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Coulomb Excitation of the 64Ni Nucleus and Application of Inverse Kinematics[1] BEAU GREAVES, DENNIS MUECHER, FUAD A. ALI, University of Guelph, TOM DRAKE, University of Toronto, VINZENZ BILDSTEIN, University of Guelph, CHRISTIAN BERNER, ROMAN GERNHAEUSER, K. NOWAK, S. HELLGARTNER, TU Munich, R. LUTTER, LMU Munich, S. REICHERT, TU Munich — In this contribution, we present new data on the semi-magic 64Ni nucleus, close to the N=40 harmonic oscillator shell gap. Recent studies suggest a complicated existence of shape coexistence in 68Ni, likely caused by type-II shell evolutions. The region studied here thus might define the "shore" of the region of more deformed nuclei in the Island of Inversion below 68Ni. At the Maier-Leibnitz-Laboratory (MLL) in Munich, a beam of 64Ni was excited using Coulomb excitation. The high-granularity MINIBALL HPGe array and a segmented silicon strip detector were used to identify gamma decays in 64Ni. Doppler-shifted attenuation method (DSAM) analysis was applied to the experimental data acquired to resolve the low-lying excited states and acquire a lifetime measurement based on Geant4 simulations of the first excited 2+ state, clarifying the previously conflicting results. Furthermore, we show DSAM data following transfer reactions in inverse kinematics. This new method has the potential to provide insight into tests of ab-initio shell model calculations in the sd-pf shell and for the study of nuclear reaction rates.

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