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Calibration system of the JUNO experiment

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The Jiangmen Underground Neutrino Observatory (JUNO) is the largest liquid scintillator detector in the world and it is under construction in Jiangmen city in South China. The JUNO Central Detector is an acrylic spherical vessel with an inner diameter of 35.4 m, filled with 20 kton liquid scintillator. The entire scintillator volume is monitored by approximately 17,600 20-inch and 25,600 3-inch photomultiplier tubes. It is designed to determine the neutrino mass ordering, measure the solar neutrino fluxes, detect supernova neutrinos, etc. A comprehensive calibration strategy is developed to achieve an unprecedented effective energy resolution (better than 3% @1MeV) and energy scale (better than 1%), by deploying multiple radioactive sources/laser source in various positions inside and outside of the Central Detector. The strategy of the JUNO calibration system has been optimized based on the results of Monte Carlo simulations from the calibration sub-systems data. This flash talk will present details of the JUNO calibration system and simulation results that help to achieve an excellent
energy resolution of 3%/sqrt(E(MeV)) and an accuracy of the energy scale at 1% level or better.

Primary author: HUI, Jiaqi (Shanghai Jiao Tong University)

Presenter: HUI, Jiaqi (Shanghai Jiao Tong University)

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