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# Characteristics of Heavy-Ion Fragmentation Reactions at Fermi Energies

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Heavy-ion-induced projectile fragmentation reactions at Fermi energies are of general interest as a means to investigate the properties of nuclei far from the valley of stability and for various applications. It is thus of importance to understand in detail the production mechanism. Here we treat such reactions in a microscopic approach, which consists of three steps: initialization of ground states of the colliding nuclei, dynamical evolution until the freeze-out point where the primary fragments can be identified, and de-excitation of these primary hot fragments. For the dynamical evolution we use a Boltzmann-Vlasov-type transport code, and for the de-excitation a statistical multi-fragmentation description. Here we further introduce realistic, stable initializations of the colliding nuclei, which are important to control and determine the excitation energies of the nuclei and fragments. We apply this approach to collisions of light projectile nuclei, and calculate isotope distributions and velocity spectra of the produced isotopes. In particular, the velocity spectra are shown to contain much information on the reaction mechanism.

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