Abstract Submitted
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Observation of plasma flows through the insertion and imaging of dust[1] T.M. ROBERTS, D.T. GARNIER, M.E. MAUEL, A.Z. QIN, A.M. SENTER, M.W. WORSTELL, Columbia University — We present plans for a new diagnostic aimed to measure the low-frequency convection fields inside a dipole plasma. Through the application of mono-disperse dust particles and high speed videography we can measure the perturbed velocity of falling dust grains deflected by the plasma electric field and viscous forces. The design is composed of a dust container positioned above the dipole plasma, which allows a controllable amount of micron-scale dust particle to sift through a orifice in the bottom, agitated by a piezoelectric transducer. Due to the low density of our plasma, the dominant forces on these particles are gravity and the electric fields in the chamber. We observe the motion of these dust particles via fast camera, and can calculate the perturbed velocity and acceleration. By observing the trajectories of dust grains of various diameters, we hope to estimate the strength of convection electric fields excited by radial biasing and to directly measure interchange flow.

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