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Calculation of the neutrino-nuclear reaction cross-sections for □□□□ nuclei and estimation of the solar neutrino background in the GERDA/LEGEND experiments.

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The work presents calculations of the neutrino-nuclear reaction cross-sections using the example of the nucleus □□'((□□'(□, □ □□'( ). *In the structure of the nucleus, not only discrete, but also continuous states formed due to the collective interaction of nucleons were distinguished. In particular, the contribution of the Giant Gamow-Teller resonance and so-called pygmy resonances in the capture rate of solar neutrinos was estimated (an increase of 25% to 50%, depending on the quenching parameter used).*
Based on the obtained capture rate, a Monte Carlo simulation of the subsequent beta decay of the nucleus □□'((□□'(⟶ □□'(+ □2 + □ + □□) was carried out for germanium detectors in the GERDA experiment. Thus, the contribution of the background component due to solar neutrinos was estimated, which, due to the small cross-sections of neutrino-nuclear reactions, is practically unremovable, imposing confines on the sensitivity limit of the setup. A similar assessment can be made for the upcoming LEGEND experiment taking into account its geometry. Preliminary results suggest that BI of solar neutrinos are 1-2 orders of magnitude lower than the predicted accuracy of the LEGEND experiment.

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