

Abstract Submitted
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Driven hard-core fluid on a ladder: shear-induced particle redistribution¹ RONALD DICKMAN, RONALDO VIDIGAL, Universidade Federal de Minas Gerais — We study driven particle systems with excluded volume interactions on a two-level ladder with periodic boundaries, using Monte Carlo simulation, cluster mean-field theory, and exact (numerical) solution of the master equation. Particles on one level are subject to a drive that forbids motion along one direction, while in the other level the motion is unbiased; particles may jump between levels. Despite the symmetry of the rates for transitions between layers, the associated particle densities are unequal: at low densities there is an excess of particles in the non-driven layer, while at higher densities the tendency is reversed. Similar results are found for an off-lattice model. We quantify the reduction in the stationary entropy caused by the drive.

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