

Nuclear data and the astrophysics site of the r process

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Tuesday, December 3 ♦ 4 P.M.
Room 123 Nieuwland Science Hall

Refreshments @ 3:30 in 202 NSH

About half of the elements heavier than iron found in the Solar System were assembled via rapid neutron capture in the r process of nucleosynthesis. Though we understand the basics of how the r process proceeds, where exactly it occurs remains a mystery. Simulations of this extreme process require nuclear data—masses, beta decay rates, and neutron capture rates—for thousands of nuclei far from stability. Here we will discuss the sensitivity of the r-process abundance pattern to these individual pieces of nuclear data, and examine the possibility that a deeper understanding of nuclear physics far from stability could give us fresh insight into the elusive r-process astrophysical site.