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Dual Calorimetry at JUNO

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Dual Calorimetry is a technique designed for high precision control of detector calorimetry systematics. It is embodied at JUNO as two independent photosensors and readout systems with different photon occupancy regimes surrounding the 20 kton liquid scintillator. One is the ~18,000 20-inch large PMTs (LPMTs) system, and the other is the ~26,000 3-inch small PMTs (SPMTs) system. The LPMT system is designed for maximal light detection in order to achieve 3% energy resolution at 1MeV. The SPMT system, as the second calorimetry, is introduced to disentangle the degeneracy of calorimetry responses, isolate the charge non-linearity effects and provide a linear charge reference for LPMT. The Dual Calorimetry technique provides robust LPMT charge non-linearity calibration, thus helping the overall systematics control and physics measurement of JUNO. In this flash talk, the physics motivation, basic principle and potential performance of the Dual Calorimetry will be presented.

Collaboration name

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