

Virtual depth by active background suppression: The cosmic muon induced background of GERDA Phase II

In-situ production of long-lived isotopes by cosmic muon interactions may generate a non-negligible background for deep underground rare event searches.

Previous Monte Carlo studies for the GERDA experiment at LNGS identified the delayed decays of ^{77}Ge and its metastable state ^{77m}Ge as dominant cosmogenic background contribution in the search for neutrinoless double beta decay of ^{76}Ge .

It might define a minimum depth requirement for next generation experiments aiming for an increased ^{76}Ge mass at background-free conditions.

In this re-evaluation it is shown that the application of state-of-the-art active background suppression techniques and simple delayed coincidence cuts allow to reduce the $^{77(m)}\text{Ge}$ background by more than one order of magnitude.

This virtual depth increase by active background rejection opens the way for next generation rare event searches at LNGS.

Session and Location

Monday Session, Poster Wall #40 (Auditorium Gallery Right)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)