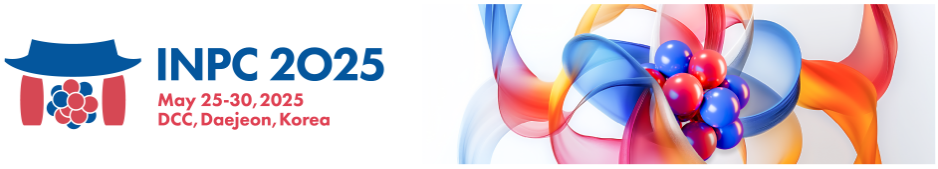

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Indirect Measurement of 88Y(n,γ) cross-sections by surrogate reaction method

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Neutron capture cross-section is a crucial component in understanding the origin of elements, modeling nuclear devices and interpreting nuclear data for security applications. While a large part of the demanded capture cross-sections involves short-lived and highly radioactive targets, direct measurement of neutrons with these targets are extremely difficult or costly.
In this work, a surrogate reaction was proposed for indirectly determining the 88Y(n,γ) cross-sections with p + 89Y system. The selected inelastic scattering proton in coincidence with two characteristic gammas of 89Y are utilized to acquire the probabilities of gamma decay channel. Then, combined with the cross-sections of compound nucleus formation calculated with optical model, desired 88Y(n,γ) cross-sections are obtained in Weisscopf-Ewing Approximation for the first time. Also, corrections are discussed for the spin-parity differences between original and surrogate reactions.

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