

研究課題名  
利用者氏名 (所属機関)

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In the initial period of the last academic year, I performed tests and optimizations of my code (the Whisky code, in the Cactus-code framework, with the Carpet-code mesh refinement driver) for its use on XT4, which poses the additional challenge of having diskless nodes. Then I performed a series of tests to speed up (independently from the specific machine) the execution of my binary--neutron-star--merger simulations. In particular, several grid setups (varying the number of refined grids, their position and resolution) and different time-stepping algorithms were compared, in order to assess the influence of numerical parameters on the results and to find a configuration with optimal running speed.

Later in the last academic year, I started a series of simulations aimed at comparing the effect of magnetic fields on the result of the merger of binary neutron stars, namely the formed hyper-massive neutron star, which may then collapse to a rotating black hole, possibly leaving a dense torus outside the horizon. Also in this case, part of the time has been spent in determining the appropriate numerical setup that allows the computation of reliable physical results. This initial necessary step is now over and the production phase has started. However, this work is still ongoing.