

数学与系统科学研究院
计算数学所定期学术报告

报告人: 张瑞丽 博士

(中国科学技术大学近代物理系)

报告题目:

**Canonical symplectic particle-in-cell
method for Vlasov-Maxwell
equations**

邀请人: 唐贻发 研究员

报告时间: 2015 年 9 月 24 (周二)

下午 16:00~17:00

报告地点: 科技综合楼三层

311 报告厅

Abstract:

Particle-in-Cell (PIC) simulation is the most important numerical tool in plasma physics. However, its long-term accuracy has not been established. To overcome this difficulty, we developed a canonical symplectic PIC method for the Vlasov-Maxwell system by discretizing its canonical Poisson bracket. A fast local algorithm to solve the symplectic implicit time advance is discovered without root searching or global matrix inversion, enabling applications of the proposed method to very large-scale plasma simulations with many degrees of freedom. The long-term accuracy and fidelity of the algorithm enables us to numerically confirm Mouhot and Villani's theory and conjecture on nonlinear Landau damping over several orders of magnitude using the PIC method.

欢迎大家参加！