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New measurements of the 17O(alpha,gamma)21Ne reaction

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s-process nucleosynthesis can be influenced by so-called 'light element neutron poisons', which absorb free neutrons before they can capture onto iron-peak seed nuclei. The 16O(n,gamma) reaction is one such neutron poison reaction. However, free neutrons can then be released back into the star via 17O(alpha,n)20Ne. The ratio of the neutron and gamma outgoing channels in 17O + alpha reactions is therefore important in determining the effectiveness of 16O as a light element neutron poison, since the 17O(alpha,gamma)21Ne channel would 'lock-up' neutrons in light elements. In this talk, two studies performed at TRIUMF targeting resonances in the 17O(alpha,gamma)21Ne reaction will be presented: a direct measurement with DRAGON and a transfer measurement with EMMA+TIGRESS. The latter experiment is aimed at determining the properties of low-energy resonances, which would be otherwise inaccessible using direct methods.

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