Competition between mechanisms of rotation of the dust structure in the stratum in a magnetic field

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When dust plasma is placed in a magnetic field, the ion drag begins to act on the dust particles in the azimuthal direction, and if the discharge chamber has the appropriate features, then the Ampere force also acts. In dust structures trapped in the stratum, eddy currents also act. The competition between these mechanisms leads to the dominance of one of them, which results in a change in the direction of rotation and a change in the magnitude of the rotation speed.

The presented message describes a physical phenomenon in which a mechanism emerges that operates within the interior of a dust structure. In the experiment, a local internal dust vortex is observed, which is not suppressed by other mechanisms, while in the volume of the dust structure, a standard inversion of rotation in a magnetic field occurs. The paper discusses experiments with local vortices in neon and their interpretation.