Contribution ID: **189** Type: **Parallel talk**

Radiative corrections for precise low- and high-energy (anti)neutrino fluxes

Wednesday 29 March 2023 11:30 (20 minutes)

To describe low-energy (anti)neutrino fluxes in modern coherent elastic neutrino-nucleus scattering experiments as well as high-energy fluxes in precision-frontier projects such as the Enhanced NeUtrino BEams from kaon Tagging (ENUBET) and the Neutrinos from STORed Muons (nuSTORM), we evaluate (anti)neutrino energy spectra from radiative muon, pion, and kaon decays at O(α) level and quantify corresponding uncertainties. We discuss the corresponding changes to fluxes and neutrino-nucleus cross sections.

Inverse muon decay is a promising tool to constrain neutrino fluxes with energies $E_\nu \geq 10.9$ GeV. To provide precise theory predictions for this process, we generalize the framework of radiative corrections in muon decay to the scattering reactions $\nu_\mu e^- \to \nu_e \mu^-$ and $\bar{\nu}_e e^- \to \bar{\nu}_\mu \mu^-$ and present resulting cross sections and energy spectra. We discuss how radiative corrections modify experimentally interesting distributions in MINERvA and future DUNE experiments.

Submitted on behalf of a Collaboration?

No

Participate in poster competition?

Primary author: TOMALAK, Oleksandr

Presenter: TOMALAK, Oleksandr

Session Classification: WG3

Track Classification: WG3: Electroweak Physics and Beyond the Standard Model