

Abstract Submitted
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Towards kinetic simulation of MRI using GPU¹ T. TATSUNO,
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Graphics processor Units (GPUs) are nowadays widely used in fluid and MHD simulations. Due to their fast computation and memory access, they enable us to make large simulations on a desktop that used to be only accessible by a large supercomputer. So far, however, there are not many attempts to make kinetic simulations on GPU. In this work, we will try to develop a kinetic simulation code on GPU. We plan to apply the developing kinetic simulation code to analyze magnetorotational instability (MRI). It is shown by the fluid analyses with some kinetic effects included in the model [1, 2] that the pressure anisotropy brings an important effect on the accretion rate. However, the results depend on the free parameters in the terms for kinetic effects. Thus evaluation using kinetic simulation is desired for quantitative estimate.

[1] E. Quataert, W. Dorland, and G. W. Hammett, *Astrophys. J.* **577**, 524 (2002).

[2] P. Sharma, G. W. Hammett, E. Quataert, and J. M. Stone, *Astrophys. J.* **637**, 952 (2006).

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