

Status and Prospect of JUNO-TAO

Thursday 28 August 2025 15:00 (20 minutes)

Taishan Antineutrino Observatory (TAO) is a satellite experiment of JUNO. It consists of a ton-level liquid scintillator detector at around 44 meters from a reactor core of the Taishan Nuclear Power Plant. It detects reactor antineutrinos by inverse beta decay (IBD). Silicon photomultipliers which have ~95% coverage and ~50% photon detection efficiency are used to collect photoelectrons, resulting in the light yield is ~4500 photoelectrons per MeV. Dark noise of SiPM is suppressed by orders of magnitude by cooling the detector down to -50 degrees. The main goal of TAO is to get the precise energy spectrum of reactor antineutrinos with very high energy resolution (<2% at 1 MeV). It will deliver a reference energy spectrum for JUNO to reduce the impact from the reactor antineutrino flux and spectrum model uncertainties, and provide a benchmark to nuclear databases. In addition, TAO can also search for light sterile neutrinos with a mass scale around 1 eV and help to verify of the technology for reactor monitoring and safeguard.

This talk will show the latest status and prospect of TAO detector.

Collaboration you are representing

JUNO

Author: LI, Ruhui (IHEP)

Presenter: LI, Ruhui (IHEP)

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