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PandaX-III: Searching for Neutrinoless Double Beta Decay with High Pressure Xe-136 Gas Time Projection Chambers

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The PandaX-III project at China Jinping Underground Laboratory (CJPL) will search for neutrinoless double beta decay of Xe-136 with high pressure xenon gas Time Projection Chambers (TPC). PandaX-III exploits the tracking capability of gaseous TPC to effectively identify possible signal and suppress background. The first TPC will contain 200 kg of enriched xenon at 10 bar and will be equipped with Micromegas charge amplification and readout modules. The projected energy resolution is 3% (FWHM at Q-value) and spatial resolution on millimeter level. We are commissioning a prototype TPC with up to 20 kg of xenon in the effective volume to validate our design of high voltage feedthrough, field cage, Micromegas readout plane, and to develop algorithms of track reconstruction. In this talk, I will give an overview of the PandaX-III design features, projected sensitivity, and the latest results of the prototype TPC.

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