

Seminar

Institute for Plasma Research

Title : Thermodynamics and simulations of gravitating systems

Speaker: Prof. Avinash Khare
Central University of Sikkim

Date : 10th July 2019 (Wednesday)

Time : 11.00 AM

Venue : Seminar Hall, IPR

Abstract :

Problems related to formulation of the thermodynamics of gravitating systems are discussed. A new inter-particle potential is shown to remove some of these problems i.e., thermal equilibria exists at all temperatures. MD simulations with this-inter-particle potential shows spinodal instability and first order phase transition with phase co-existence and latent heat in gravitating systems. Analytic models based on N gravitating hard spheres and Chandrasekhar's theory of polytropes are developed to explain simulation results. It is further shown that simulations can also be interpreted as nonlinear simulations of Jeans instability. Astrophysical applications of results are discussed.
