

## Developments of astrophysical simulation laboratory(2)

# Ryoji Matsumoto[1], Net Laboratory Team Matsumoto Ryoji

[1] Dept. Physics, Fac. Sci., Chiba Univ.

<http://www.astro.phys.s.chiba-u.ac.jp/~matumoto>

As a three-year project supported by research and developments applying advanced computational science and technology, Japan Science and Technology Corporation (ACT-JST), we are developing a 'Net-laboratory system for space simulations'. We have developed an integrated software which we call CANS (Coordinated Astrophysical Numerical Software) for astrophysical magnetohydrodynamic simulations. CANS consists of simulation engines, modules to incorporate various physical processes (e.g. electric conductivity, thermal conductivity, self gravity) and models and documents for typical astrophysical simulations. Simulation engines based on the modified Lax-Wendroff scheme, Roe scheme, and CIP-MOCCT method are installed. We adopt netCDF for file format. We are now developing modules to compute radiation spectrum from simulation results and incorporating general relativistic effects to simulate relativistic astrophysical jets. We are also installing web-based network visualization systems and developing interfaces to the visualization softwares such as IDL and AVS. By using CANS and network visualization systems, we will introduce results of numerical magnetohydrodynamical simulations of astrophysical rotating plasmas.