

Abstract Submitted
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Two-dimensional diffusion in a self-heated dusty plasma DONALD J. PLESHINGER, T.E. SHERIDAN, Ohio Northern University — We investigate self diffusion in a dusty plasma using the Dusty Ohio Northern University experiment (DONUT). A two-dimensional liquid of about 100 dust particles is formed at the center of, and heated by, a toroidal gas of dust particles confined in the surrounding annular potential well. The motions of individual dust particles are recorded, allowing particle trajectories to be directly observed. The mean-squared displacement is found to increase linearly with time, in agreement with diffusion theory. Dependence of the diffusion coefficients and probability distribution functions on temperature will be presented.

Terrence Sheridan
Ohio Northern University

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