

Ground States and Isomers of Cadmium by High-Resolution Laser Spectroscopy

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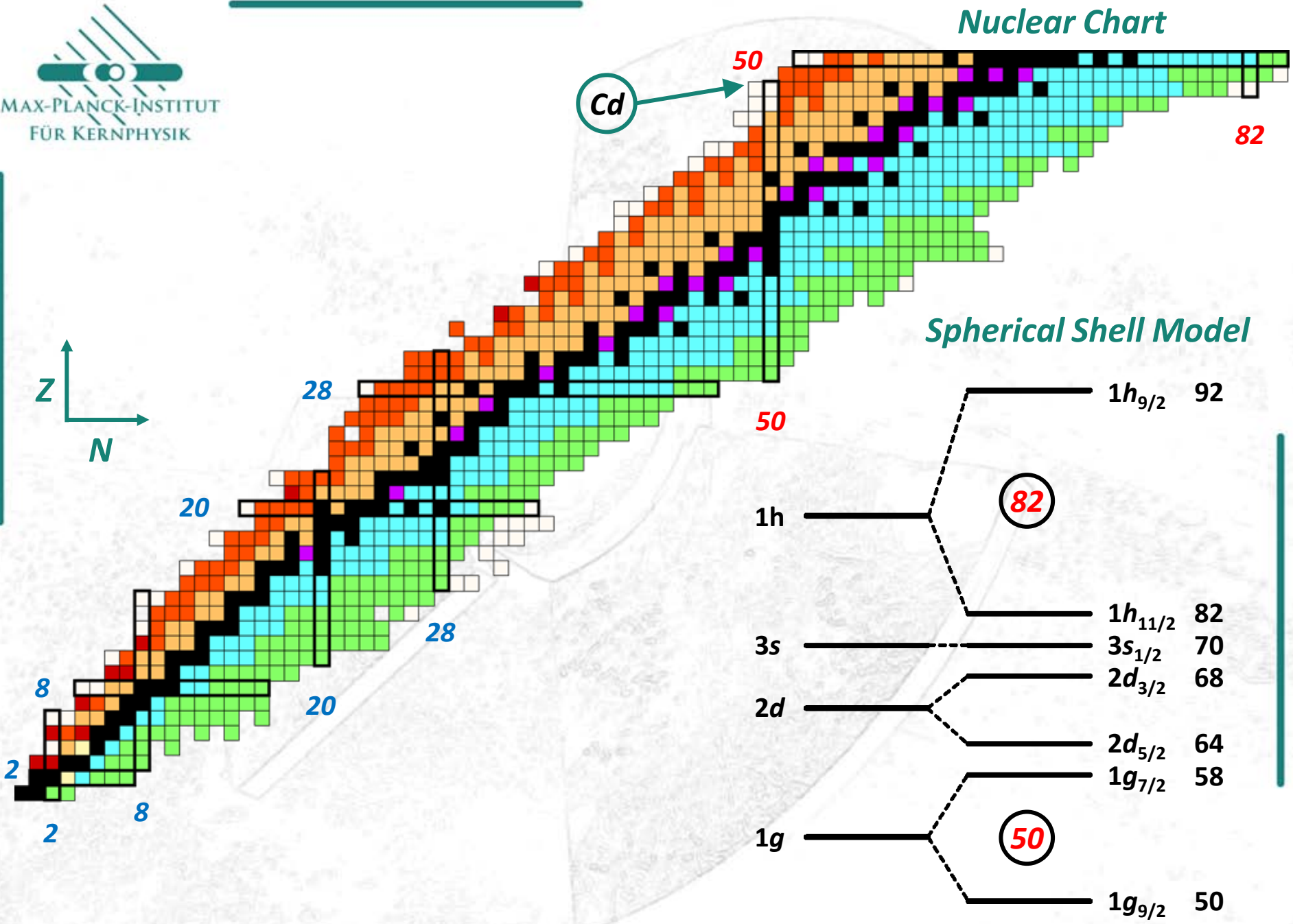
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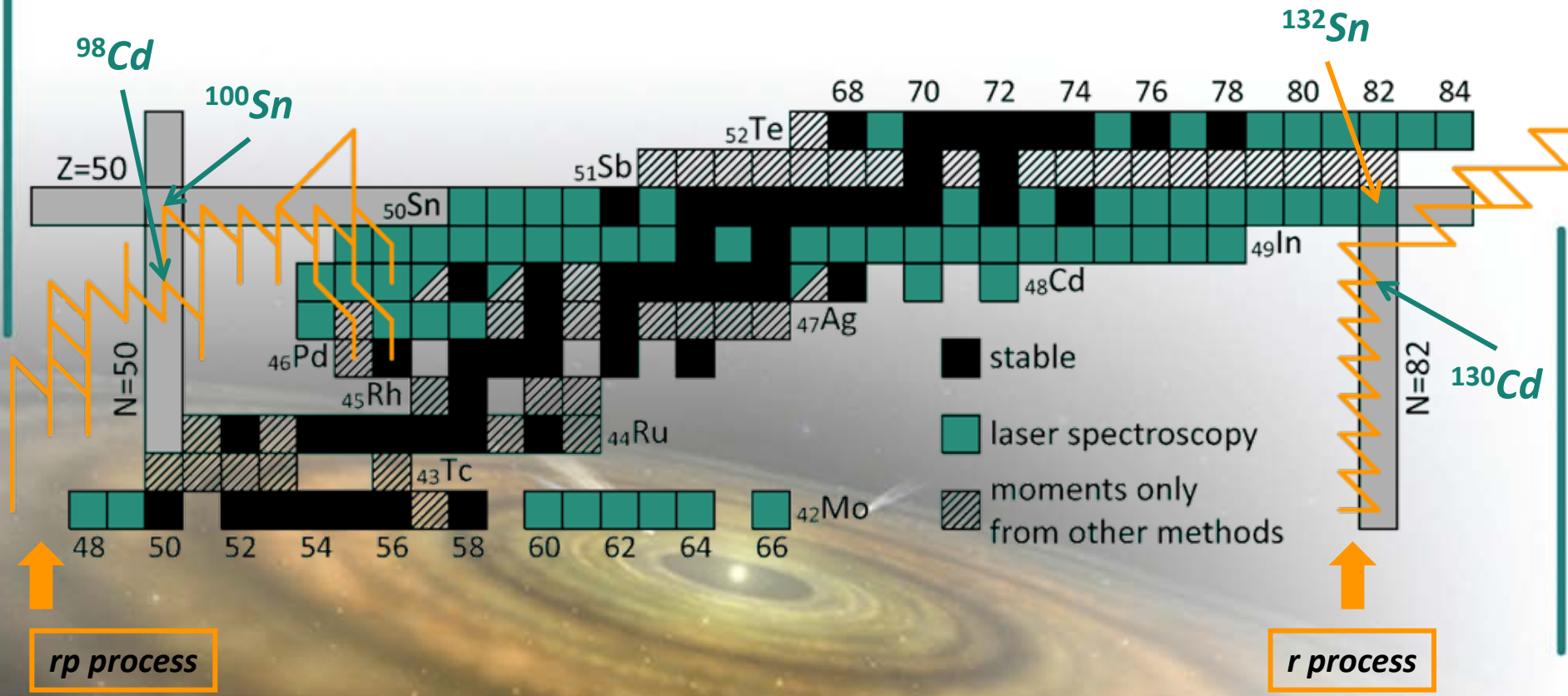
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Outline:

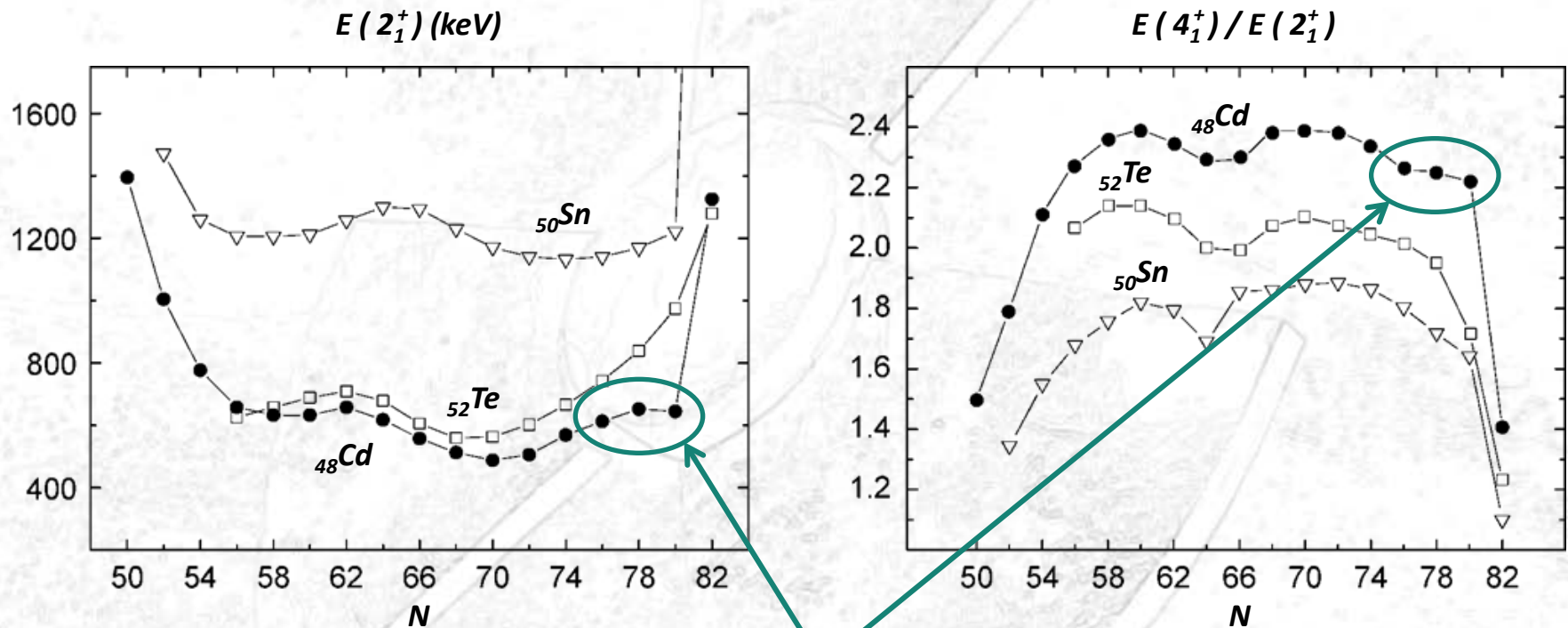
- ***Physics interest in the isotopes of cadmium***
- ***Experiment and results***
- ***Systematics of μ and Q moments***
- ***Charge radii - g.s. vs. isomers***



Survey of nuclear moments in the $Z \approx 50$ region and astrophysical aspects



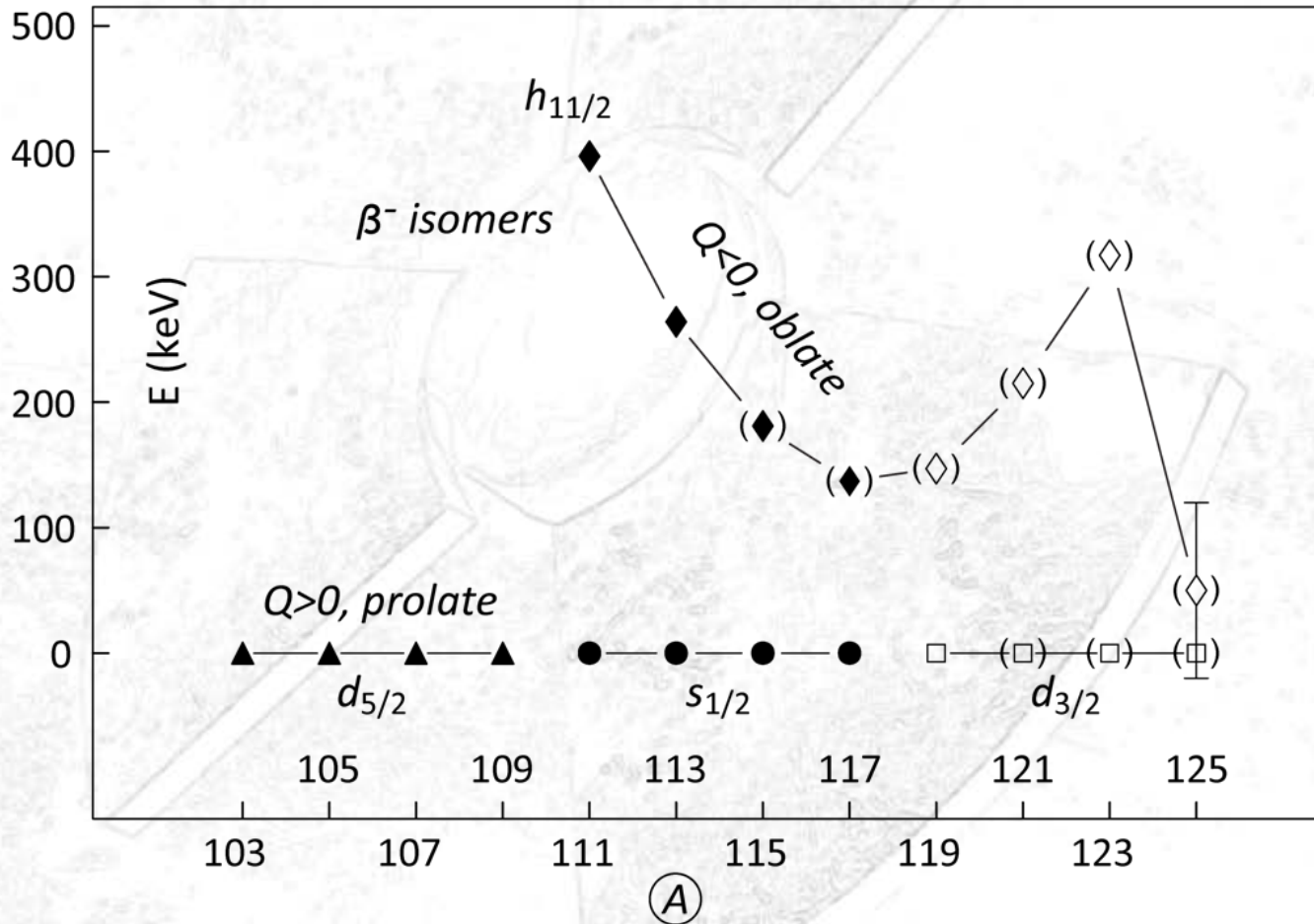
Indication for collectivity in the even - even isotopes



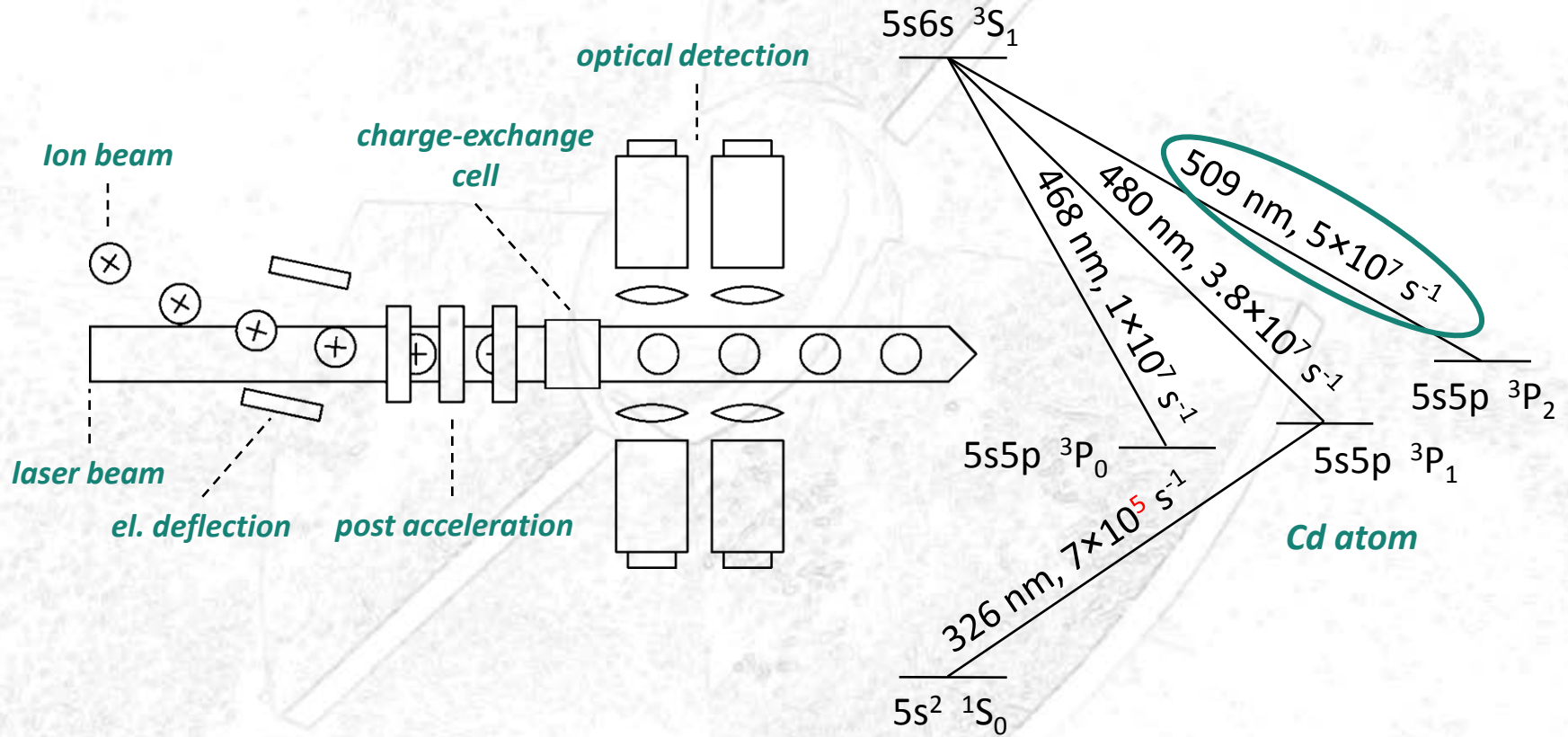
Anomaly in the energy levels of $^{126, 128}\text{Cd}$

- Evidence in the rms charge radii?
- Evidence in the Q moments of the neighboring odd isotopes?

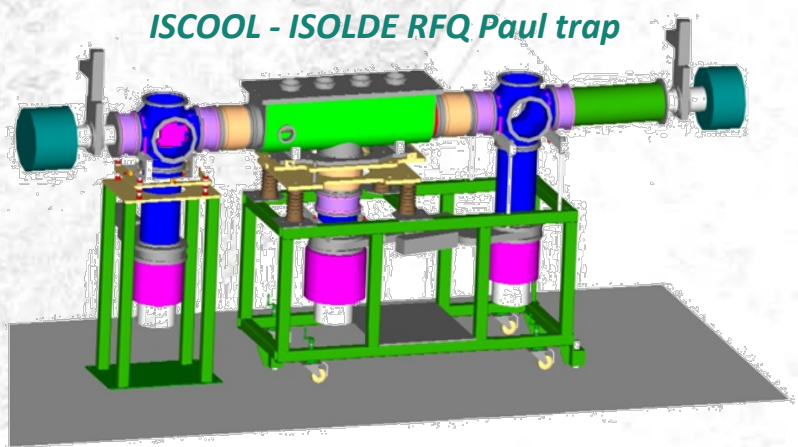
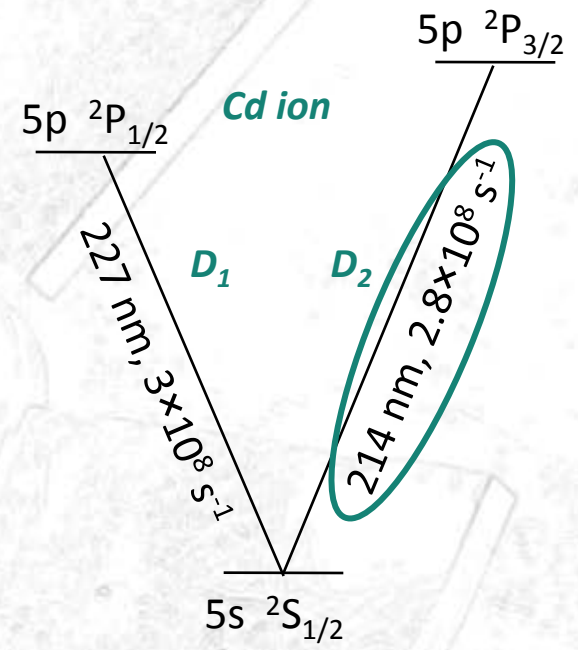
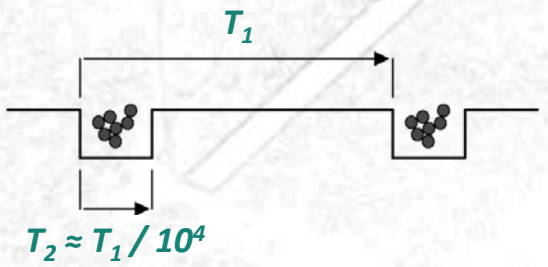
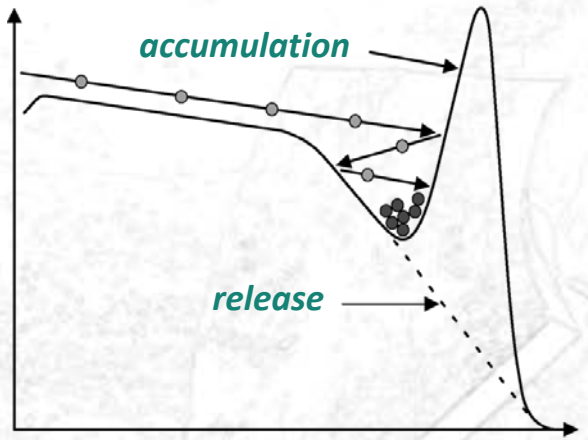
Spins, moments, shapes and isomers in the odd - A isotopes



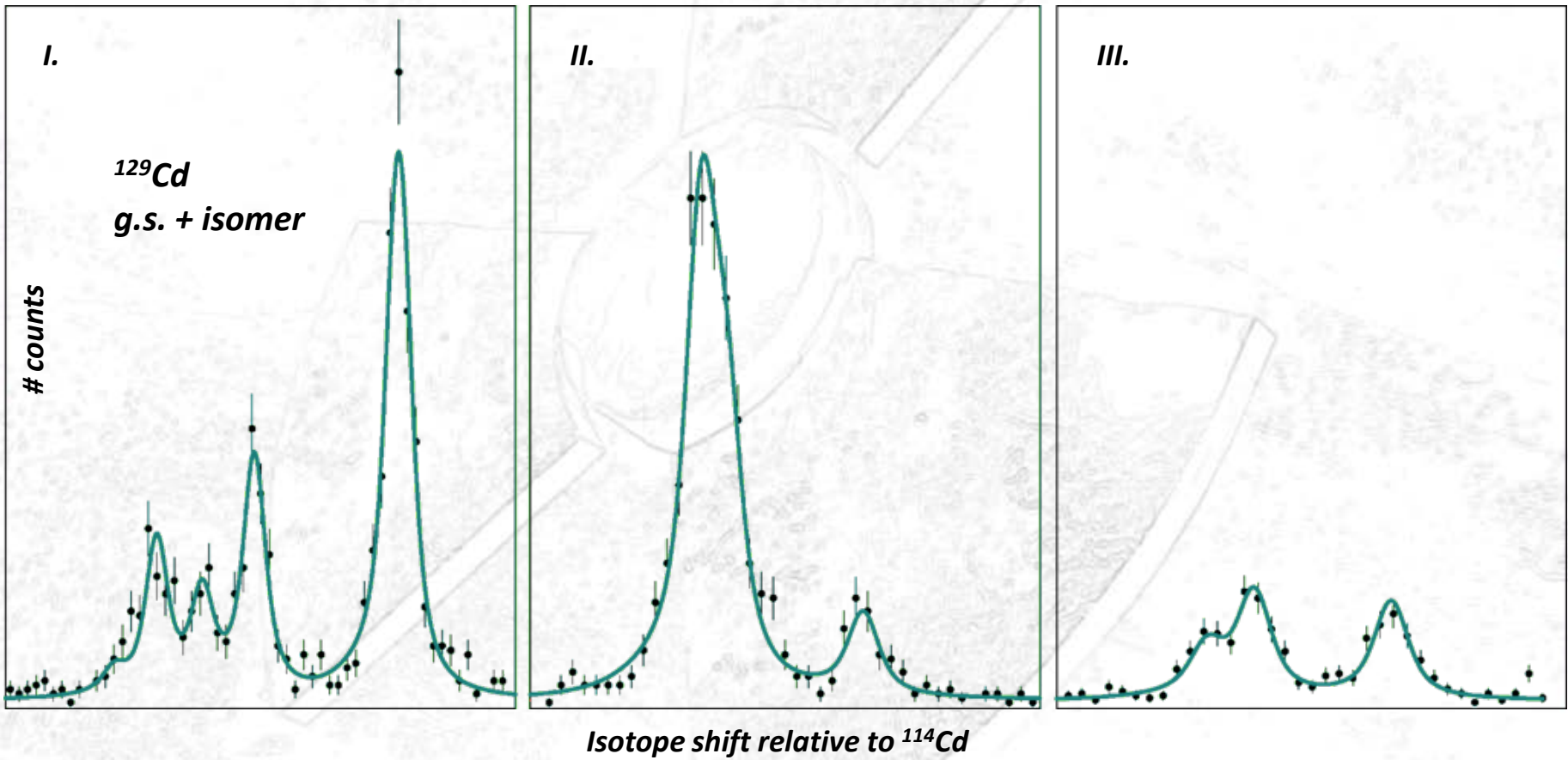
Continuous fast-beam fluorescence on $^{107-124}, ^{126}\text{Cd}$



Bunched-beam fluorescence of $^{100-130}\text{Cd}$



Discovery of a long-lived isomeric state in ^{129}Cd



Summary

- *Measured model independent I , μ , Q and $\langle r^2 \rangle$ of $^{100-130}\text{Cd}$*
- *First direct observation of long-lived isomers in $^{127, 129}\text{Cd}$*
- *Unique parity orbital - behavior of the $h_{11/2}$ Q moments*
- *$g.s.$ - isomer size change towards $N = 82$*