

Hydrodynamic Galaxy Cluster Simulations: a challenge for physics, parallel computing and visualisation

W. Kapferer

Institute for Astrophysics, University of Innsbruck

N-body/hydrodynamic numerical simulations of galaxy clusters including the interaction of the intra-cluster medium (ICM) with the galaxies is one of the outstanding challenges in computational astrophysics. We introduce metal enrichment processes like galactic winds and ram-pressure stripping. Galactic winds are calculated with an additional code which takes into account cosmic rays as well as magnetic fields for supernovae driven winds. To treat higher star formation rates due to galaxy galaxy interactions smoothed particle hydrodynamic simulations are performed. This combination of different techniques allows us to determine the enrichment efficiency of different processes. Additionally, methods for the investigation of huge 3 dimensional data sets with state of the art visualisation techniques will be shown.

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