First direct measurement of the 13N(alpha,p)16O reaction for core-collapse supernovae

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The 13N(alpha,p)16O reaction has been identified in several recent sensitivity studies as a reaction which affects the nucleosynthesis in core-collapse supernovae (CCSNe) for a range of relevant temperatures. The 13N(alpha,p)16O reaction cross sections have not been measured directly in the past, and various indirect methods have been used to infer the 13N(alpha,p)16O reaction rate. The first direct measurement of the total 13N(alpha,p)16O reaction cross sections was performed using a 34.6 MeV beam of radioactive 13N and the active-target detector MUSIC at Argonne National Laboratory. Recently finalized results for the 13N(alpha,p)16O reaction rate from this measurement will be presented.