

TIME: 3/07/2023, 10:00am--10:30am

SPEAKER: Carlos Blanco (Princeton/OKC)

TITLE: Where are the Cascades from Blazar Jets? An Emerging Tension in the gamma-ray sky

ABSTRACT: Blazars are among the most powerful accelerators and are expected to produce a bright TeV gamma-ray flux. However, TeV gamma rays are attenuated by interactions with intergalactic radiation before reaching Earth. These interactions produce cascades that transfer the TeV power into the GeV band, powering both extended halos around bright sources and a large contribution to the isotropic gamma-ray background (IGRB). Using state-of-the-art blazar models and recent IGRB measurements, we rule out models where blazars effectively transfer their TeV power into GeV gamma rays. Three possible solutions include: (1) strong spectral cuts on bright blazars, which are at odds with local blazar observations, (2) collective plasma effects that can prevent the development of blazar cascades, the effectiveness of which is debated, (3) an increase in the effective γ -ray opacity from axion-like particles.