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Heavy ion reactions producing a heavier deformed nucleus and free nucleons

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Abstract: Carbon induced heavy ion reactions on the heavy ^{197}Au target are considered. The statistical scission model is used to calculate this fission process. In the present considered reactions, the process leads to the fragmentation of only one deformed heavy fragment and few nucleons. Angular distributions of the fission fragments are numerically calculated for different values of the incident energies in the range 64-104 MeV. The present theoretical calculations of the differential cross-sections are in good agreements with experimental data for the carbon incident energy 84 A MeV. The effective variance of this fission process is also calculated. The present numerically calculated values of the variance and angular distributions are in good agreement with previously calculated values.

Key Words: Fission reactions, charged particle induced fission, mulifragmentation, $^{12}\text{C} + ^{197}\text{Au}$ reactions, calculated angular distributions and variances.

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