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Linear algebra and bootstrap percolation

József Balogh, Béla Bollobás, Robert Morris, Oliver Riordan

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In $\HH$-bootstrap percolation, a set $A \subset V(\HH)$ of initially 'infected' vertices spreads by infecting vertices which are the only uninfected vertex in an edge of the hypergraph $\HH$. A particular case of this is the H-bootstrap process, in which $\HH$ encodes copies of H in a graph G. We find the minimum size of a set A that leads to complete infection when G and H are powers of complete graphs and $\HH$ encodes induced copies of H in G. The proof uses linear algebra, a technique that is new in bootstrap percolation, although standard in the study of weakly saturated graphs, which are equivalent to (edge) H-bootstrap percolation on a complete graph.

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