Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Molecular dynamics simulations of magnetized dusty plasmas[1]
ALEXANDER PIEL, TORBEN REICHSTEIN, JOCHEN WILMS, Christian-Albrechts-University, D-24098 Kiel, Germany — The combination of the electric field that confines a dust cloud with a static magnetic field generally leads to a rotation of the dust cloud. In weak magnetic fields, the Hall component of the ion flow exerts a drag force that sets the dust in rotation. We have performed detailed molecular-dynamics simulations of the dynamics of torus-shaped dust clouds in anodic plasmas. The stationary flow [1] is characterized by a shell structure in the laminar dust flow and by the spontaneous formation of a shear-flow around a stationary vortex. Here we present new results on dynamic phenomena, among them fluctuations due to a Kelvin-Helmholtz instability in the shear-flow. The simulations are compared with experimental results.

[1] T. Reichstein, A. Piel, Phys. Plasmas 18, 083705 (2011)

[1]Supported by DFG TR24/A2.

Alexander Piel
Christian-Albrechts-University, D-24098 Kiel, Germany

Date submitted: 18 Jul 2012 Electronic form version 1.4