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J. Jacquemin Ide: Magnetically-driven jets and winds from MRI-active accretion disks

Semi-analytical models of disk outflows have successfully described magnetically-driven, self-confined super-Alfvénic jets from near Keplerian accretion disks (Ferreira 1997). These Jet Emitting disks (JED) are possible for high levels of magnetization, close to the equipartition, leading to supersonic accretion and deeply affecting the emitted spectrum (see eg. Marcel et al 2018). However, these solutions prove difficult to compare with cutting edge numerical simulations, for the reason that numerical simulations show wind-like outflows but in the domain of small magnetization. In this work, we present for the first time self-similar solutions for accretion-ejection structures at small magnetization. We will elucidate the role of the magneto-rotational instability in the acceleration processes that drive this new type of solutions. The generalized parameter space and the astrophysical consequences will then be discussed. We believe that these new solutions could be a stepping stone in understanding the way astrophysical disks drive either winds or jets.

Classification de Session: Students' presentations