Contribution ID: **126** Type: **Oral Presentation**

INVESTIGATING THE PHOTON STRENGTH FUNCTION FOR 61Cu USING 60Ni (p, γ) REACTION AT iTHEMBA LABS

Thursday 10 July 2025 10:50 (20 minutes)

INVESTIGATING THE PHOTON STRENGTH FUNCTION FOR ⁶¹Cu USING ⁶⁰Ni (p, γ) REACTION AT iTHEMBA LABS

The Brink-Axel hypothesis assumes that photo-de-excitation only depends on the emitted γ-ray energy Eγ and not the detailed structure of the initial and final states (spin and parity) involved in the transition as it is the case for photo-excitation process. While the hypothesis is widely used for all PSF energy regions such as the giant dipole resonance (GDR), it remains under investigation for the low energy region [1]. In the present work, this hypothesis will be tested below the neutron separation energy, using for the first time radiative proton capture. An experiment to indirectly measure the photon strength function (PSF) took place at iThemba LABS's Tandetron facility, to populate excited states in ⁶¹Cu utilizing ⁶⁰Ni(p, γ)⁶¹Cu reaction. The model independent ratio method [2] and the shape method [3] will be used to investigate the statistical γ-ray decay to individual well established discrete states. With the neutron separation energy at 11.7 MeV, populated states with beam energies in the range 2.32-4.32 MeV will confine the study below the particle separation energy.

Data analysis is ongoing, and preliminary results will be presented.

References

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2. M. Wiedeking et al. Phys. Rev. Lett. 108, 162503 (2012).
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This research work is supported in part by the National Research Foundation (Grant No:118846, 92600, 90741, 92789 and REPSARC180529336567). It is also based upon work supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics under Contract No. DE-AC02-05CH11231.

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Session Classification: Nuclear, Particle and Radiation Physics-1

Track Classification: Track B - Nuclear, Particle and Radiation Physics