

Rambody: Coupling RAMSES and Nbody6 to simulate collisional systems in galactic environments

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Modelling the formation and evolution of globular clusters in cosmological simulations is a notoriously difficult problem. Due to the extreme differences in scales in space and time required to resolve the star-by-star dynamics of the globular clusters, most simulations presently use sub-grid and semi-analytical models as prescriptions for the globular clusters. Moreover, even if this extreme scaling is resolved in high-resolution simulations, cosmological codes such as RAMSES compute collisionless dynamics which is not suited for the evolution of dense stellar systems. We present Rambody: a coupling between RAMSES and the collisional dynamics code Nbody6 to follow the dynamical evolution of dense clusters in cosmological context. This innovative approach allows us to capture the coupling between stellar and galactic (hydro-)dynamics through live inter-code communications of the galactic potential and stellar evolution. We present the method and the results of preliminary validation runs.

Presenter: Dr DELORME, Maxime (University of Surrey)

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