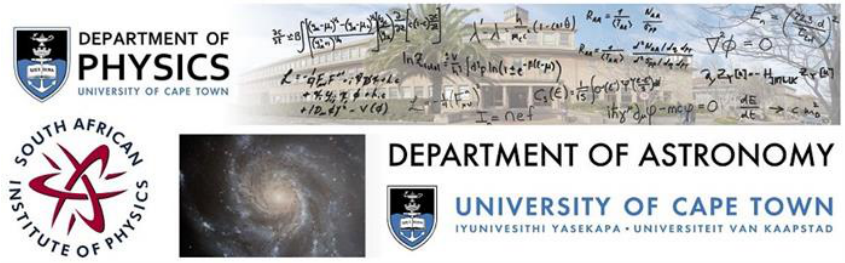

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Investigating the Gamma-Ray Strength Function in 74Ge using the Ratio Method

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Abstract content
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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 Egamma;, 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,gamma;) and (p,gamma;) 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 74Ge, populated in the 74Ge(p,p') reaction at a beam energy of 18MeV. 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 74Ge is extracted through the recently established Ratio Method [1] and will be discussed in the context of other work done in 74Ge using the (gamma;,gamma;') [2], (3He,3He') [3] and (α,α') [4] reactions.

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