Equivalence of a earthquake model and driven Edwards-Wilkinson interface

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Abstract

We discuss the equivalence of the dynamics in a discretized version of the Burridge-Knopoff train model with random pinning (instead of frictional force) and the propagation of the Edwards-Wilkinson (EW) interface through random media. Both these models exhibit power law avalanche statistics with similar (within numerical error) exponents. We find the complimentary observation of depinning velocity growth in the train model and Omori law of after-shock avalanches in EW model.