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Gas Dynamics in Protoplanetary Disks including Ohmic, Hall and Ambipolar Diffusion

Tuesday 5 August 2014 11:30 (30 minutes)

I will present recent local stratified shearing-box simulations on the gas dynamics of protoplanetary disks (PPDs) that self-consistently take into account all three non-ideal MHD effects. I argue that PPDs are most likely threaded by external poloidal magnetic flux, and will address 1). launching of magnetocentrifugal wind in the inner disk, 2). dependence of the gas dynamics on the external magnetic flux due to the Hall effect, and 3). layered accretion toward the outer disk. Limitations of the shearing-box approach and prospects to perform global simulations will also be discussed.

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