

The R&D, Mass Production of the 20 inch MCP-PMT for neutrino detector

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Researchers at IHEP have conceived a new concept of MCP-PMT several years ago. The small MCP units replace the bulky Dynode chain in the large PMTs. In addition the transmission and reflection photocathode in the same glass bulb to enhance the efficiency of photoelectron conversion. After three years R&D, a number of 8 inch prototypes were produced in 2013. The 20 inch prototypes were followed in 2014, and its' performance were improving a lot in 2015. This type of PMT has large sensitive area, high QE, and large P/V for good single photoelectron detection. Compensating the PMT performances, cost, radioactivity, the JUNO ordered 15000 pic 20-inch MCP-PMT from the NNVT in Dec.2015. The MCP-PMT collaboration group finished to build the mass production line in Nanjing, and finished the batch test system in the same place in 2016. From 2017 to 2019, all the 20-inch PMTs will be produced and tested one by one in NNVT for JUNO. This presentation will talk about the R&D, the mass production and batch test result of the 5K pieces of MCP-PMT prototypes for JUNO.

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