

Electromagnetic and hadronic forces in nuclear peripheral collisions at intermediate energies studied via γ -ray angular distribution at RISING

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Coulomb excitation is a selective tool to investigate low lying nuclear excited states in exotic nuclei. It is particularly useful in studies aiming at evaluation of properties of the first 2^+ level in even-even exotic nuclei, such as excitation energy and reduced electric quadrupole transition probability - $B(E2)$.

In forward scattering of a relativistic projectile on a heavy target mainly long range electromagnetic forces lead to nuclear excitation. However, at a touching projectile-target distance a contribution of a strong interaction may also occur. These two different excitation mechanisms result in emission of γ -rays with a characteristic angular distribution.

Studies of a γ -particle angular correlation were performed at the RISING fast beam campaign setup at GSI.

In the paper, an application of the Cluster detector array in evaluation of electromagnetic-nuclear interface for projectiles of different Z will be shown. Unexpectedly large hadronic contribution to the inelastic scattering cross section observed in the experiments will be discussed.