1116-05-2148 **Charles Tomlinson*** (ctomlinson2@math.unl.edu), 203 Avery Hall, P.O. Box 880130, Lincoln, NE 68588, and **Philip DeOrsey** (pdeorsey@ehc.edu). *Fast percolation on the hexagonal lattice.*

Bootstrap percolation considers the evolution of a cellular automaton of cells arranged in a rectangular array with the update rule that a cell becomes 'infected' if half its neighbors are infected. Cells are included in the initially infected sites, seed, with probability p. Classical interest was in the critical threshold, c, such that if $p > c$ an n-cell lattice becomes infected asymptotically almost always. Variations have been considered, including alternative lattice structures and infection rules. Exact thresholds of alternative lattices have proven elusive, and much work has gone into their estimation.

We approach the model from an extremal perspective, asking how fast a hexagonal lattice can be percolated by a minimum size seed . We provide what we believe is a novel proof of the folklore result that the $n \times n$ square cannot be percolated in less than $n - 1$ steps. For the hexagon of side length n, the n-hex, we show percolation with a minimum seed requires $2n + 1$ steps. However, the percolated region does not reside entirely in the n-hex, and when so constrained we show the fastest percolation time, t, satisfies $2n + 1 \leq t \leq \frac{7}{3}(n - 2) + 3$. The upper bound is a construction which we are working to show is the unique fastest internal seed. (Received September 21, 2015)