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## Decay Spectroscopy of Neutron-Rich Cd Around the N=82 Shell Closure (student talk)

Friday, 16 February 2018 11:00 (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  $\beta$ -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  $^{128,131,132}\mathrm{Cd}$  will be presented. Already in

<sup>128</sup>Cd, 23 new transitions and 15 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 <sup>131</sup>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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