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Application of modern commercial digitizers for new approaches to neutron's detection

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Modern commercially available digitizers provide for a moderate price new detection approaches (pulse shape discrimination (PSD), pulse height analysis, etc.) in nuclear and particle physics. In particular, such new electronics became highly demanded for neutron's detection. One of a new detection methods is to use PSD technique for new lithium containing scintillators for effective discrimination between neutron- and gamma-events. As we found, high level of intrinsic alpha- background of these scintillators still does not allows to use such detectors in low background experiments. The actual work presented fundamentally new neutron detection method which is combination of modern digitizers with well-known NaI detectors. Method based on delayed coincidences in deexcitation of iodine-128 which is result of neutron capture on iodine-127. Sensitivity of the method has been investigated with several different digitizers.

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