

The production of high-spin isomers around ^{52}Fe in fragmentation reaction of ^{58}Ni and ^{59}Co beams at 350 MeV/u

Projectile fragmentation is one of the most effective methods of producing unstable nuclei. Calculations of the reaction cross-section are based on the abrasion-ablation model, which consists of a two-step reaction via an excited pre-fragment state.

While the total cross-section is calculated using the abrasion-ablation model, the momentum distribution is often described by the Goldhaber model, which considers the Fermi momentum in the nucleus focusing on the abrasion process and deceleration, for example, but the detailed mechanism of these processes remains unclear.

High-spin isomers are among the interesting products in fragmentation reactions because of getting the information of the pre-fragment.

We aim to study the role of the prefragment, a missing element in the Goldhaber model, by comparing the momentum distribution of (unbiased) fragments and that of high-spin isomers for the first time.

Experimental study on nuclear physics

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