Indirect, experimental constraints of (n, γ) reaction rates for the i- and r-process

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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 [1] and Cameron [2], it is 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 this respect, the intermediate and rapid neutron-capture processes are perhaps the most 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 contribution, possibilities to obtain indirect, experimental constraints of these rates by means of the Oslo method and the beta-Oslo method will be discussed [3].

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