Physics Colloquium

WEDNESDAY

JANUARY 27

4:00 P.M.

RM 118 NSH

Refreshments
in Rm 202 NSH
@ 3:30 pm

Understanding Stellar Explosions Using Nuclear Physics

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At the birth of our universe, the Big Bang produced the initial abundances of hydrogen, helium, and lithium that are seen in our Galaxy today. All other elements, however, were synthesized in a variety of stellar environments through nuclear processes. Specifically, the most common stellar explosions in our Galaxy, classical novae and Type I X-ray bursts, are driven by nuclear reactions on proton-rich nuclei up to the tin region at mass ' 100. This nucleosynthesis can be understood through the combination of stellar observations, computational physics, and experimental nuclear physics. Specifically, the study of these nuclear reactions in the laboratory has undergone significant advancements with recent developments in radioactive ion beam facilities and detector technology, which have allowed experimental work on isotopes that do not naturally occur on Earth. I will discuss these recent advances and experimental results using specific examples of key nuclei and nuclear reactions that occur in stellar explosions.