

Neutrino detection at the SND@LHC experiment

Tuesday, 21 December 2021 14:35 (10 minutes)

Neutrinos are the less known particles of the Standard Model, due to their very low interaction probability. The Scattering and Neutrino Detector at the Large Hadron Collider (SND@LHC) experiment has been approved in March 2021 to detect high energy neutrinos produced in the LHC. The detector is currently being installed at the TI18 tunnel, 480 m from ATLAS impact point. It will start data taking at March 2022, at the beginning of LHC RUN3. It is placed off-axis with respect to the beam, in order to receive neutrinos in the unexplored pseudo-rapidity region of $7.2 < \eta < 8.6$, where the main source of electron and tau neutrinos is the decay of charmed hadrons. By identifying the flavour of the neutrino interaction, it is possible to test the lepton flavour universality of the Standard Model. My work consists of simulating a signal of neutrinos and antineutrinos of different flavors, in order to optimize the reconstruction and evaluate the detection efficiency. At present, I am focusing on neutrino interactions originated in the target, which employs a high resolution emulsion tracker to reconstruct the interaction vertex and to identify the neutrino. This presentation provides a report of my analyses and the status of SND@LHC.

Primary author: IULIANO, Antonio (Istituto Nazionale di Fisica Nucleare)

Presenter: IULIANO, Antonio (Istituto Nazionale di Fisica Nucleare)

Session Classification: Lightning talks