

Studying Nuclear Reactions to Understand the Stellar Cauldrons

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During the past decades, major effort was devoted to the understanding of the processes which are responsible for the synthesis of all elements found in the cosmos. Although much more is now known about the different mechanisms and stellar environments where nucleosynthesis could take place, there are still many open questions that need to be resolved. One of the puzzles of astrophysical models is the production of a group of proton rich nuclei, the so called “p nuclei”. The term p nuclei refers to 35 stable nuclides, in the mass region between Se ($Z=34$) and Hg ($Z=80$), which are 10-100 times less abundant than their more neutron rich neighbors. These rare nuclei are not produced by the two neutron processes that create all other nuclides beyond iron. Instead, a different mechanism was proposed for their synthesis called the “p process”. In this talk a description of the possible p-process scenarios and the discrepancies between the predicted and the observed abundances of the p nuclei will be presented. The main focus will be the nuclear physics contribution to the p-process modeling. In particular, different experimental techniques will be described as well as recent results.

Host: Joe Finck

Cookies and coffee @ 3:30pm in Dow 201.