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The software and solutions for express processing of the raw list mode data measured on the neutron spectrometers of the IBR-2 reactor using a delay line position-sensitive detector as designed to be integrated into the experiment control system

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Recently we have performed a comparative study of the characteristics of the data acquisition systems for the position-sensitive detectors with a delay line operating on the neutron instruments of the IBR-2 reactor. As a result, to have an optimal version of electronics we have chosen two directions of further development: the DeLiDAQ-2 system for high-flux measurements and the CAEN N6730 digitizer-based system for high-precision experiments. The study has also revealed an urgent need to integrate list mode measurements into the experiment control system on some of the neutron spectrometers. So far, the experiment control system SONIX operating on most of the IBR-2 spectrometers has received and displayed the data measured in the histogram mode. The report, besides the results of the comparative study also describes the software that is developed to solve the task of formation of events from raw data, their sorting, selecting by appropriate criteria, histogramming and to be appropriate for integration into the SONIX. The proposed solutions are not limited to any specific types of electronics for PSD.

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