

Abstract Submitted
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Long Range Hydrodynamic Correlations in Quasi-One-Dimensional Circular and Linear Geometries EKATERINA KOSHELEVA, Harvard Univ., BRIAN LEAHY, Cornell Univ., HAIM DIAMANT, Tel Aviv Univ., STUART A. RICE, BINHUA LIN, Univ. of Chicago — We report the results of studies of the collective and pair diffusion coefficients of particles in two quasi-one-dimensional geometries: straight 2 mm long channels and rings with radii between 3 and 35 μm . We investigate, for both geometries, the observed density dependence in the collective diffusion coefficient as predicted by Frydel and Diamant (Phys. Rev. Letts. 104, 248302 (2010)). The origin of this density dependence is the nonvanishing $q = 0$ component of the Green's function of the linearized one-dimensional hydrodynamic equation, which is indicative of the hydrodynamic coupling resulting from collective motion of particles in periodic or infinite quasi-one-dimensional geometries.

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