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Status of the PandaX-20T Liquid Xenon Detector

PandaX (Particle and Astrophysical Xenon experiment), a large-scale liquid xenon dark matter detection project located at the China Jinping Underground Laboratory, has provided a high-sensitivity experimental platform for dark matter and neutrino searches through the iterative development of three generations of detectors since its launch in 2009. As a core leading institution of the collaboration, the Tsung-Dao Lee Institute (TDLI) of Shanghai Jiao Tong University hosts a full-chain detector operation and R&D platform featuring a 2-tonne liquid xenon prototype detector, supporting the stable data taking, performance calibration and low-background technology development of the PandaX program.

To further enhance the sensitivity to these rare signals, the PandaX collaboration has proposed the next-generation detector PandaX-20T, scheduled to come online in 2027. Over 20 tonnes of xenon will be utilized, with a time projection chamber measuring ~2 m in diameter and ~2.5 m in height. New R12699 photomultiplier tubes with significantly lower radioactivity will be employed for photon detection. The TDLI prototype platform also supports the pre-research of key technologies for PandaX-20T.

This talk will give an overview of the PandaX detector operation status, the latest R&D progress of PandaX-20T.

Primary author: YAN, Binbin (Shanghai Jiao Tong University)

Presenter: YAN, Binbin (Shanghai Jiao Tong University)