

Pile-up rejection for AMoRE-II

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In the neutrinoless double beta decay search using a low-temperature detector technique such as AMoRE, one of the major background sources at the energy range of interest is an accidental coincidence of two background signals at one crystal detector, so-called pile-up. While a large mass-time exposure is the key parameter of the experimental sensitivity, the pile-up event rate ultimately limits the crystal size, which determines the number of detector modules and data acquisition channels. For a typical AMoRE crystal detector with a cylindrical shape of 6 cm in both diameter and height and 2-3 millisecond signal rise-time, the pile-up event rate in AMoRE-II with ~360 detector modules can be suppressed down below 3×10^{-5} counts/keV/kg/year level using multivariate analysis of pulse shape parameters.

Poster prize

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