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Nota di contenuto

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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 Neuronal Avalanches and Coherence Potentials; Acknowledgement ReferencesChapter 3 Critical Brain Dynamics at Large Scale; 3.1 Introduction; 3.1.1 If Criticality is the Solution, What is the Problem?; 3.2 What is Criticality Good for?; 3.2.1 Emergence; 3.2.2 Spontaneous Brain Activity is Complex; 3.2.3 Emergent Complexity is Always Critical; 3.3 Statistical Signatures of Critical Dynamics; 3.3.1 Hunting for Power Laws in Densities Functions; 3.3.2 Beyond Fitting: Variance and Correlation Scaling of BrainNoise; 3.3.2.1 Anomalous Scaling; 3.3.2.2 Correlation Length; 3.4 Beyond Averages: Spatiotemporal Brain Dynamics at Criticality
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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.