Workshop

Stellar End Products: The Low Mass - High Mass Connection

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Title:
Three-dimensional hydrodynamics simulations of stellar interiors

Abstract:
Traditional stellar evolution simulations rely on the assumptions of spherical symmetry and hydrostatic equilibrium, treating dynamical phenomena with physically motivated prescriptions tuned to observations. We present a 3D hydrodynamics code, which addresses the uncertainties of the 1D simulations and is specifically adapted to simulations of stellar interiors. It includes nuclear reactions and a general equation of state and it handles low Mach number flows accurately and efficiently. This is illustrated with simulations of shear instabilities and convective overshooting in massive stars.