

Development of SPH: Toward Understanding of Disk-planet Interaction Near the Disk Inner Edge

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Recent observations of exoplanets reveal the existence of close-in planets. These planets are thought to form in outer disks and migrate inward because of the disk-planet interaction. If there are disk inner cavities, planets can stop migrating and stay in close-in orbit. Disk evolution is highly affected by these planets. Thus, the understanding of the interaction between disks and close-in planets is crucial. In this study, we develop a numerical scheme to investigate the interaction between disks and planets. Although the grid-based schemes are widely used in this context, there are difficulties in calculating with a disk inner cavity or eccentric planets. These difficulties can be removed by smoothed particle hydrodynamics (SPH) with high accuracy. In this presentation, we will talk about the development of code and the performance evaluation.

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