

1108-60-157

**Milton Jara**, IMPA, Estrada Dona Castorina, 110, Horto, Rio de Janeiro, Brazil, and **Jonathon Peterson\*** ([peterson@purdue.edu](mailto:peterson@purdue.edu)), Purdue University, Dept. of Mathematics, 150 N University St, West Lafayette, IN 47907. *Hydrodynamic limits for directed traps and systems of independent RWRE.*

We study the evolution of a system of independent random walks in a common random environment (RWRE). Previously a hydrodynamic limit was proved in the case where the environment is such that the random walks are ballistic (i.e., transient with non-zero speed  $v_0 \neq 0$ ). In this case it was shown that the asymptotic particle density is simply translated deterministically by the speed  $v_0$ . In this talk we will consider the more difficult case of RWRE that are transient but with  $v_0 = 0$ . Under the appropriate space-time scaling, we prove a hydrodynamic limit for the system of random walks. The statement of the hydrodynamic limit that we prove is non-standard in that the evolution of the asymptotic particle density is given by the solution of a random (rather than a deterministic) PDE. The randomness in the PDE comes from the fact that under the hydrodynamic scaling the effect of the environment does not “average out” and so the specific instance of the environment chosen actually matters.

The proof of the hydrodynamic limit for the system of RWRE will be accomplished by coupling the system of RWRE with a simpler model of a system of particles in an environment of “directed traps.” This talk is based on joint work with Milton Jara. (Received January 09, 2015)