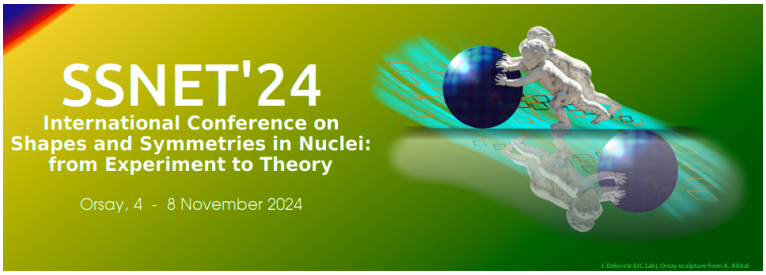

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Exploring quadrupole and octupole collectivity in 106Cd via unsafe Coulomb excitation

mardi 5 novembre 2024 12:20 (20 minutes)

We studied cross-section distributions measured as a function of scattering angle for multiple excited states in ^{106}Cd, populated via inelastic scattering on a ^{92}Mo target. The balance between Coulomb and nuclear interaction in the population of individual states was explored by comparing the experimental γ-ray yields with the predictions obtained with the GOSIA Coulomb-excitation code. We demonstrated that from such an "unsafe" Coulomb-excitation measurement it is possible to correctly evaluate reduced transition probabilities between certain low-lying states. In this way, we obtained new information on the collectivity of the presumably oblate structure built on the 0_3^+ state, as well as on the role of octupole correlations in this nucleus. By comparing our observations with the results of previous spectroscopic studies of ^{106}Cd, we were also able to propose a rearrangement of the level scheme including notably K=2 and K=4 structures. These results, as well as remaining puzzles concerning the low-energy part of the ^{106}Cd level scheme, motivated a future high-precision beta-decay study into ^{106}Cd, which has been recently accepted at TRIUMF.

Auteurs principaux: KALAYDJIEVA, Desislava (CEA Paris-Saclay / Université Paris-Saclay); ZIELINSKA, Magdalena (CEA Paris-Saclay, France)

Orateur: ZIELINSKA, Magdalena (CEA Paris-Saclay, France)

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