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Decay Spectroscopy of Neutron-Rich Cd Around the N = 82 Shell Closure (G)*

Monday 11 June 2018 14:15 (15 minutes)

The neutron-rich Cadmium isotopes around the well-known magic numbers at $Z = 50$ and $N = 82$ are prime candidates to study the evolving shell structure observed in exotic nuclei. Additionally, the extra binding energy observed around the nearby doubly-magic ^{132}Sn has direct correlations in astrophysical models, leading to the second r-process abundance peak at $A \approx 130$ and the corresponding waiting-point nuclei around $N = 82$. The β-decay of the $N = 82$ isotope ^{130}Cd into ^{130}In was first studied a decade ago [1], but the information for states of the lighter indium isotope (^{128}In) is still limited. Detailed $\beta\gamma$-spectroscopy of ^{128}Cd was accomplished using the GRIFFIN [2] facility at TRIUMF, which is capable of performing spectroscopy down to rates of 0.1 pps.

The ongoing analysis of the ^{128,131,132}Cd will be presented. Already in ^{128}Cd, 28 new transitions and 11 new states have been observed in addition to the 4 previously observed excited states [3]. These new results are compared with recent Shell Model calculations. For ^{131}Cd, results will be compared with the recent EURICA data. These data highlight the unique capabilities of GRIFFIN for decay spectroscopy on the most exotic, short-lived isotopes, and the necessity to re-investigate even "well-known" decay schemes for missing transitions.

[1] I. Dillmann *et al.*, Phys. Rev. Let. 91, 162503 (2003)

[2] C.E. Svensson and A.B. Garnsworthy, Hyperfine Int. 225, 127 (2014)

[3] B. Fogelberg, Proc. Intern. Conf. Nuclear Data for Science and Technology, Mito, Japan, p.837 (1988)

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