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Calculations of Momentum distributions of reaction products in fragmentation reactions at low energies

Fragmentation reactions are one of the primary tools for studying nuclides that are far from the stability line (exotic nuclides). One of the main approaches to describing fragmentation reactions is the high-energy approximation or the Glauber method.

This report examines the features of applying the Glauber method to fragmentation reactions at low energies (starting from 10 MeV per nucleon). Although the Glauber method is formally applicable in this energy range, practical modifications are required to adequately account for the kinematic features of nuclear reactions. The report will propose an approach that formally allows for the correct consideration of the conservation laws of energy and momentum for reaction products. Additionally, a relatively simple model for describing the velocity distributions of reaction products will be discussed.

Furthermore, the report will consider the application of the described models to specific experimental tasks: Monte Carlo simulation of the experiment and data analysis.

Section

Nuclear physics (Section 1)

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