

# Proton-capture reactions in thermonuclear supernovae and the $p$ process

Thursday

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4 P.M.

Rm 124 NSH

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Most of the elemental abundances beyond the so-called iron peak of the solar abundance distribution are produced by neutron-capture reactions in the  $r$  and  $s$  processes. However, there are about 35 isotopes on the proton-rich side of the valley of stability that are shielded against these reaction chains. These isotopes are usually referred to as  $p$  nuclei and are thought to be produced by different mechanisms in a number of astrophysical scenarios. One of these scenarios is a thermonuclear or type Ia supernova explosion. Thermonuclear supernovae provide a hot scenario where the  $p$  nuclei can be synthesized by the  $\gamma$  process and also by a series of proton-capture reactions.

The reactions producing the most abundant  $p$  nucleus  $^{92}\text{Mo}$  and their experimental investigation will be presented, *e.g.*, recent results on the investigation of the  $^{90}\text{Zr}(p, \gamma)$  reaction using high-resolution  $g$ -ray spectroscopy at Cologne, Germany, and steps towards the study of the  $^{91}\text{Nb}(p, \gamma)$  reaction in direct kinematics at FRANZ, Frankfurt, Germany. Future possibilities at different experimental facilities will be discussed in a detailed outlook.

Refreshments  
served prior to  
the seminar in  
Rm 124.