

Se-82 imaging detectors for a definitive search for neutrinoless double beta decay

We are developing a new experimental technique to search for the neutrinoless double beta decay of Se-82 with imaging devices made from an active layer of amorphous selenium coupled to a complementary metal-oxide-semiconductor (CMOS) active pixel array. The proposed technology combines at once the possibility of a low-background implementation, the precise energy resolution required to reject background from the two-neutrino double beta decay channel, and the efficient determination of the event topology necessary for a powerful rejection of alpha, beta and gamma-ray backgrounds from natural radioactivity. A detector consisting of a large array of these devices could have very low backgrounds, possibly reaching background rates in the neutrinoless decay region of interest (ROI) $<1\text{E-6/kg/year}$, a leap forward by orders of magnitude in sensitivity to this rare process.

Session and Location

Wednesday Session, Poster Wall #154 (Hölderlin-Room)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)