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The CRAB-0 Demonstrator Detector for Camera-Based Track Imaging in Xenon Gas

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The experimental effort to detect neutrinoless double beta decay has shown numerous R&D advancements in the past several years. One of the R&D lines being explored in high pressure gas xenon detectors, such as those used by the NEXT experiment, is the utilization of a fast optical camera in order to digitize the tracking information. Another R&D line is tagging of the daughter Barium ion, from the decay of Xenon136. Combining barium tagging with topological imaging via high speed cameras and VUV image intensifiers would enable a novel direction in the search for neutrinoless double beta decay within future NEXT detectors. In this talk we will present the first data taken with the high pressure gas xenon Camera Readout and Barium Tagging (CRAB-0) prototype constructed and operated at UT Arlington, and prospects of the larger NEXT-CRAB demonstrator at Argonne National Laboratory.

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