Michael Damron, Jack Hanson and Wai-Kit Lam* (lamw@indiana.edu). The size of the boundary in the Eden model.

The Eden model, a special case of first-passage percolation, is a stochastic growth model in which an infection that initially occupies the origin of $\mathbb{Z}^d$ spreads to neighboring sites at rate 1. Infected sites are colonized permanently; that is, an infected site never heals. It is known that at time $t$, the infection occupies a set $B(t)$ of vertices with volume of order $t^d$, and the rescaled set $B(t)/t$ converges to a convex, compact limiting shape. In joint work with M. Damron and J. Hanson, we partially answer a question of K. Burdzy, concerning the order of the size of the boundary of $B(t)$. We show that, in various senses, the boundary is relatively smooth, being typically of order $t^{d-1}$. This is in contrast to the fractal behavior of interfaces characteristic of percolation models. (Received September 17, 2016)