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ELASTIC d ^{12}C SCATTERING WITHIN A THREE-BODY MODEL

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Intrinsic electric dipole momenta (EDM) of particles and atoms if they do exist will indicate directly to time-reversal invariance violation (and CP violation under CPT symmetry) as well as P-parity violation. Knowledge of these signals is important to understand origin of matter-antimatter asymmetry of the Universe. An EDM of charged particles can be observed by measuring the rate of spin precession in an external electric field. Measurement of EDM of protons and deuterons is planned at COSY (Juelich) by JEDI Collaboration using the COSY storage ring [1]. This experiment suggests a measurement of deuteron - carbon scattering using high sensitivity in a carbon target polarimeter [2]. An important question is to choose an optimal energy of the deuteron beam which would provide a maximal figure of merit. Existing experimental data on polarized elastic scattering in region of ~100 -200MeV not enough complete. Therefore theoretical calculations are desirable as a guide for a choose of the beam energy.
In this work we apply spin-dependent Glauber theory [3] for calculation of differential cross section and vector analyzing power A_y of the d^{12}C elastic scattering. The formalism of the dp- scattering [3] is modified here properly to be applied to the d^{12}C scattering and Coulomb interaction is taken into account. As the first step the elementary N^{12}C elastic scattering amplitudes are taken from the optical model [4] which provide a fit to the absolute value of the unpolarized N^{12}C cross section but without fit to the vector analyzing power. Numerical results are obtained at the deuteron beam energy 270 MeV. We
find [5] the calculated differential cross section is in a good agreement with the data [6] in the forward hemisphere, whereas the calculated spin observables A_y and $A_z z$ are only in qualitative agreement with the data. The latter indicates an importance of further development of the model for the amplitudes of the N^{12}C elastic scattering.

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Primary author: Prof. UZIKOV, Yury (Joint Institute for Nuclear Researches)

Presenter: Prof. UZIKOV, Yury (Joint Institute for Nuclear Researches)

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