DNP20-2020-000235

Abstract for an Invited Paper
for the DNP20 Meeting of
the American Physical Society

Measuring (α,n) reaction rates relevant for nuclear astrophysics

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There are numerous reaction rates involving α-particles that play a crucial role in nuclear astrophysics. For instance, some (α,n) reactions have been found to be important for the nucleosynthesis of light nuclei in the rapid neutron-capture process (r-process) in neutrino-driven winds after a core collapse supernovae. Direct measurements of these reactions at relevant astrophysical energies are experimentally challenging. This is due to the typically small cross sections of these reactions and the experimental difficulties associated with low-intensity radioactive beams needed to study them. As a consequence, most of these reaction rates are still unknown. However, recent advances in the capabilities of radioactive ion beam facilities and experimental techniques have opened up new possibilities for the study of these astrophysically important reactions. In this talk I will review recent experimental efforts by different groups to measure such important reactions. Then, I will discuss recent advances and future possibilities that will enable better insights into the nuclear physics of these relevant reactions.