

1133-60-83

**Ilie Grigorescu\*** (igrigore@math.miami.edu). *Hydrodynamic limit for the Bak-Sneppen branching diffusions.*

We prove a hydrodynamic limit for a system of  $N$  diffusions moving in an open domain  $D \subseteq \mathbb{R}^d$  undergoing branching when one particle reaches a certain subset of the boundary. The branching mechanism represents a hybrid between the Fleming-Viot branching and a mean-field version of the Bak-Sneppen fitness model where the absorbing boundary represents the *minimal* configuration, seen as biologically not viable. The limiting profile is the normalization of the solution of a heat equation with mass creation, which is studied using its representation via an auxiliary measure-valued supercritical process. Connections to the standard Fleming-Viot model and the particle representations of the resolvent of a killed process are also discussed.

*Based in part on work with Min Kang and Yishu Song.* (Received July 12, 2017)