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In-beam γ-ray spectroscopy of 94Ag

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The formal concept of isospin has been introduced to explain the apparent exchange symmetry between neutrons and protons. However, if the nuclear force were the same for protons and neutrons properties such as masses and excitation energies would depend only on the mass number A. Recent studies have shown that the Coulomb force cannot account for all deviations, suggesting that other isospin-symmetry-breaking components must be present. N⊠Z systems present the perfect testing ground to probe isospin symmetry phenomena [1-3]. In particular, pairing correlations have a significant importance in the description of the nuclear structure of N=Z nuclei, where protons and neutrons are arranged occupying the same orbits, allowing T=0 np pairing in addition to the normal T=1. It was recently suggested that spin-aligned T=0 np pairs dominate the wavefunction of the y-rast sequence in ^{92}Pd [4]. Subsequent theoretical studies were devoted to probe the contribution of np pairs in other N=Z A>90 nuclei [5-6], suggesting that a similar pairing scheme strongly influences the structure of these nuclei. In an effort to further understand the influence of np pairing in self-conjugate nuclei, a recoil beta tagging experiment has been performed to try and identify the excited T=0 and T=1 states in odd-odd N=Z ^{94}Ag using the ^{40}Ca(^{58}Ni,p3n)^{94}Ag reaction. The experiment was conducted using MARA recoil separator and JUROGAM3 array at the Accelerator Laboratory of the University of Jyväskylä.

The detailed goals of the experiment, the setup, tentatively identified transitions, experimental CED and nuclear shell model predictions will be shown in this presentation. A preliminary interpretation of the experimental results will also be discussed.

[1] K. Wimmer, et al., Phys. Rev. Lett. 126, 072501 (2021).
[2] R.D.O. Llewellyn, et al., Phys. Lett. B 797, 135873 (2019).

[3] A. Boso, et al., Phys. Lett. B 797, 134835 (2019).
[4] B. Cederwall, et al., Nature 469, 6871 (2011).
[5] G.J. Fu, et al., Phys. Rev. C 87, 044312 (2013).
[6] Z.X. Xu, et al., Nucl. Phys. A 877 (2012) 51-58.

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