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Jamming in Quasi-One Dimensional Systems PRASANTA PAL, Department of Applied Physics, Yale University, COREY O'HERN, Department of Mechanical Engineering, Department of Physics,Yale University — We study the dynamics of hard rods undergoing Brownian motion in narrow channels. Our system is in the shape of a "figure-8" and composed of a horizontal and a vertical channel that intersect. In our preliminary studies, we allow the particles to switch at the ends of the channels, but not at the intersection. We calculate the mean-square displacement (msd), the residence time that a particle spends in the intersection, and other important dynamical quantities as a function of the density of rods and system size. In contrast to purely one-dimensional systems, we find that the figure-8 system jams (i.e. the msd possesses a plateau at long times) above a characteristic density that increases with system size. In addition, we have studied the effects of a biasing field on the dynamics and find that the jamming transition is pushed to much lower densities than at zero field. We also compare our results to those found in model glass-forming liquids in two and three dimensions.

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