

DEVELOPING SIMULATION AND ANALYSIS TOOLS FOR THE DOUBLE POLARIZED DD-FUSION EXPERIMENT

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A double-polarized dd-fusion experiment (PolFusion, PNPI, Gatchina) has been proposed to investigate the reactions $d + d \rightarrow {}^3\text{He} + n$ and $d + d \rightarrow t + p$ in the energy range of 10-100 keV. The possibility of using a vector and tensor polarized beam and target combination creates the opportunities to measure the asymmetry of the differential cross section and spin-correlation coefficients in the $d + {}^3\text{He}$ and $d + t$ reactions. Suggested measurements offer capabilities for determination of the quintet-state suppression factor for both reactions[1], one of the goals of PolFusion experiment program.

A brief description of mathematical model[2, 3], which allow to predict the observables, status of experimental data and first test measurements are given. Overview of Monte Carlo simulation studies and details of future analysis are discussed.

[1] H. Paetz gen. Schieck. The status of “Polarised Fusion” // Eur. Phys. J. **A44**, 321–354 (2010).

[2] E.N.Komarov, S.G. Sherman // Preprint PNPI **2967**, (2015).

[3] E.N.Komarov, S.G. Sherman // Preprint PNPI **2996**, (2016).