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Many-body Delocalization as a Quantum Avalanche

I discuss a diagonalization scheme to study the MBL transition in quantum chains. The scheme focuses on the dichotomy MBL versus random matrix theory and implements microscopic rules to treat resonant spots as well as the "quantum avalanches" they seed. Delocalization is found to be induced by the largest ergodic spots. While the typical localization length remains bounded at the transition, the average localization length diverges, which reflects the very strong heterogeneity of systems close to criticality.
