

COULOMB EXCITATION OF ^{129}Xe BY ^{32}S AND ^{58}Ni BEAMS

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The ^{129}Xe nucleus belongs to the transitional region of the Z,N=50-82 shell. It is the region of shape coexisting structures of prolate or oblate deformation and strong asymmetric gamma-deformation. The neighbouring ^{128}Xe nucleus was extensively studied and the large set of reduced electromagnetic transition probabilities was found [1]. The Coulomb excitation of ^{129}Xe can give the unique opportunity for common study of the electromagnetic structure of even-even and odd-even neighbouring nuclei.

The presented experiment was performed using the NORDBALL facility with 100 MeV ^{32}S and 195 MeV ^{58}Ni beams. The NORDBALL setup consisted of 20 Ge detectors and 5 new type large Position Sensitive Detectors (PSD) covering 65% of the backward hemisphere of scattered projectile. Energies and intensities of gamma-rays transitions were measured in coincidence with backscattered projectiles. Theta spherical angle covered by PSDs extended over

theta=104-153 deg angle in LAB system of coordinates. The 60-element BaF₂ calorimeter was used for additional time reference.

Two types of ¹²⁹Xe targets prepared in special way [2] by Warsaw University Isotope Separator (UWIS) were used with both ³²S and ⁵⁸Ni beams:

- a) self-supporting one composed of 150 μg/cm² of ¹²⁹Xe enriched to more than 97% and 300 μg/cm² of carbon,
- b) the same as a) but with thick copper backing.

In presented experiment four bands were populated from 1/2⁺ ground state up to energy over 2 MeV and spin 17/2⁺. Besides, several low lying levels observed only in β-decay experiments were also populated. The data analysis aimed to extract E2 and M1 transition probabilities is in progress.

References

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