# Investigation of Spectroscopic Properties of $^{108}$Ag via the $^{107}$Ag(n,2γ) Reaction

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In low-energy nuclear physics, the precise determination of gamma transitions, level scheme, nuclear level density, and radiative strength function holds paramount importance. These accurate experimental values play a crucial role in various scientific domains, including astrophysical reactions, medical isotope production, rare isotope beams, and reactor technology. The two-step gamma cascade method, involving the detection of gamma-gamma coincidences after thermal (cold) neutron capture (i.e., the ($n_{th}$,2γ) reaction), has demonstrated effectiveness in providing spectroscopic data and insights into level density and radiative strength functions.

This study focuses on the investigation of the spectroscopic properties of the $^{108}$Ag nucleus, utilizing an enriched (99.07%) $^{107}$Ag target. The experimentation took place at the PGAA station of the Budapest Neutron Centre in Budapest, Hungary, employing a cold neutron beam, 3 HPGe detectors with appropriate shielding, and an acquisition system for coincidence measurements. This presentation offers a concise overview of the methodology employed, highlighting the spectroscopic results for the $^{108}$Ag nucleus obtained through the $^{107}$Ag($n_{th}$,2γ) reaction, with a specific emphasis on gamma transitions and the level scheme.

**References**

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