

Measurement of fusion-evaporation cross sections in $^{136}\text{Xe}+^{64}\text{Zn}$ system using inverse kinematics

The heavy-ion fusion reaction is powerful in expanding the chart of nuclides as well as exploring the nuclear structure beyond Pb ($Z = 82$). A fusion experiment was performed at HIMAC to study the inverse kinematic systems by bombarding the low-energy ^{136}Xe beam onto ^{27}Al , ^{nat}Cu and ^{nat}Zn targets. Two newly developed detectors were used in the experiment: a position-sensitive mosaic detector array which is composed of 128 Silicon photodiodes for the in-beam α measurement and a ToF spectrometer based on the Micro Channel Plates to measure the beam energy, respectively. Partial Fusion-Evaporation Residues were identified by measuring the decayed α particles and β -delayed γ rays, independently. The excitation functions of partial ERs were deduced and compared with the calculations using statistical models.

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