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Constraining the 90Sr Neutron Capture Rate with the Short-Lived 91Sr Nucleus

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Recent neutron-star merger observations have provided r-process abundance constraints, which has led to significant attention towards additional neutron-capture processes such as the i-process and n-process. Working between the rates and environmental neutron densities of the r-process and s-process, their reaction pathways and abundance contributions are not yet fully characterized. Operating in densities of 10^{13} - 10^{20} neutrons/cm^3, sensitivity studies have shown these intermediate neutron-capture processes to take reaction pathways through experimentally accessible n-rich nuclei, providing opportunities to constrain the capture rates that define them.

This contribution will review the β-Oslo analysis of ^{91}Sr, taken with the SuN total absorption spectrometer at the NSCL in 2018. By measuring both γ-ray and excitation energies, a coincidence matrix was produced to perform the Oslo analysis, providing experimental information on the nuclear level density and γ-ray strength functions, two critical components in finding the neutron capture cross section. Since neutron capture rates are historically unconstrained by experimental work, this provides an opportunity to further reduce these uncertainties, better characterizing the contribution of ^{91}Sr to these exotic capture processes.

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