

Top Tracker of the JUNO Experiment

Friday, 21 June 2024 17:30 (2 hours)

The Jiangmen Underground Neutrino Observatory (JUNO) is a multipurpose observatory currently under construction in China. JUNO's physics reach will span many areas, amongst which precision neutrino oscillation measurements using reactor neutrinos, solar, atmospheric and geoneutrino related measurements.

In order to reduce the backgrounds from the atmospheric neutrino flux, the JUNO detector is located 650 m underground. Even at this depth, decays from cosmogenic isotopes miming the inverse beta decay (IBD) signature, used to identify electron antineutrinos, are expected to appear about as often as the IBDs themselves. To remove this background a dedicated cut around muon tracks passing through the detector is required. The JUNO veto system, composed of the Top Tracker (TT) and of the Water Cherenkov Detector (WCD), was designed with the goal of tracking those muons to make it possible to directly measure their flux and use it in the aforementioned veto strategy to suppress the cosmogenic background contamination.

The TT is made using refurbished plastic scintillator modules of the Target Tracker of OPERA equipped with new electronics. It will cover about 60% of the surface above the WCD. This makes it possible for the TT to precisely track about a third of the muons crossing the detector with a median resolution of about 0.2° . While the TT won't be able to track all muons of interest, it will produce a sample of well tracked muons to calibrate the other subdetectors of JUNO and help tune their reconstructions.

This poster will discuss the current status of the JUNO Top Tracker, covering in particular updates made since its usage in OPERA and its performance in JUNO.

Poster prize

No

Given name

João Pedro & Deshan

Surname

Athayde Marcondes de André & Sandanayake

First affiliation

IPHC Strasbourg/IN2P3/CNRS

Second affiliation

Institutional email

jpandre@iphc.cnrs.fr

Gender

Male

Collaboration (if any)

JUNO

Primary authors: Dr ATHAYDE MARCONDES DE ANDRÉ, João Pedro (IPHC/IN2P3/CNRS); SANDANAYAKE, Pathiranaage Shamilka Deshan (University of Strasbourg)

Presenters: Dr ATHAYDE MARCONDES DE ANDRÉ, João Pedro (IPHC/IN2P3/CNRS); SANDANAYAKE, Pathiranaage Shamilka Deshan (University of Strasbourg)

Session Classification: Poster session and reception 2

Track Classification: Reactor neutrinos