

CRAB: A Camera Readout and Barium Tagging System R&D for the NEXT collaboration

Thursday, May 27, 2021 9:30 AM (18 minutes)

The experimental effort to detect neutrinoless beta decay has shown numerous R&D advancements in the past several years. One of the R&D lines being explored in NEXT and presented in this talk is that of digitizing tracking information with a fast optical camera. This would enable a novel direction in the search for neutrinoless double beta decay within the NEXT collaboration: demonstrating a detector that includes tagging of the daughter Barium ion, from the decay of Xenon136, leveraging the latest breakthroughs in single molecule fluorescence. To achieve this, we need to house single-ion Barium detection (via single molecule fluorescence) as well as adapt the TPC to hold the electroluminescence (EL) region at high voltage. In this talk, we'll describe the design, status, and early information from the CRAB (Camera Readout and Barium Tagging) system which is under construction at Argonne National Laboratory, focusing on the fast optical camera.

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