

Dear members of Gordon Bell Prize selection committee,

The paper by Iwasawa et al. describes the algorithm, implementation and performance of the simulation code that they developed for Sunway TaihuLight and GYOKOU system based on PEZY-SC2 processor, to perform realistic global simulation of planetary rings. Their calculation code is based on the framework "FDPS" that they developed for particle simulations. I am actually one of the FDPS users, and have used FDPS to simulate the rings around an asteroid using 300 million particles. I believe that our simulation is the first realistic global simulation of rings. Here "realistic" means that the ring particle size and ring spatial scale are realistic. We found realistic global simulations are crucial for the advance of our understanding of the dynamics and evolution of planetary rings. In the case of rings around asteroids, the number of particles necessary is around a billion, which, with the help of FDPS, we could handle on our Cray XC30 system in National Astronomical Observatory of Japan.

In the manuscript, the authors describe how they made simulations with a trillion or more particles possible on fastest supercomputers such as TaihuLight and GYOKOU. I am very excited with the possibility of realistic global simulation of Saturn's rings, which is our long-cherished dream, and I am sure such simulations will open a new horizon in the study of ring dynamics.

Sincerely yours,

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