

Space Plasma Instabilities Resolve GeV-TeV Tension and Constrain Light Axions

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TeV blazars dominate the extragalactic gamma-ray sky and highly energetic pair beams arising from such blazar jets underproduce gamma rays in the GeV band while inverse-Compton scattering off the cosmic microwave background. Recent Fermi-LAT isotropic gamma-ray background measurements suggest that space plasma instabilities can play a crucial role in alleviating this GeV-TeV tension by transferring energy from the active galactic nucleus into the intergalactic medium. A direct consequence of such instability losses is the modification of thermal history and suppression of power at late times, potentially holding a clue towards resolving the small-scale crisis in cosmology. We show that the observation of dwarf galaxies and Lyman-alpha measurements can narrow down the mass range for light axion-like particles in a blazar-heated universe.

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yes

Author: GHOSH, Oindrila (Stockholm University & the Oskar Klein Centre)

Presenter: GHOSH, Oindrila (Stockholm University & the Oskar Klein Centre)

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