

Abstract Submitted  
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**Contact processes in crowded environments** J.M. SCHWARZ, Syracuse University, BISMAYAN CHAKRABARTI, Indian Institute of Technology, Kanpur — A nonequilibrium absorbing state phase transition with conserved particle number has been realized in a periodically sheared particle suspension. A diffusing (active) particle in the suspension collides with a stationary (inactive) particle and activates it. As the strain amplitude is increased, the fraction of active particles per shear cycle becomes nonzero only above some critical strain amplitude. To further study this system at higher densities, we construct a lattice model with active and inactive particles occupying some fraction of the lattice sites with each site being occupied by at most one particle. The active particles hop to empty neighboring sites and activate  $k$  neighboring inactive particles at some rate  $\lambda_k$ . Also, active particles become inactive at some rate  $\gamma$ . We investigate this model for  $\lambda_{k=1} = 0$  and  $\lambda_{k>1} > 0$  to study the effects of multi-particle collisions which are likely to occur at higher densities, i.e. crowded environments.

J. M. Schwarz  
Syracuse University

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