

# POWER OF MAGNETICALLY ARRESTED ADVECTIVE ACCRETION FLOWS TO EXPLAIN ULXS AND BLAZARS

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We explore the large scale strong magnetic field in the removal of angular momentum outward, as well as the possible origin of different kinds of magnetic barrier in advective, geometrically thick, sub-Keplerian accretion flows around black holes. The origin of this large scale strong magnetic field near the event horizon is due to the advection of the magnetic flux by the accreting gas from the environment, say, the interstellar medium or a companion star, because of flux freezing. We show that such a “magnetically arrested disk” (MAD) could explain unusually high luminosity and spectral nature of ultra-luminous X-ray sources (ULXs) in their hard-states, based on stellar mass black hole accreting at a sub-Eddington rate only. This so-called MAD flow further is able to uncover the luminosity dichotomy in blazars. We propose that it is the mutual effects of strong magnetic field and accretion rate both, which produce different classes of blazar. The talk will be based on two published papers: MNRAS, 476, 2396, 2018; MNRAS, 482, L24; and two submitted papers.