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New constraints on the dark matter-neutrino/photon scatterings

Friday 2 December 2022 12:20 (10 minutes)

In this talk, I will discuss the attenuation of high energy neutrinos and photons produced in a blazar when they propagate through the dark matter spike around the central black hole and the halo of the host galaxy. In particular, I will discuss new constraints on the dark matter-neutrino and dark matter-photon scattering cross sections obtained from the observation by IceCube of a few high-energy neutrino events from TXS 0506+056, and their coincident gamma-ray events. I will emphasize the dependence of the constraints with the location where the neutrinos and gamma-rays are produced, and the dependence with the dark matter self-annihilation cross section. The constraints are orders of magnitude more stringent than those derived from considering the attenuation through the intergalactic medium and the Milky Way dark matter halo. When the cross-section increases with energy, the constraints are also stronger than those derived from the CMB and large-scale structure.

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