

Stereo Calorimetry in JUNO: Physics Motivation and Instrumentation

The Jiangmen Underground Neutrino Observatory (JUNO) will install 25k 3-inch PMTs (SPMTs) in the gaps between 18k closely packed 20-inch PMTs (LPMTs). The SPMT system will significantly enhance JUNO's physics capabilities by mitigating the non-stochastic term of the energy resolution, providing a semi-independent measurement of the solar oscillation parameters, and improving the reconstruction of cosmic-ray muon and supernova burst events. This poster will discuss the physics benefits of the SPMT system as well as the instrumentation. About 200 electrical junction boxes will be deployed underwater to power and read out the SPMTs. Each of these boxes will manage 128 PMTs, and will contain densely packed equipment with high reliability. In particular, a dedicated 128 channel front-end board based on the CATIROC ASIC has been developed and prototyped. Among several benefits, the system will allow to read the SPMTs in triggerless mode for event rates ranging from a few kHz to a few MHz.

Authorship annotation

for the JUNO collaboration

Session and Location

Monday Session, Poster Wall #107 (Auditorium Gallery Left)

Poster included in proceedings:

yes

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