

NEXT-CRAB: A High Pressure Xenon Gas Time Projection Chamber with Camera Readout for Neutrinoless Double Beta Decay Searches

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NEXT-CRAB (Camera Readout And Barium tagging) aims to demonstrate an ultra-high resolution tracking detector that scales elegantly to very large future detectors that can incorporate barium tagging. To do this we are employing several novel techniques, one of which is using an optical readout for direct VUV imaging of the electroluminescence. This opens up the cathode plane for incorporation of barium tagging, a novel technique developed to distinguish each time the daughter nucleus of double beta decay is within the detector volume, suppressing all anticipated radiological backgrounds and providing the possibility for zero-background detectors at very large masses, enabling measurements that probe the normal neutrino mass ordering.

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