

Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Evidence for Two-Phonon Transverse Wobbling in ^{135}Pr ¹ TYLER MCMAKEN, Case Western Reserve Univ — Evidence is presented for a second transverse wobbling band in ^{135}Pr , the first two-phonon wobbling band to be observed outside of the $A\sim 160$ region of the nuclear chart. Wobbling, a unique indicator of triaxially-shaped nuclei, is characterized by the $\Delta I=1$, $E2$ nature of interband linking transitions, and transverse wobbling is characterized by a decrease in the wobbling energy as angular momentum increases. Previous work has investigated the one-phonon wobbling band in ^{135}Pr , but this analysis of high-statistics data using the $^{123}\text{Sb}(^{16}\text{O}@80\text{ MeV},4n)^{135}\text{Pr}$ reaction in the Gammasphere array at Argonne National Laboratory reveals that ^{135}Pr is robust enough to support two vibrational modes of wobbling. This definitively shows that multiple-phonon wobbling is not confined to any one region of the nuclear chart. In addition, this analysis yields more precise measurements of angular distributions and mixing ratios across the level scheme of ^{135}Pr .

¹NSF/REU Program at Notre Dame [Grant No. PHY-1559848]

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Date submitted: 28 Jul 2017

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