
Dynamics of massive black holes in cosmological simulations

Marta Volonteri^{*1}, Yohan Dubois , Hugo Pfister , Ricarda Beckmann , and Sandrine Lescaudron

¹Institut d'Astrophysique de Paris (IAP) – Université Pierre et Marie Curie [UPMC] - Paris VI, INSU, CNRS : UMR7095, Université Pierre et Marie Curie (UPMC) - Paris VI – 98bis, bd Arago - 75014 Paris France, France

Abstract

A well known problem in cosmological simulations including massive black holes is their dynamics: in principle parsec or sub-parsec resolution is needed in order to account correctly for the forces acting on these objects, notably dynamical friction. Besides spatial resolution, mass resolution is also critical, because to avoid shotnoise the mass of the black hole should be about 10 times higher than that of stellar particles. Such spatial and mass resolution are very expensive for cosmological simulations with large volume or being run to late cosmic times. I'll report on a series of numerical studies with RAMSES where we tackled this problem and if time permits also discuss of investigations with SPH codes.

^{*}Speaker