PLASMA MEDIUM AND ITS UNDERSTANDING THROUGH NUMERICAL SIMULATIONS

AMITA DAS*

Plasma is an interesting complex medium, which offers many exciting research opportunities spanning and catering to applied as well as fundamental interests. The quest for unlimited clean energy through fusion and many environment friendly technologies in areas as diverse as medical, security etc., are based on this particular state of matter. Since, this medium is created by doing violence to matter (heating and/or striking an electrical discharge) it is in general found in a state far from thermodynamic equilibrium. Furthermore, it supports many kinds of waves and instabilities, and displays coherent as well as turbulent nonlinear dynamical behavior. These complex properties of the plasma medium are understood by adopting experimental, observational, numerical and theoretical tools. In this article a brief description of some of the numerical simulation tools, which have been successfully adopted in various contexts of plasma studies, has been provided. An overview of activities in our group in this direction has also been presented.