

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Charge Analysis techniques for Magnetized Dusty Plasma Flows

DYLAN FUNK, UWE KONOPKA, EDWARD THOMAS, Auburn University —
Dusty plasmas consist of the standard plasma components (electrons, ions and neutrals) as well as micrometer sized particles. The dust particles are in general highly charged as a result of their interaction with the other plasma components. The charge of these dust particles is, in general, a difficult quantity to estimate precisely, especially when under the influence of a magnetic field. Because of this difficulty, a method for the experimental determination of the dust particle charge under the influence of a magnetic field is required. We will demonstrate the experimental setup we developed for investigation of this dust charge. Our method utilizes the Lorentz force acting on the moving particles due to the static magnetic field. A dust particle density gradient will build up due to the Lorentz force. We plan to use these methods on the Magnetized Dusty Plasma Experiment (MDPX) at Auburn University. We plan to compare this experimental data to the results from our molecular dynamic simulation (MD).

Dylan Funk
Auburn University

Date submitted: 10 Jul 2019

Electronic form version 1.4