

Neutron Slowing Down as a Random Walk Problem

E.I. Sharapov

Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, IIO, Dubna

In this report-poster author asserts that the names of Pierre-Simon Laplace, Gian-Carlo Wick, Enrico Fermi, Karl Pearson and Paul Langevin happened to be directly related to the historical problems of the random walk in the statistical theory and slowing down of fast neutrons to thermal energy in the physics. Their works have been instrumental in solving these problems by developing the exact mathematical expressions for the probability density of the sum of independent random variables. Several approaches to obtaining these expressions will be shown. There were most problematic difficulties with getting the result in the form of an analytical formula for energy distribution of neutrons, which are slowed down by a fixed numbers of impacts with protons. The author's simplest way to deduce such formula is shown also, for the pedagogical reasons, for students interested in neutron physics.

References:

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