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The double calorimetry system in JUNO

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The JUNO detector was designed to achieve 3% energy resolution which required 18k high quantum efficiency 20-inch PMTs (LPMTs) closely packed around liquid scintillator (LS) target ball. Beside this, 25k 3-inch PMTs (SPMTs) were also designed to install between the gaps of LPMTs to make a double calorimetry system to improve and extend JUNO physics, such as improving energy resolution, muon reconstruction, supernova neutrino detection and so on.

Now PMTs are producing, include 15k MCP LPMTs from Chinese NNVT company, 5k Dynode LPMTs from Japanese Hamamatsu company and 26k SPMTs from Chinese HZC company. Until now more than 15k LPMTs and SPMTs are produced respectively. Performance test data so far indicate that both LPMTs and SPMTs perform as expected. Both system's high voltage divider, potting, cabling, connector have passed the production readiness review. The splitter, electronics and underwater box are all making good progress.

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