Development of a simple algorithm for prefragment formation in proton – nucleus spallation reactions

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A FORTRAN Monte Carlo algorithm is developed to calculate the energy, mass and charge distribution of the prefragments produced in proton induced spallation. The algorithm is based on Glauber's theory [1,2] together with a reasonable assumption on the type of the promptly emitted nucleons. For the evaporation stage, correlated (A, Z, E) values were fed into a properly modified version of the MCEF (Monte-Carlo Evaporation-Fission) code written in Java [3]. A good agreement is obtained with the experimental mass and charge distributions of residues observed in p + ^{56}Fe spallation reactions at 300, 500 and 750 MeV/A [4].

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