Seminar

Institute for Plasma Research

Title : Experimental investigation on cogenerated dusty plasma

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Date : 05th March 2015, Thursday

Time : 10.00 AM

Venue : Seminar Hall, IPR

Abstract:

Experiments on the behavior of cogenerated dusty plasma have been investigated in cylindrical vacuum chamber using parallel electrode geometry. Dust is produced by acetylene dissociation and sputtering of graphite electrode simultaneously using bipolar pulsed dc power supply. The schematic diagram of set-up and details of experimental technique may be found elsewhere [1, 2]. Cogenerated dusty plasma (where particles are subjected to time dependent mass and density variation) shows various fluid instabilities like Taylor-like instability at two cloud interface, self-excited wave phenomena, and vortex motion of dust cloud for different parameter regimes (gas pressure, discharge voltage) and wave trapping by perturbing the sheath electric field (by introducing dielectric plate in grounded electrode). Also by biasing ring electrode (placed between two discharge electrodes), void was generated with heartbeat oscillation in dense dust cloud and by varying bias voltage through ring electrode control over void size was achieved. In this presentation, above mentioned experiments on cogenerated dusty plasma shall be presented.

[1] S. Sarkar, M. Bose, J. Pramanik, and S. Mukherjee, Phys. Plasmas **20**, 024506 (2013).

[2] S. Sarkar, M. Bose, S. Mukherjee, and J. Pramanik, Phys. Plasmas **20**, 064502 (2013).