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Investigating the Gamma-Ray Strength Function in ^{74}Ge using the Ratio Method

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Abstract content (Max 300 words) **Formatting & Special chars**

As excitation energy increases from the ground state towards the separation energy, the density of nuclear states increases exponentially. In this region of high level density, called the quasi-continuum, it is impossible to distinguish between individual states, since the level spacing becomes very small and in some cases the levels can even overlap. This is the regime where nuclear properties are best described by statistical quantities. As such, the gamma-ray strength function, which is the ability of atomic nuclei to emit and absorb photons with energy E_{γ} , is a measure of the probability for an excited nucleus to decay to low-lying states. These gamma-ray strength functions are input parameters to calculate cross sections such as (n,γ) and (p,γ) which are vital to improve our understanding on how elements are generated in astrophysical processes. I will present preliminary results of our research focusing on ^{74}Ge , populated in the $^{74}\text{Ge}(p,p')$ reaction at a beam energy of 18 MeV. The data was collected with the STARS-LIBERACE array at Lawrence Berkeley National Laboratory. Silicon detector telescopes were used for particle identification and gamma rays in coincidence were detected in 5 Clover-type high-purity germanium detectors. The gamma-ray strength function of ^{74}Ge is extracted through the recently established Ratio Method [1] and will be discussed in the context of other work done in ^{74}Ge using the (γ,γ) [2], $(^3\text{He},^3\text{He}')$ [3] and (α,α') [4] reactions.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

Main supervisor (name and email) and his / her institution

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Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

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