

## Physics Division Seminar

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### The Influence of the $^{26}\text{Al}$ $0^+$ Isomer on the Destruction of Galactic $^{26}\text{Al}$

Host: Shaofei Zhu

Monday, September 25, 2017 – 203, R150, 3:30 PM

The detection of the 1.809-MeV gamma-ray line from the decay of  $^{26}\text{Al}$  in the interstellar medium provides direct evidence of ongoing nucleosynthesis in the Galaxy, confirming earlier measurements of excess  $^{26}\text{Mg}$  in meteorites and presolar dust grains.  $^{26}\text{Al}$  is one of the best studied radio-isotopes in our Galaxy. Its nucleosynthesis has wide implications for the birth of the solar system and evolution of our Galaxy. The presence of a low-lying  $0^+$  isomer, however, severely complicates the astrophysical calculations. It is expected that radiative proton captures on both, the ground ( $^{26}\text{Al}^g$ ) and isomeric ( $^{26}\text{Al}^m$ ) states in  $^{26}\text{Al}$ , dominate the destruction path of  $^{26}\text{Al}$  in Asymptotic Giant Branch stars, Classical Novae and Core Collapse Supernovae. In this talk, I'll present results of a novel study of the  $^{26}\text{Al}^m(d,p)^{27}\text{Al}$  reaction using, for the first time, an isomeric  $^{26}\text{Al}$  beam. Implications for the destruction of  $^{26}\text{Al}^m$  in relevant astrophysical scenarios will be discussed.