
# Background suppression in large mass TeO2 bolometers with Neganov-Luke amplified light detectors

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Bolometric detectors are excellent devices for the investigation of neutrinoless double-beta decay (DBD0v). The observation of such decay would demonstrate the violation of lepton number, and at the same time it would necessarily imply that neutrinos are Majorana particles.

The sensitivity of cryogenic detectors based on TeO2 is strongly limited by the alpha background in the region of interest for the DBD0v of 130Te. It has been demonstrated that particle discrimination in TeO2 bolometers is possible measuring the Cherenkov light produced by particle interactions. However an event-by-event discrimination with NTD-based light detectors has to be demonstrated.

We will discuss the performance of a highly-sensitive light detector exploiting the Neganov-Luke effect for the signal amplification. The detector, being operated with NTD-thermistor and coupled to a 750 g TeO2 crystal, shows the ability for an event-by-event identification of electron/gamma and alpha particles. The obtained results demonstrate the possibility to enhance the sensitivity of TeO2-based DBD0v experiment to an unprecedented level.