

Ruchi Mishra - Numerical Simulation of Backflow in thin Accretion disk

Thursday, June 13, 2019 3:00 PM (20 minutes)

Analytical solution for a thin accretion disk shows that, for some values of the viscosity parameter, part of the accretion flow in the disk, is not towards the star, but in the opposite direction. We study such thin disks by performing hydrodynamic simulations using the PLUTO code, comparing the numerical with analytical results. We confirm that, for viscosity smaller than some critical value, there is a backflow in the mid-plane of the disk. The distance from the star to the starting point of backflow is increasing with viscosity, as predicted by the analytical solution. When the viscosity reaches some critical value, there is no backflow in the disk. We extend this study to the cases with magnetic field.

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