

Inaugural Lecture



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The non-thermal Universe: Decoding messages from extragalactic jets

Gamma rays, high-energy neutrinos and cosmic rays impinging on Earth signal the existence of environments in the Universe that allow acceleration of particle populations far out of thermal equilibrium, and often into the extremely energetic regime. Among the most numerous persistent source populations in the non-thermal gamma-ray sky are powerful relativistic matter streams - jets - emanating from the core of distant galaxies that host supermassive black holes.

Where and how are these energetic photons produced? Are such jetted active galactic nuclei (AGN) sources of ultra-high energy cosmic rays as observed on Earth? In this presentation I will discuss how decoding the information contained in key observables (such as broadband photon and neutrino spectra) from AGN through multi-messenger modeling allows to approach these decades-old questions.

I will further discuss the potential contained in high-energy observations from jetted AGN to probe the elusive intergalactic radiation and magnetic field, and show some recent findings.

**Tuesday, November 29, 2022, at 17:00 h
HS C (Technik)**