Contribution ID: 1

Type: not specified

Status of the Taishan Antineutrino Observatory

The Taishan Antineutrino Observatory (TAO) is a satellite experiment of the Jiangmen Underground Neutrino Observatory (JUNO), designed to achieve a precise measurement of the reactor antineutrino spectrum with an unprecedented energy resolution of 2% at 1 MeV. Located 44 meters from one core of the Taishan nuclear power plant, TAO utilizes a ton-scale liquid scintillator detector nearly fully instrumented with cutting-edge silicon photomultipliers (SiPMs) featuring a photon detection efficiency (PDE) of approximately 50%, achieving a high photoelectron yield of around 4500 p.e./MeV. By operating the detector at -50°C, the SiPM dark current is reduced by three orders of magnitude. TAO is able to reveal the fine structure of the reactor antineutrino spectrum and can help to validate reactor monitoring techniques using neutrinos. This talk will provide a comprehensive introduction to the TAO experiment and its current status.

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