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Calibration System of the JUNO Experiment

The Jiangmen Underground Neutrino Observatory (JUNO) central detector (CD) would be the world's largest liquid scintillator (LS) detector with an unprecedented energy resolution of $3\%/\sqrt{E(\text{MeV})}$ and an energy nonlinearity better than 1% to achieve multiple physics goals, including determining neutrino mass hierarchy, measuring solar neutrino, detecting supernova neutrino, etc. In order to achieve this challenging calibration goal, a calibration system, including Auto Calibration Unit (ACU), Cable Loop System (CLS), Guide Tube Calibration System (GTCS), and Remotely Operated Vehicle (ROV), is designed with deploying multiple radioactive sources in various locations inside/outside of the CD. The strategy of the JUNO calibration system has been optimized based on Monte Carlo simulation results from calibration sub-systems data. This poster will present details of the JUNO calibration system and simulation results which help achieve an excellent energy resolution better than 3% between 1MeV and 8MeV.

Mini-abstract

The design and simulation of calibration system of the JUNO experiment

Experiment/Collaboration

JUNO

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