Self-organized Criticality and Absorbing States: Lessons from the Ising model

GUNNAR PRUESSNER, Virginia Polytechnic Inst. & State Univ., OLE PETERS, Santa Fe Institute — I will report on an analysis of a suggested path to self-organized criticality. Originally, this path was devised to “generate criticality” in systems displaying an absorbing-state phase transition, but closer examination of the mechanism reveals that it can be used for any continuous phase transition. The Ising model as well as the Manna model are used to demonstrate how the finite-size scaling exponents depend on the tuning of driving and dissipation rates with system size. The findings limit the explanatory power of the mechanism to non-universal critical behavior.