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High energy emission from shocks due to jets and accretion in young stars with disks: combining observations, numerical models, and laboratory experiments

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High energy emission from young stars with disks, with all their components due to accretion and outflow activity, can have a deep impact on the evolution of their disks and on the formation of exo-planetary systems. An inter-disciplinary approach, which combines multi-wavelength observations, magnetohydrodynamical models, and laboratory experiments, allows us to get a more complete description of the accretion/ejection phenomena characterizing young stars.

We will discuss the case of the HH 154 jet, its X-ray emission localized at the base of the jet and its complex morphology, comparing observations, models, and laser experiments.

We will present the comparison between magnetohydrodynamical models prediction and high energy observations (UV and X-ray bands) of TW Hya, a promising object to perform also Doppler shift measurements, pushing to the limit the capabilities of currently available instruments (e.g. Chandra Telescope).

We will discuss how multi-band investigation and the use of future instruments (Athena and LSST) will improve our understanding of the accretion process in young stars.

Contribution

Talk

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