

Abstract Submitted
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Devil's Staircases, Crackling Noise and Phase Transitions in Percolation JAN NAGLER, Max Planck Inst. for Dynamics and Self-Organization, Goettingen, Germany — We identify and study certain phenomena in percolation that can subvert predictability and controllability in networked systems. We establish devil's staircase phase transitions, non-self-averaging, and power-law fluctuations in percolation. We provide exact conditions for percolation that exhibits multiple discontinuous jumps in the order parameter where the position and magnitude of the jumps are randomly distributed - characteristic of crackling noise. The framework can be linked to magnetic effects and fragmentation processes.

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