

Neutron Detector Based on Polystyrene and Cadmium Layers

Wednesday, 12 October 2016 15:30 (30)

There is description of the development of detectors for neutrons, based on polystyrene and cadmium layers. Cadmium is used as neutron's converters via reaction (n,γ) and polystyrene is used as scintillation material to register the originated gamma quanta. The simulation and experimental investigations of proposed detectors design are presented. The main advantages of proposed detection is short measurement time- approximately 5 μsec . It is shown that the principle, suggested in the models, can be applied to the detection of neutrons from a pulsed neutron source, for example, secondary neutrons, generated by hadron showers in the space environment or by high-intensity pulsed sources based on accelerators. Detection efficiency for the $24 \times 20 \text{ cm}^2$ size detector model, measured during the experiment and simulated by the Monte Carlo technique is about 1% with the measurement time being approximately 5 μsec

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Session Classification : Poster session - III

Track Classification : Methods of experimental physics