Contribution ID: **92** Type: **Oral**

The Role of Electromagnetic Cascades in High-Energy Neutrino Astrophysics

Thursday, 20 July 2023 14:30 (15 minutes)

High-energy gamma-rays do not travel freely across our Universe. Above the pair production threshold, they interact with background photon fields, giving rise to eletromagnetic cascades that take place over cosmological distances, and producing sub-TeV gamma-ray fluxes at the Earth. In this talk, we will demonstrate how one can use such cascades in a multimessenger context to infer properties of the IceCube astrophysical neutrino sources. We also explore the role of muon pair production in producing neutrinos along the development of ultra-high energy cascades, opening a potential window to probe cosmic accelerators at large redshifts.

Primary authors: CAPANEMA, Antonio (Pontifícia Universidade Católica do Rio de Janeiro); Prof. ESMAILI, Arman (Pontifícia Universidade Católica do Rio de Janeiro); Mr ESMAEILI, AmirFarzan (Pontifícia Universidade Católica do Rio de Janeiro); Prof. SERPICO, Pasquale (Laboratoire d'Annecy-le-Vieux de Physique Théorique)

Presenter: CAPANEMA, Antonio (Pontifícia Universidade Católica do Rio de Janeiro)

Session Classification: Student Talks