

ABSTRACT

Neutron-capture rates for i- and r-process nucleosynthesis

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The element distribution we observe in the Universe, and in particular the diverse abundances of atomic nuclei, tells a fascinating story of nucleosynthesis events that have taken place throughout the 13.7-billion-year-long history starting with the Big Bang. Since the groundbreaking works of Burbidge, Burbidge, Fowler and Hoyle and Cameron in 1957, it has been known that radiative neutron-capture reactions play a major role in synthesizing elements heavier than iron. However, many questions remain when it comes to our understanding of neutron-capture processes in various stellar environments. In particular, the intermediate and rapid neutron-capture processes are very challenging to describe, as they involve neutron-rich nuclei for which there exist little or no data on the much-needed neutron-capture rates. In this talk, I will present possibilities to obtain experimental constraints of these rates, with the aim to improve our understanding of the r- and i-process nucleosynthesis.

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