

Speaker: A. Murat Guler

Title: Recent results from the SND@LHC experiment

Abstract:

SND@LHC is a compact and standalone experiment designed to study neutrinos produced at the LHC in a previously unexplored pseudo-rapidity range of $7.2 < \eta < 8.6$. This range complements the coverage of all other LHC experiments. The detector is located 480 meters downstream from Interaction Point 1 (IP1) in the TI18 tunnel. The experimental setup features a hybrid system that includes an 800 kg tungsten target layered with emulsion films and electronic trackers, followed by a calorimeter and a muon detection system. This configuration facilitates the efficient identification of all three neutrino flavors, presenting a unique opportunity to explore heavy-flavor production in a kinematic region that is inaccessible to ATLAS, CMS, and LHCb. This forward region is also significant for the physics programs of future circular colliders and for modeling ultra-high-energy atmospheric neutrinos. Furthermore, the detector is well-equipped for searching for Feebly Interacting Particles through their scattering signatures in the target material. The first phase of the experiment is planned to run throughout LHC Run 3, with a target integrated luminosity of 290 fb^{-1} . SND@LHC has been operating successfully since 2022 and has already produced several noteworthy physics results. This presentation will highlight the insights gained from the initial measurements.