Contribution ID: **647** Type: **Talk in the parallel session**

Magnetized disc-outflow symbiosis to unify blazar classification: FSRQ/BL Lac dichotomy

Wednesday 7 July 2021 08:30 (20 minutes)

The Fermi blazar observations show a strong correlation between γ-ray luminosities and spectral indices. BL Lac objects are less luminous with harder spectra than flat-spectrum radio quasars (FSRQs). Interestingly FSRQs are evident to exhibit a Keplerian disc component along with a powerful jet. We compute the intrinsic jet luminosities by beaming corrections determined by different cooling mechanisms. Observed γ-ray luminosities and spectroscopic measurements of broad emission lines suggest a correlation between the accretion disc luminosity and the intrinsic jet luminosity. Also, theoretical and observational inferences for these jetted sources indicate a signature of hot advective accretion flow and a dynamically dominant magnetic field at jet-footprint. Indeed it is difficult to imagine the powerful jet launching from a geometrically thin Keplerian disc. We propose a magnetized, advective disc-outflow symbiosis with explicit cooling to address a unified classification of blazars by controlling both the mass accretion rate and magnetic field strength. The large-scale strong magnetic fields influence the accretion dynamics, remove angular momentum from the infalling matter, help in the formation of strong outflows/jets, and lead to synchrotron emissions simultaneously. We suggest that the BL Lacs are more optically thin and magnetically dominated than FSRQs at the jet footprint to explain their intrinsic γ-ray luminosities.

References

[1] Mondal T., Mukhopadhyay B., MNRAS, 495, 350 (2020)
[2] Mondal T., Mukhopadhyay B., MNRAS, 486, 3465 (2019)

Author: MONDAL, Tushar (Indian Institute of Science)

Co-author: MUKHOPADHYAY, Banibrata (Indian Institute of Science)

Presenter: MONDAL, Tushar (Indian Institute of Science)

Session Classification: Multiwavelength and Multi-Messenger Observations of Active Galactic Nuclei

Track Classification: Active Galactic Nuclei: Multiwavelength and Multi-Messenger Observations of Active Galactic Nuclei