Contribution ID: **63** Type: **Talk**

Probing photon-axion-like particle (ALP) oscillations from the FSRQ QSO B1420+326

Wednesday, 20 December 2023 15:45 (15 minutes)

We investigate the effect of photon-axion-like particle (ALP) oscillations in the gamma-ray spectra of FSRQ B1426+326 measured by Fermi-LAT and MAGIC around the flaring activity in January 2020. We set 95% confidence level (C.L.) upper limit on the photon-ALP coupling constant $g_{a\gamma} < 2 \times 10^{-11}$ GeV^{-1} for ALP masses $m_a \sim 10^{-10} - 10^{-9}$ eV. Assuming the hadronic origin of very-high-energy (VHE) photons, we also estimate the expected neutrino flux and the cumulative flux from QSO B1420+326-like FSRQs at sub-PeV energies. Furthermore, we study the implications of photon-ALP oscillations on the counterpart γ-rays of the sub-PeV neutrinos. Finally, we investigate a viable scenario of invisible neutrino decay to ALPs on the gamma-ray spectra and diffuse γ-ray flux at sub-PeV energies. Interestingly, we find that for the choice of neutrino lifetime $\tau_2/m_2 = 10^3$ s eV^{-1}, the γ-ray flux has a good observational sensitivity towards LHAASO-KM2A.

Reference publication/preprint

arXiv:2310.16634

Designation

Student

Institution

Indian Institute of Technology Jodhpur

Primary author: PANT, Bhanu Prakash (Indian Institute of Technology Jodhpur, India)

Presenter: PANT, Bhanu Prakash (Indian Institute of Technology Jodhpur, India)

Session Classification: Parallel: BSM + Cosmology