

Determination of neutron detection efficiency of DEMON and PARIS detectors using a ^{252}Cf source

Wednesday, 13 July 2022 11:00 (20 minutes)

The results of measuring the energy distribution of neutrons emitted from the ^{252}Cf source by the DEMON and PARIS detectors are presented. DEMON (DEtecteur MOdulaire de Neutrons) is scintillator detector widely used for neutron detection [1]. PARIS (Photon Array for the studies with Radioactive Ion and Stable beams) is new-built detector consisting of CeBr_3 - NaI(Tl) phoswich scintillators [2].

The energies of the neutrons were measured by the Time - Of - Flight (TOF) method where a semiconductor detector was used for fission fragment detection and START-pulse generation for the TOF measurements. The STOP pulses for TOF measurements were generated by DEMON and PARIS detectors, respectively.

The energy dependence of the neutron efficiency for DEMON and PARIS detectors at the $E_n = 0.7\div 7$ MeV neutron energy range were determined by comparing the measured data with standard ^{252}Cf spectrum [3].

1. I. Tilquin et al., Nucl. Instr. Meth. A 365, 446 (1995).
2. A. Maj et al., Acta Phys. Pol. B 40, 565 (2009).
3. W. Mannhart, Proc. of IAEA Consulting Meeting, INDC(NDS)-220, p. 305 (1989).

The speaker is a student or young scientist

Yes

Section

1. Synchrotron and neutron radiation sources and their use in scientific and applied fields

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Session Classification: Poster session