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On the possibility of using scintillation material $\text{Li}_2\text{CaSiO}_4:\text{Eu}^{2+}$ in solid-state reactor antineutrino detectors.

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At the present time, a scintillation material ${}^6\text{Li}_2\text{CaSiO}_4:\text{Eu}^{2+}$ (LCS) is being developed at the NRC “Kurchatov Institute”. This material is designed for neutrons registration by capturing by the ${}^6\text{Li}$ isotope. The work presents the possibility of using LCS for neutrons detection after the inverse beta decay reaction ($\bar{\nu}_e + p \rightarrow n + e^+$), which is widely used for antineutrinos registration in reactor experiments. It is shown that when using LCS in combination with a plastic scintillator (EJ-200, which acts as a target for antineutrinos and registers positrons), selection by pulse shape allows the signals of two scintillators to be separated, which demonstrates the possibility of using this material in antineutrino experiments.

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