

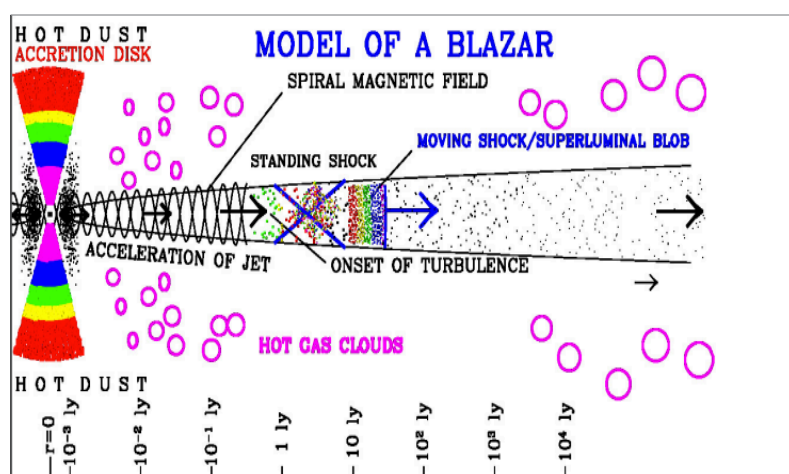


COLLOQUIUM

CRC 1601 HABITATS OF MASSIVE STARS ACROSS COSMIC TIME

April 29, 2025

University of Cologne
Physics Institutes
Lecture Hall III, 2:00 pm



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Radio Beacons of the Cosmos: Unveiling Relativistic Jets in Blazars

Blazars, among the most powerful radio beacons in the universe, host relativistic jets launched from the vicinity of the black hole–accretion disk system at the cores of active galactic nuclei (AGN). When these jets are closely aligned with the Earth's line of sight, the AGN are classified as blazars. Due to the relativistic motion of the jet plasma, their radio emission is significantly boosted, making blazars prime targets for high-resolution radio interferometric observations with the Very Long Baseline Array (VLBA), Global Millimeter VLBI Array (GMVA), and Event Horizon Telescope (EHT).

The MOJAVE program has been monitoring blazars at 15~GHz with the VLBA for over two decades. In this talk, I will present studies of jet structure, dynamics, and polarization properties based on data from the VLBA, GMVA, and EHT. Sub-milliarcsecond-resolution images at 15 GHz of selected blazars allow for the investigation of relativistic transverse waves, as well as the fine structure and kinematics of both quasi-stationary and moving jet components on sub-parsec scales. I will discuss the association of blazars with sources emitting in the X-ray and gamma-ray regimes, as well as very high-energy sources, along with jet models and particle acceleration mechanisms.