Neutron-capture constraints for the astrophysical i-process

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Neutron-capture nucleosynthesis occurs via a variety of processes depending on the astrophysical sites and conditions. Recent observations and stellar evolution models of carbon-enhanced metal poor stars (CEMP) suggest that an intermediate process, known as the i-process, exists between the traditional s- and r-processes, and is necessary to explain observed abundances in these stars. i-process nucleosynthesis is impacted by various nuclear physics inputs, of which the main source of uncertainty arises from neutron-capture reaction rates. Direct neutron-capture measurements are only feasible for long-lived nuclei, while for short-lived nuclei, indirect techniques are required. One such technique is the β-Oslo method in which the nuclear level density (NLD) and γ-strength function (γSF) are extracted following the β-decay of a neutron-rich parent, and are used in a statistical reaction model to constrain the neutron-capture cross section. Results from experimental campaigns to constrain i-process nucleosynthesis using the β-Oslo method at both the National Superconducting Cyclotron Laboratory and at Argonne National Laboratory will be presented.