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Investigation of High-Lying (⍰,⍰) Resonances in 22Ne via High-Resolution Gamma Ray Spectroscopy in Inverse Kinematics

Monday 3 June 2019 11:30 (15 minutes)

In asymptotic giant branch (AGB) stars, 22Ne plays an important role in several nucleosynthesis processes, with its production competing with the synthesis of 19F through the so called 'poisoning reaction', and the following transfer into 25Mg acting as the main neutron sources for the heavy element s-process, affecting the reaction rates of numerous isotopes.

In this contribution, we discuss a recent neutron transfer experiment done at TRIUMF in November 2018, directly populating 22Ne, allowing for high resolution measurements of the resonance energies with the SHARC silicon detector, coupled to the HPGe detector array TIGRESS for accurate measurement of the characteristic gamma rays. We will then present the method of using the angular distribution of these newly measured gamma rays to determine the spins of the resonance states, allowing for further constraint on the reaction cross-section.

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