Contribution ID: **243** Type: **oral**

Characterization of the large area photocathode PMTs for the JUNO Detector

Tuesday, May 23, 2017 9:54 AM (18 minutes)

The primary physics goal of the Jiangmen Underground Neutrino Observatory (JUNO) is to resolve neutrino mass hierarchy taking the advantage of the copious antineutrinos from two powerful nuclear power plants at distances of ˜53 km in Guangdong Province, China. To meet this goal, JUNO has designed a 20 kt underground liquid scintillator (LS) detector that deploys 20 k high quantum efficiency (HQE) photomultipliers (PMTs) to reach an energy resolution of $3\%/\sqrt{(E/MeV)}$ and an energy scale uncertainty better than 1%. The required performance on such a massive LS detector is unprecedented, which places stringent requirements on the two types of PMTs used by JUNO, the Hamamatsu HQE PMT and the newly developed micro-channel plate (MCP) PMT. To select qualified PMTs and, more importantly, to supply the detector simulation with precise PMT performance data, the JUNO collaboration has developed two PMT performance evaluation systems, an industrial container based multi-PMT testing system and PMT photocathode uniformity scanning station. This talk will explain the requirements on the two types of JUNO PMTs in connection to its physical goals, the technical designs of the two PMT evaluation systems and the strategy to carry out the PMT evaluation.

Primary author: Prof. WANG, Wei (Sun Yat-Sen University)

Presenter: Prof. WANG, Wei (Sun Yat-Sen University)

Session Classification: R4-Photon detectors(2)

Track Classification: Photon detectors