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PULSE SHAPE ANALYZING SYSTEM FOR A GRIDDED IONIZATION CHAMBER

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A high-performance charged particle spectrometer was developed for investigation of reactions induced by fast neutrons. The charge particle detector is a twin-gridded ionization chamber and its structure can be found in Ref. [1]. In this article, we describe experimental methods for detecting alpha particles using a twin-gridded ionization chamber developed at FLNP JINR using the PXI system, which consists of chassis (NI PXI-1031 from NI, USA), the embedded controller (NI PXI-8820 from NI, USA) and one high-speed digitizer (Pixie-4 from XIA, USA). The Pixie-4 is a PCI/PXI 4-channel all-digital waveform acquisition and data card. It combines spectroscopy with waveform capture and on-line pulse shape analysis. Incoming signals are digitized by 14-bit 75 MSPS ADCs. Also as examples are some of our test measurements obtained on 6Li, 10B nuclei. Experiments were performed with a 239Pu-Be radioisotope neutron source.

REFERENCES

[1] Yu. M. Gledenov, M. V. Sedysheva, G. Khuukhenkhuu, Huaiyong Bai, Haoyu Jiang, Yi Lu, Zengqi Cui, Jinxiang Chen, Guohui Zhang. Measurement of the cross sections of the 25Mg(n,α)22Ne reaction from 4 to 6 MeV region. Phys. Rev. C 98, 034605 (2018).

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