GENERAL PRINCIPLES FOR THE FORMATION OF DUST SELF-ORGANIZING STRUCTURES. DUST COLLECTIVE ATTRACTION AND PLASMA CRYSTAL FORMATION

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S u m m a r y

It is demonstrated that a homogeneous dusty plasma is universally unstable to form structures. The theory is given for stationary equilibrium structures, dust voids, dust layers, dust spherical and cylindrical structures for boundary-free conditions, and for structures surrounded by walls, collision-dominated, and collisionless. The effect of collective grain attraction is a basic phenomenon for the proposed new paradigm (general principles) for the plasma crystal formation.