

Self-organized Bistability

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Self-organized criticality elucidates the conditions under which systems tune themselves to the edge of a second-order phase transition, with scale invariance. Motivated by the empirical observation of bimodal activity-burst distributions in neuroscience and other fields, we propose and analyze a theory for the self-organization to the point of phase-coexistence in systems exhibiting a first-order phase transition. It explains the emergence of regular avalanches with attributes of scale-invariance which coexist with huge anomalous ones, with possible realizations in many fields.

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