

”The properties of excited states in Ni-63 populated in (n, γ) reaction”

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Nuclides in the vicinity of double magicity have simple structure, which can be described with the shell model. The nuclei is treated like closed, well bounded core, built with magic number of nucleons, and valence nucleons. The excitation-energy spectrum is dominated by single particle excitations. Therefore, there is a great need of systematic investigation of the nuclear structure of the nuclei in this area, it is crucial to understand how the nuclear structure evolve with addition of subsequent nucleons. Obtaining Ni-63 decay scheme is part of those systematic investigations.

The experiment was performed in Institut Laue-Langevin (ILL) in Grenoble . Excited states of Ni-63 were populated in (n, γ) reaction. During the data analysis there were 9 new or confirmed γ ray transitions found. One excited level proposed within previous investigation of the Ni-63 was unobserved in the analysed dataset. The branching factors were calculated for all γ ray transitions. Additionally, shell model calculations with using different effective interactions were performed and compared to the experimental results.

This work was done in EXILL collaboration.

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