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Dustwheel: a new experiment for magnetized dusty plasma SASCHA KNIST, FRANKO GREINER, ALEXANDER PIEL, IEAP, Kiel University, 24098 Kiel, Germany — We report on the construction and features of a new magnetized dusty plasma experiment. A set of 24 water-cooled magnets produces a steady-state magnetic field $\mathbf{B} \leq 0.7$ T. The magnets have a bore of 30 cm diameter and the magnetic field is homogeneous over a length of L = 1 m. The magnets are suspended in a wheel-shaped cage, which allows tilting the entire experiment to any position between horizontal and vertical. In this way, the angle between the magnetic field direction and gravity can be chosen at will. This allows exciting dust flows by a variation of the residual component of gravity. The dusty plasma is generated by means of a high frequency discharge at 13.56 MHz. The objective of the experiments is the study of wave phenomena in magnetized dusty plasmas. In particular, we are interested in the influence of dust on the destabilization and propagation of drift waves. Drift waves are plasma surface modes which are excited by the radial pressure gradient in magnetized plasma columns. In the presence of dust the reduction of free electron density and the ion drag by the Coulomb collisions with dust will affect the drift waves. The planned investigations will be focussed on the range of existence of different modes, the threshold conditions for the excitation of drift waves and drift-wave dispersion. The investigations will subsequently be expanded to drift-wave turbulence. Supported by Deutsche Forschungsgemeinschaft SFB-TR24/A2.

Sascha Knist
IEAP, Kiel University, 24098 Kiel, Germany

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