

Abstract Submitted
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The JUNO Calibration Systems YUHANG GUO, QINGMIN ZHANG, Xi'an Jiaotong Univ, FEIYANG ZHANG, MENGJIAO XIAO, JIANGLAI LIU, YUANYUAN ZHANG, Shanghai Jiao Tong Univ, JUNO COLLABORATION — The Jiangmen Underground Neutrino Observatory (JUNO), a 20 kton multi-purpose underground liquid scintillator (LS) detector equipped with about 50k PMTs, is under construction at Kaiping, Guangdong Province in China. The primary scientific goal is to determine the neutrino mass hierarchy (MH). Its unprecedented energy resolution requirement of $3\%/\sqrt{E}$ will be the most crucial performance parameter. To help achieve this, thorough calibration of the detector is a must. A comprehensive calibration system, including a Cable Loop System, Guide Tube Calibration System, Auto Calibration Unit, and Remotely Operated Vehicle, have been designed to deploy multiple sources, to cover the entire energy range of reactor neutrinos, and to achieve a full-volume position coverage inside the detector to measure the spatial response function at different calibration energies. The energy linearity can also be studied with different gamma and electron sources. In the presentation, the design and current status of the JUNO calibration systems will be discussed, including their designs and hardware progress, as well as a simulation of on the effectiveness of this calibration program.

Yuhang Guo
Xi'an Jiaotong Univ

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