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Title: Active phase for Activated Random Walk

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Abstract: We consider a system with two types of particles, A (active) and S (sleeping), on the  $d$ -dimensional lattice. The system is governed by the following rules. Particles of type A perform independent, continuous time simple random walk until they turn into S-particles. This happens at a rate  $\lambda$ . Particles of type S do not move. Whenever two or more particles share a site they all turn into A-type immediately. If the particle density is above the unit the system sustains activity, as there is not enough space for all particles to be sleeping. In this talk I will comment on a recent result, showing that the system sustains activity even for particle density below the unit in case of biased jump distribution. This provides an answer to a question asked by Rolla and Sidoravicius (2009) in case of bias. Secondly, I will discuss how the bias affects the critical density.