

Seminar

Fluid instabilities and nonequilibrium structure formation in soft super-charged medium via particle simulation

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Nearly spherical, micron-sized (conducting or dielectric) grains easily get super-charged to about 10000 times that of an electronic charge when immersed in a plasma medium. A simple laser based illuminating procedure combined with high speed camera and computer-aided-counting allows one to measure instantaneous velocities and positions of these super-charged grains, thus facilitating a near one-to-one comparison with simulations. In this talk, using non-equilibrium molecular dynamics simulations, several interesting nonequilibrium features such as the onset of instability during laminar to turbulent transition, destruction of macroscale vortex dynamics due to molecular shear heating, formation of inhomogeneous liquid-like-crystals, onset of Rayleigh-Benard convection, von Karman vortex streets of the super charged grain medium will be presented along with several new scaling laws.

Thursday, Mar 9th 2017

4:00 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TCIS