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The Veto System of the JUNO Experiment

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The Jiangmen Underground Neutrino Observatory (JUNO) is a new generation of reactor based experiments located in the Guangdong province in China. This experiment offers a rich physics program and will bring significant contributions in many neutrino areas, in particular concerning the determination of the neutrino mass ordering and the measurement of the oscillation parameters at the percent level.

The central detector consists of a sphere filled with 20 kilo-tons of liquid scintillator surrounded by about 17612 photomultipliers (20") and 25600 small photomultipliers (3") for reading the light produced by the event interactions. Even if the detector is located at 700 m depth in an underground laboratory, the remaining background imposes the use of a Veto System for its characterization and to insure an efficient event selection. In particular, the cosmogenic induced background due to the muons passing through the central detector represents the most dangerous contributions and needs to be precisely characterized. The Veto System is assigned to this task and consists of two subsystems, the Outer Veto (OV) and the Top Tracker (TT). The OV is a Water Cherenkov type detector surrounding the central detector and is equipped with 2400 large photomultipliers (20") fixed on the support structure looking outward. The JUNO-TT uses the modules from the decommissioned OPERA experiment which are based on the well-known plastic scintillator technology equipped with wavelength shifting fibers. It will be placed on the top of the central detector for an efficient muon track reconstruction. In this poster, the status of the Veto System will be presented with some elements on the trigger strategy.

In-person participation

Yes

Primary author: BAUSSAN, Eric (IPHC-IN2P3/CNRS)**Presenter:** BAUSSAN, Eric (IPHC-IN2P3/CNRS)**Session Classification:** Poster Session**Track Classification:** Neutrino Physics