[PST-05] Benchmark Test for GRAPE

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We present a performance test of GRAvity PipE(GRAPE), a special-purpose computer for gravitational many-body simulations. We have used the recently acquired GRAPE6-BLX64 board by the N-body consortium in Korea. The entire cluster is composed of 8 GRAPE boards. Parallelization and performance test for N-body simulation are on-going before the application of this cluster for specific studies. Each board can accommodate up to 260k particles, and the cluster will be able to calculate the gravitational potential up to two million particles. Here, we report our results on the performance test of a single board based on sample program provided by the vendor (written by J. Makino), as well as a simple code developed by us. Based on the communication model, we decompose the entire computing time into the the times spent by the host computer, communication and GRAPE board computing time. The fraction of time spent for communication reduces drastically as the number of particles becomes larger. We found that our analysis gives consistent results with the previously published ones by GRAPE development team. The overall speedup is found to reach 100 times when compared the same N-body calculation performed by the host computer only.

[PST-06] Sco-Cen Project: Target Selection and Spectroscopy observations

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Tidal tails and streams of Galactic globular clusters appeared in stellar distribution around the Galactic globular clusters are strong evidences of the merging scenario of the Galaxy formation. To investigate substructure and tidal tail in density distribution of stars around the Galactic halo globular clusters, we used $\sim 3^{\circ} \times 3^{\circ}$ wide-field *gri* images, which were obtained by using CFHT Megacam in 2004, centered on M15, M30, M53, NGC 5053, and NGC 5466. The statistical CMD masking algorithm has been used to define the cluster's member stars currently located inside and outside of the target clusters. From the analysis of the spatial distribution of the selected cluster's member stars, the tidal tails and streams are detected around the target clusters. This supports the merging scenario of the formation of the Galactic halo. In order to examine the merging scenario on the formation of the Galactic bulge, we also have obtained wide-field near-infrared JHK images of the metal-poor ([Fe/H] < -1) bulge globular clusters by using the CFHT WIRCam and IRSF SIRIUS camera. Here, we report a current advance of the analysis for the stellar density distribution around the globular clusters in the Galactic bulge, and discuss the merging scenario of the Galaxy formation as a whole.