

Prototype of coordinate scintillation detector of thermal neutrons of high resolution on wave-length shifting fibers

Currently, the development of a position-sensitive scintillation detector of thermal neutrons of high resolution is carried out at the FLNP JINR. As scintillator is used so-called ND-screen, representing a thin (0.42 mm) plate from the mixture of ZnS(Ag) and ^6LiF granules of micron size. Using of ND-screen allows to efficiently suppress the background of gamma radiation. For light collection the system of wave-length shifting (WLS) fibers with spectrum intermediate emitter is used. WLS fibers transmitting light from scintillation flash to multichannel photomultiplier. The index number of light-exposed fiber will determine the coordinate of the point of neutron interaction with scintillation screen. To minimize the number of registration channels it is supposed to use the system of optical coding of the light-exposed WLS fiber index number. For supplementary improvement of spatial resolution of the detector the amplitude information will be used. The coordinate of the maximum of the amplitude distribution of nearby channels will determine the coordinate of the neutron interaction with the ND-screen.

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