying Critical Dynamics through Local Perturbations; 2.1.2 Principles in Cortex Design that Support Critical Neuronal Cascades; 2.2 Cortical Resting Activity Organizes as Neuronal Avalanches; 2.2.1 Unbiased Concatenation of Neuronal Activity into Spatiotemporal Patterns 2.2.2 The Power Law in Avalanche Sizes with Slope of -3/22.2.3 Neuronal Avalanches are Specific to Superficial Layers of Cortex; 2.2.4 The Linking of Avalanche Size to Critical Branching; 2.3 Neuronal Avalanches: Cascades of Cascades; 2.4 The Statistics of Neuronal Avalanches and Earthquakes; 2.5 Neuronal Avalanches and Cortical Oscillations; 2.6 Neuronal Avalanches Optimize Numerous Network Functions; 2.7 The Coherence Potential: Threshold-Dependent Spread of Synchrony with High Fidelity; 2.8 The Functional Architecture of

Sommario/riassunto

Leading authorities in the field review current knowledge of critical behavior in brain function, both experimental and theoretical. The book begins by summarizing experimental evidence for self-organized criticality in the brain. Subsequently, recent breakthroughs in modeling of neuronal circuits to establish self-organized criticality are described. Finally, the importance of critical dynamics for brain function is highlighted.