

γ -ray spectroscopy above the 9^+ isomer in ^{66}As

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The $N = Z$ nucleus ^{66}As has been produced in a ^{28}Si on ^{40}Ca fusion-evaporation reaction to study the excited states of this nucleus at the Accelerator Laboratory of the University of Jyväskylä, Finland (JYFL). The experiment was performed using the vacuum-mode recoil separator MARA [1], the germanium-detector array JUROGAM3 [2] and the focal plane detector setup of MARA, including the new scintillator detector Tuike [3] built for recoil- β tagging. Prompt feeding to the isomeric 9^+ state has been studied using different primary beam energies and target thicknesses. It was observed that the majority of the feeding ends in excited states above the 9^+ isomer, even at lower compound nucleus excitation energies.

The focus of the analysis has so far been in the states above this 9^+ isomer. The decay of the isomer gives rise to fast conversion electrons, which were utilised to create clean γ spectra. The newly acquired data reveal new γ -ray transitions, which were not observed in an earlier ^{66}As experiment run at JYFL [4]. Many of these transitions, previously reported also by Grzywacz et.al. [5], have now been placed to the level scheme.

I will briefly present the experimental setup and discuss about the method of conversion electron tagging. I will present the updated level scheme of ^{66}As and compare the new states to the predictions obtained from shell-model calculations.

[1] J. Uusitalo *et al.*, Acta Phys. Pol. B **50** (2019) 319–327.

[2] J. Pakarinen *et al.*, Eur. Phys. J. **56** (2020) 149.

[3] H. Joukainen *et al.*, Nucl. Instrum. Methods. Phys. Res. A **1027** (2022) 166253.

[4] P. Ruotsalainen *et al.*, Phys. Rev. C **88** (2013) 024320.

[5] R. Grzywacz *et al.*, Nucl. Phys. A **682** (2001) 41c–47c.