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The demise of the SAD model

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The Standard Accretion Disk (SAD) model, based on the assumption that angular momentum transport in accretion disk is mainly in the radial direction, has been the at the center of much of the work on accretion disks since the days of Lynden-Bell & Pringle (1974) and Shakura & Sunyaev (1976). Remarkably, over essentially the same period of time, a completely different –and most likely much more fruitful –concept, where angular momentum transport (along with mass and energy transport) is mainly in the vertical direction, has lived an apparently nearly independent life (Blandford & Rees 1974, Blandford 1976, Blandford & Payne 1982, Lovelace et al 1986, Konigl 1989, Konigl & Pudritz 2000, ···). I will discuss these concepts, and show that in the light of both observations and recent very high resolution simulations of star formation, which start out from conditions calibrated on well observed ISM properties and cover a scale range of nearly $1:10^9$, the SAD model is no longer sustainable.

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