

A Prediction Method for Large-Size Event Occurrences in the Sandpile Model

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Abstract : In this research, the occurrences of large size events in various system sizes of the Bak-Tang-Wiesenfeld sandpile model are considered. The system sizes (square lattice) of model considered here are 25×25 , 50×50 , 75×75 and 100×100 . The cross-correlation between the ratio of sites containing 3 grain time series and the large size event time series for these 4 system sizes are also analyzed. Moreover, a prediction method of the large-size event for the 50×50 system size is also introduced. Lastly, it can be shown that this prediction method provides a slightly higher efficiency than random predictions.

Keywords : Bak-Tang-Wiesenfeld sandpile model, cross-correlation, avalanches, prediction method

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