Advances in Radioactive Isotope Science - ARIS 2011

Abstract ID : 288

Orbital dispersion and deflection of fragmentation products at 290 MeV/u

Abstract text :
Orbital dispersion and deflection of fragmentation products, reduced from their transverse-momentum distributions, are studied. Based on those orbital parameters, the mechanism of the fragmentation process will be discussed.

The projectile fragmentation process is a powerful tool to produce RI beam (RIB). Transverse distribution of the products is one of the important factors to characterize RIB, and is a probe to reveal interactions contributing to the fragmentation process. In previous studies, a dispersion adding to the contribution of the Fermi motion was observed and empirically formulated. Furthermore, a remarkable orbital-deflection effect was observed with heavy target nuclei at 290 MeV/u, and was numerically analyzed by an off-centered Gaussian function by our research group. A systematic behaviour of reduced orbital parameters concerning the isospin of fragments suggested a contribution of reaction parameters, such as the excitation energy.

In this study, transverse distributions of fragments in a broad range of mass and charge were observed at HIMAC accelerator facility. Fragments were produced from 290 MeV/u Ar- and Kr-beams with various targets (C, Al, Nb, Tb, Au). The dispersion and deflection effect are evaluated numerically through the above analysis. Based on reduced orbital parameters, we intend to investigate a contribution of the Coulomb repulsion and nuclear potential.

Primary authors : Prof. MOMOTA, Sadao (Kochi University of Technology)

Co-authors : Dr. KANAZAWA, Mitsutaka (National Institute of Radiological Sciences) ; Dr. KITAGAWA, Atsushi (National Institute of Radiological Sciences) ; Mr. SATO, Shinji (National Institute of Radiological Sciences)

Presenter : Prof. MOMOTA, Sadao (Kochi University of Technology)

Track classification : Radioactive ion beam production, experimental developments and applications

Contribution type : Oral presentation

Submitted by : Prof. MOMOTA, Sadao

Submitted on Sunday 16 January 2011

Last modified on : Sunday 16 January 2011

Comments :