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THE POLARIZATION OF FAST NEUTRONS

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Abstract

It is insufficient to know coordinates and momentum to describe a state of a neutron. It is also necessary to define the spin orientation. As far as it is known from quantum mechanics, a half spin has a projection in the positive direction or in the negative direction. The probability of both projections in an unpolarized beam is equal. If a direction exists, in which the projection is more probably, then the beam

is called polarized in this direction. It is essential to know polarization of neutrons for characteristics of a neutron source, which is emitting it. The question of polarization of fast neutrons came up in 1950's.

The present work is the review of polarization of fast neutrons and methods of polarization analysis. This also includes information about polarization of fast neutrons from first papers, which described polarization in the $D(d,n)^3\text{He}$, $^7\text{Li}(p,n)^7\text{Be}$, and $T(p,n)^3\text{He}$ reactions.