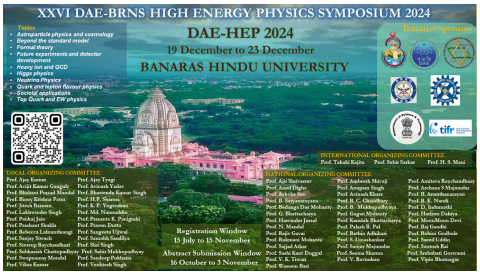

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Assembly and Testing of Straw Tubes for Neutrino Detection

Gaseous ionization detectors are essential instruments in particle physics for detecting ionizing particles and measuring radiation in protection applications. One notable type is the straw tube, which consists of gas-filled cylindrical tubes with a conductive inner layer serving as a cathode and an anode wire along the cylinder's axis. These detectors facilitate the reconstruction of neutrino interactions in targets, enabling accurate tracking of charged particles and particle identification. The Deep Underground Neutrino Experiment (DUNE) features a far detector located at the Sanford Underground Research Facility (SURF) in South Dakota and a Near Detector (ND) complex at Fermilab. Within the ND, the System for on Axis Neutrino Detection (SAND) employs tracking modules composed of straw tubes. Here at Panjab University , we assembled two straws which were tested using a prototype we designed. The gas leak tests, efficiencies and some physical properties of the assembled straw tube have also been studied.

Field of contribution

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Track Classification: Future experiments and detector development