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Data acquisition system for focal plane detector of mass separator MASHA

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One of the significant changes during last years at mass spectrometer MASHA (Mass-Analyzer of Super Heavy Atoms), located at JINR Flerov Laboratory of Nuclear Reactions, was upgrade of the data acquisition system. The main difference from previous CAMAC DAQ is in using new modern platform –National Instruments PXI with XIA multichannel high speed digitizers (250MHz 12 bit 16 channels). There are 448 spectrometric channels. Each channel has its charge sensitive preamplifier which are grouped by 16 in a load balance way. Grouped channels are connected to multiplexers-amplifiers and after that to digitizers. Preamplifiers and multiplexers-amplifiers are designed at FLNR JINR [1]. Software for data acquisition is written in C++ and consist of two main parts. First one is run at PXI controller for collecting and storing data from digitizers located at experimental hall and the second one is a viewer at PC for on-line and off-line data analysis located at MASHA control room.

New DAQ system expands precision measuring capabilities of alpha decays and spontaneous fission at focal plane position sensitive silicon strip detector what in turn increases capabilities of the setup in such field as low yield elements registration.

Keywords: DAQ, data acquisition, mass-spectrometry, super heavy elements

1. A. Kuznetsov, E. Kuznetsov, Electronic devices for constructing a multichannel data acquisition system. Proceedings of the XXII International symposium NEC"2009, Varna, pp. 173-179.

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