

Searching for $0\nu\beta\beta$ Decay with High Pressure Xenon Gas Time Projection Chambers

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Finding evidence of neutrinoless double beta decay would reveal the Majorana nature of the neutrino and give insight into the origins of the matter-antimatter asymmetry in the universe, the smallness of neutrino mass, and the symmetry structure of the Standard Model. The NEXT collaboration is developing a sequence of high pressure xenon gas time projection chambers with the aim of creating a ton-scale, very low background neutrinoless double beta decay search. In this talk, we will highlight the strengths of this program, including recent results from the NEXT-White demonstrator, status of NEXT-100, and prospects for ton-scale and beyond R&D and experiments.

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