第27回 RESCEU コロキウム

東京大学大学院理学系研究科　附属ビッグバン宇宙国際研究センター

日　時：　2018 年 5 月 31 日（木）13:30 ～14:30

場　所：　理学部 4 号館 1 階ピロティ RESCEU セミナー室

講　師：　Stéphane Colombi 氏（IAP）

Some aspects of Vlasov-Poisson equations

Dark matter or stars in galaxies are ensembles of particles that can be approximated with a self-gravitating, collisionless fluid, of which the dynamics is described by Vlasov-Poisson equations. I will study some properties of these equations and how they are solved numerically with the traditional N-body method and direct solvers using ``semi-Lagrangian'' methods and sophisticated computational geometry techniques. Focusing here on the dynamical evolution of single objects, I will study what happens for various systems, evolving from an initially warm or initially cold state. The concept of mean field limit will be approached through comparisons between N-body and Vlasov codes that will show that it is sometimes difficult if not nearly impossible to disentangle numerical from physical effects. I will discuss as well theoretical predictions, in particular the early evolution of dark matter proto-halos using perturbation theory and ``post-collapse'' perturbation theory.

興味をお持ちの方の聴講を歓迎致します。お茶とお菓子を用意しております。