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Neutrinos from muon-rich ultra high energy electromagnetic cascades: The MUNHECA code [Online]

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Unveiling the still unknown ultra high energy astrophysical sources in the sky greatly benefits of a multi-messenger approach, combining information from charged cosmic rays with the one carried by photons and neutrinos. However, implementing this approach necessitates a thorough understanding of the microphysics processes shaping the spectra and energy distribution across these species. In this context, we have recently studied a purely leptonic channel for production of ultra high energy neutrinos, the electromagnetic cascade, linked to muon-producing QED processes.

In this presentation I will introduce a public python3 code, MUNHECA, to compute the neutrino spectrum by taking into account various QED processes, with the electromagnetic cascade developing either along the propagation in the cosmic microwave background in the high-redshift universe or in a predefined photon background surrounding the astrophysical source.

Authors: ESMAEILI, AmirFarzan (Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio)); Prof. ESMAILI, Arman (Pontifícia Universidade Católica do Rio de Janeiro); Prof. SERPICO, Pasquale Dario (LAPTh - Laboratoire d'Annecy-le-Vieux de Physique Théorique)

Presenter: ESMAEILI, AmirFarzan (Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio))

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