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## An introduction of new 2-inch R11699 PMTs for Liquid Xenon TPC

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The PandaX project consists of a series of xenon-based experiments that are used to search for dark matter (DM) particles and to study the fundamental properties of neutrinos. The operating PandaX-4T contains 4-ton liquid xenon in the sensitive volume and the next generation Pandax-nT with 30-ton. With increasing target mass, the sensitivity of searching for both DM and neutrinoless double-beta decay ( $0\nu\beta\beta$ ) signals is significantly improved. However, the typical energy of interest for ( $0\nu\beta\beta$ ) signals are at the MeV scale, which is much higher than that of most popular DM signals. The dynamic range of baseline readout scheme of the photomultiplier tubes (PMTs), which was designed from DM specially, is very limited. Signals from the majority of PMTs in the top array of the detector are heavily saturated at MeV energies. We have designed a new high voltage divider with more de-saturation capacitors, which could be used later in PandaX-4T.

The R11410 3-inch PMTs are the most popular photon detectors in Xe TPCs. However, the detector sensitivity is limited by the radioactivity, large size, signal-saturation and position reconstruction accuracy. In this report, we report a new 2-inch R12699 PMTs with four individual anodes for liquid xenon TPCs. We are testing 350pcs of R12699 in Shanghai Jiao Tong University.

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