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Towards universality in bootstrap percolation

Models arising from the action of monotone (two-state) cellular automata on random subsets of $\mathbb{Z}^d$ or $\mathbb{Z}_n^d$ are known as bootstrap percolation. In this talk I will describe a new universality theory for bootstrap percolation, which is motivated by the following vague question: to what extent does the global behaviour of the models depend on the local details of the model itself? That is, to what extent is the global behaviour of the models universal? To grossly oversimplify, the answer is that every monotone cellular automaton behaves 'roughly' like an r-neighbour model, for some $r \in \{1, 2, \ldots, d+1\}$, where these are defined according to the rule that new sites become active at time $t+1$ if at least r of their $2d$ nearest neighbours are active at time t.