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JUNO Calibration System

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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), which requires the unprecedented energy resolution of 3%/√E. Consequently, thorough calibration of the detector is a must. Accordingly, a comprehensive calibration system, including a Cable Loop System, Guide Tube Calibration System, Auto Calibration Unit, and Remotely Operated Vehicle, has 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 system will be introduced, finally it's also presented that the effectiveness of this calibration program is validated by simulation.

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