

Abstract Submitted
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Unusual finite-size crossover features in driven lattice gases¹

GEORGE L. DAQUILA, UWE C. TAUBER, Virginia Tech — We study the temporal scaling behavior of the autocorrelation function for the asymmetric exclusion process (ASEP) on a ring in one dimension as function of system size and hopping bias. We have performed extensive Monte Carlo simulations using standard and continuous time algorithms to extract the long-time asymptotic scaling behavior for some very large systems. Even for the totally asymmetric exclusion process (TASEP), the effective exponent for the temporal autocorrelation function displays an extremely slow crossover towards the asymptotic value $2/3$, with unusual features. For the ASEP, the crossover time grows with increasing backwards hopping rates. In contrast, we observe standard crossover behavior and much shorter crossover times in two- and three-dimensional lattice gases.

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