$13/2^+$ isomeric states in neutron deficient ^{173,175}Pt

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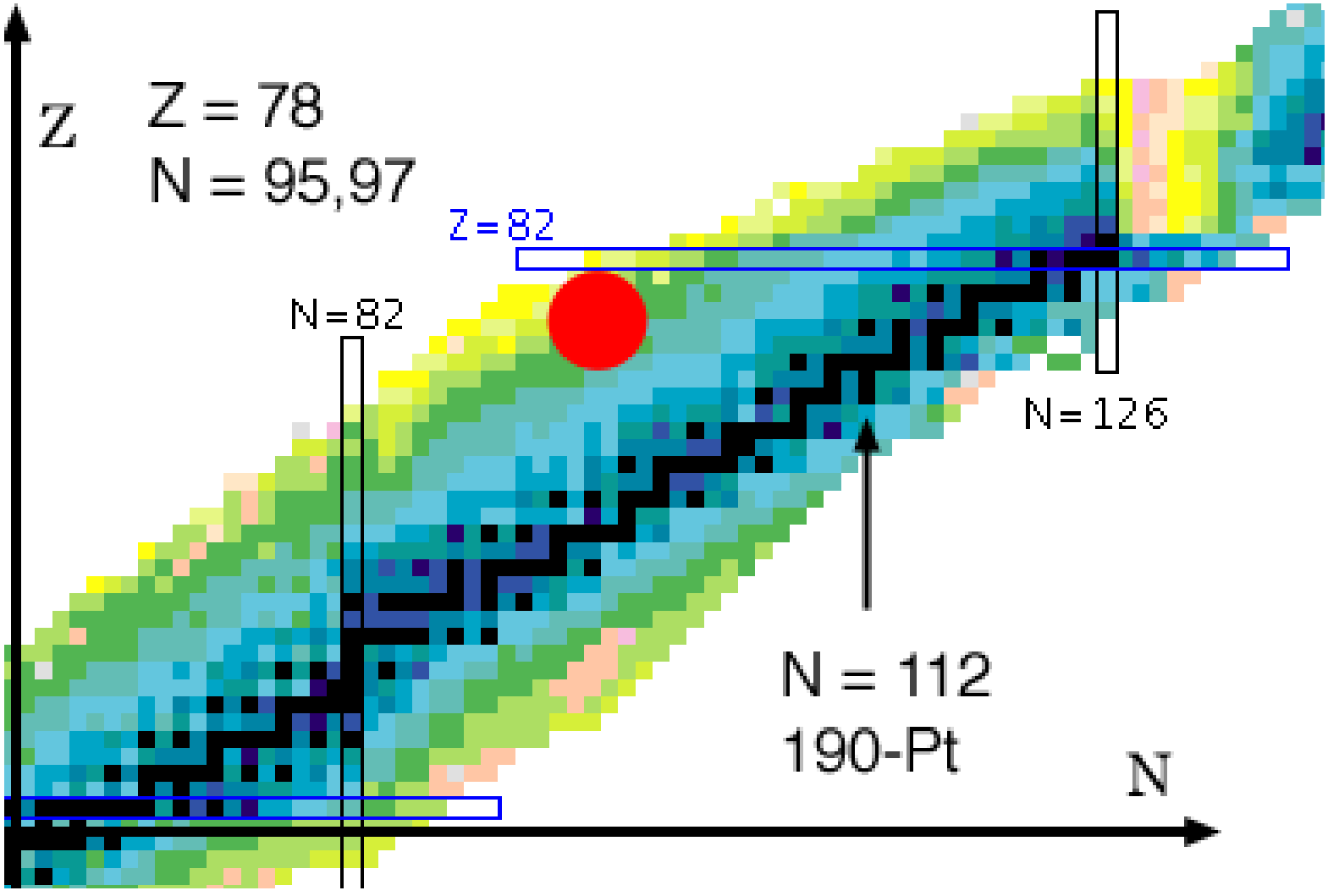
Chart of nuclides



National Nuclear Data Center, information extracted from the Chart of Nuclides database, http://www.nndc.bnl.gov/chart/

N=95,97 and the $i_{13/2}$ intruder

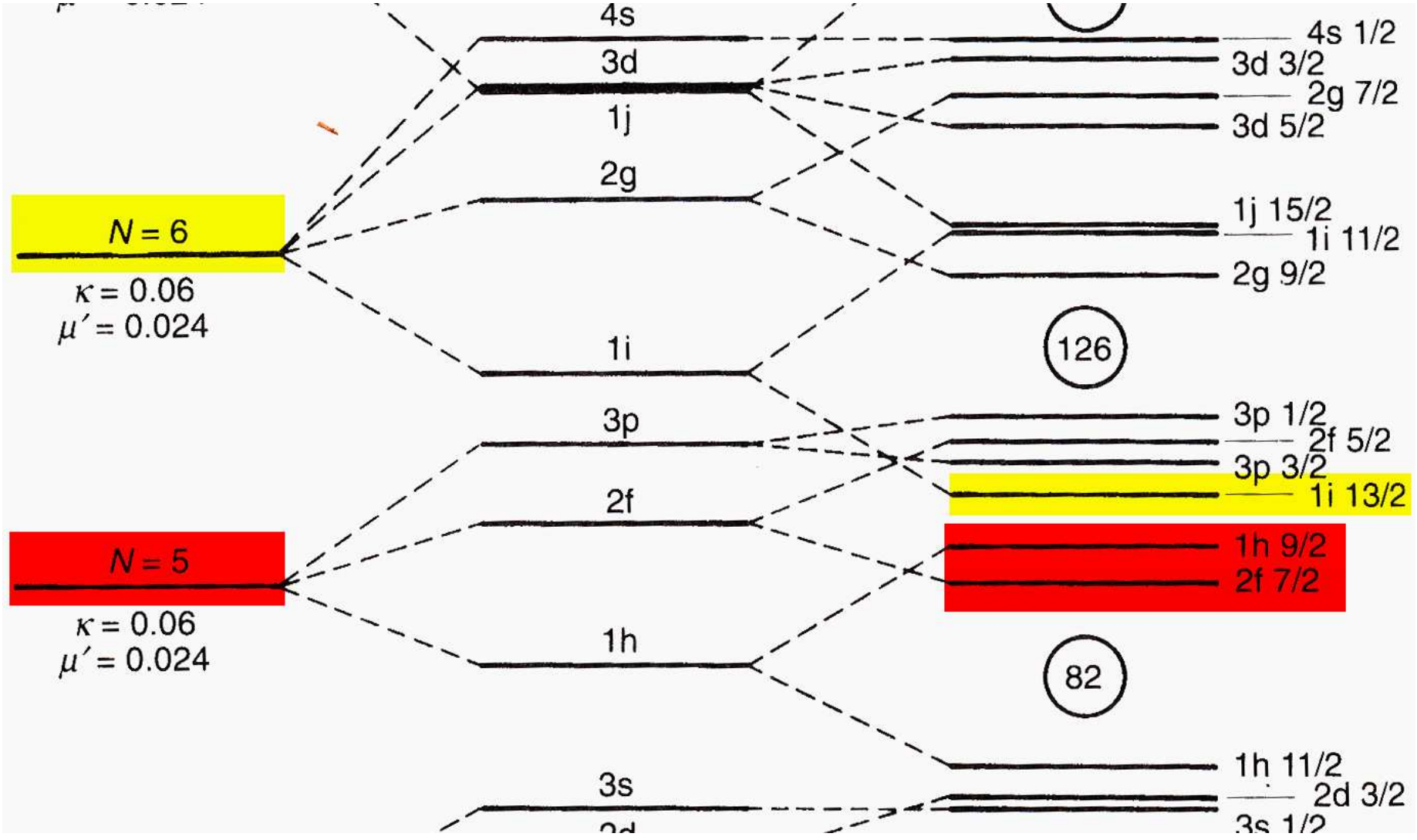
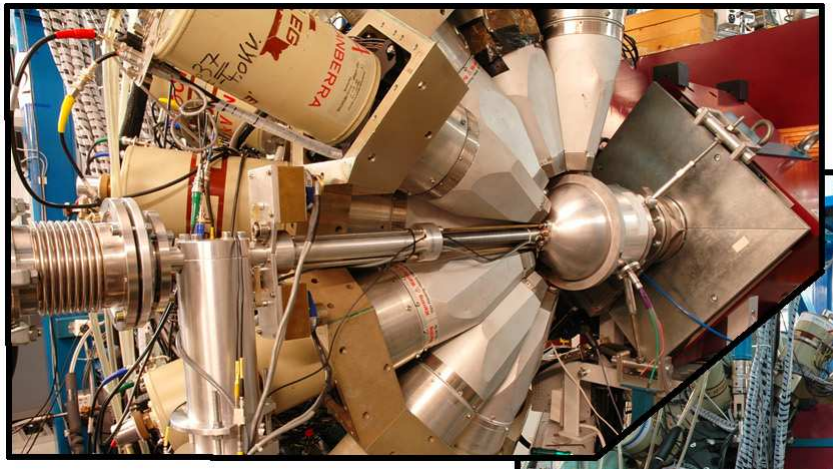


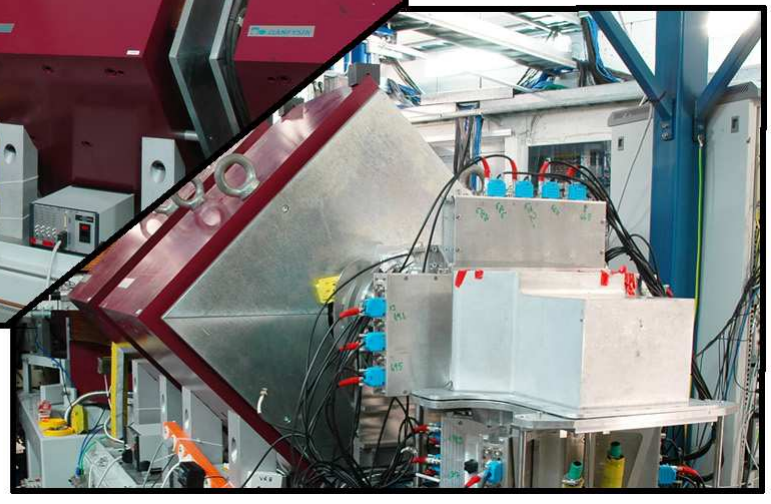
Figure from Nilsson and Ragnarsson, *Shapes and Shells in Nuclear Structure*

Measurement equipment



JUROGAM

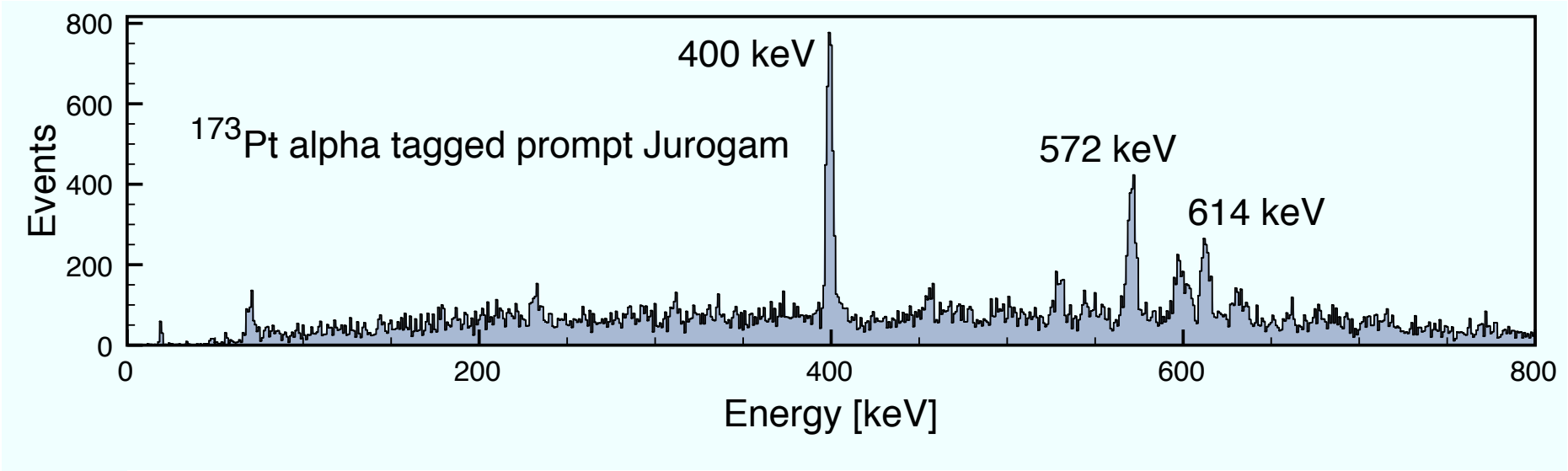
RITU

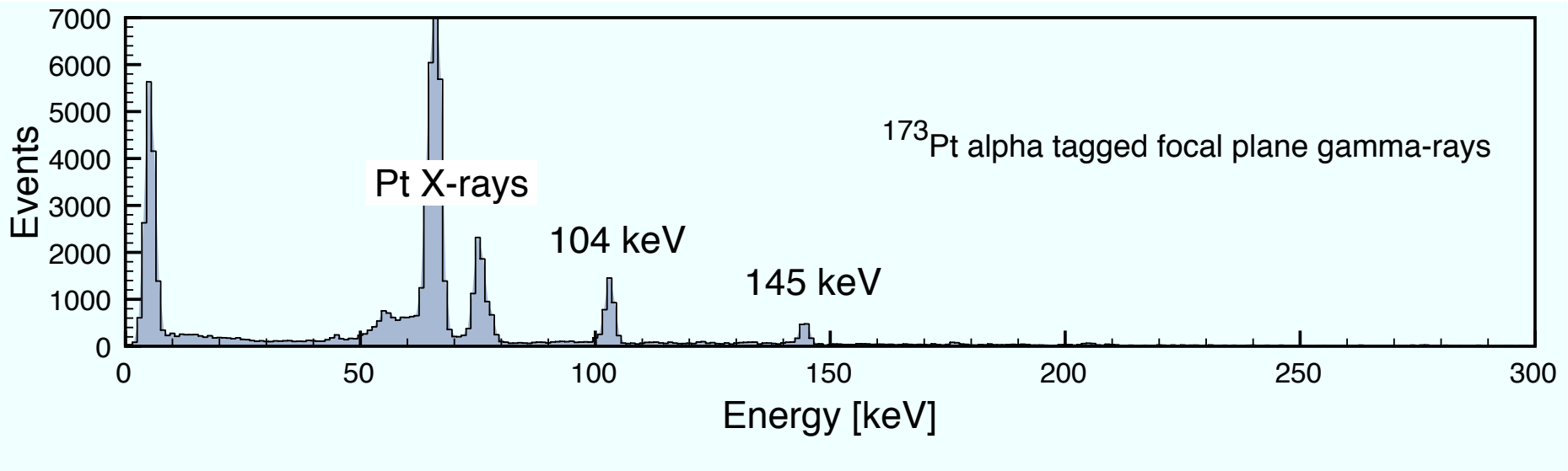


GREAT

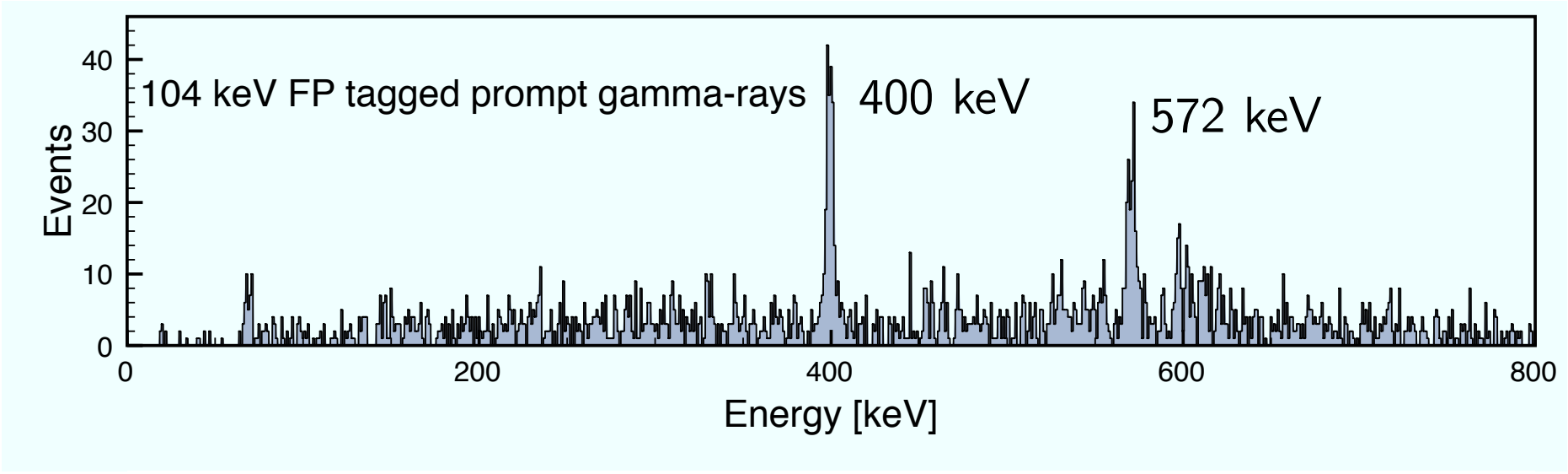
Reaction 1: 403 MeV $^{86}Sr^{16+}$ beam, ^{92}Mo target, 2pn/αn channels
Reaction 2: 355 MeV $^{82}Kr^{15+}$ beam, ^{94}Mo target, 3n channel

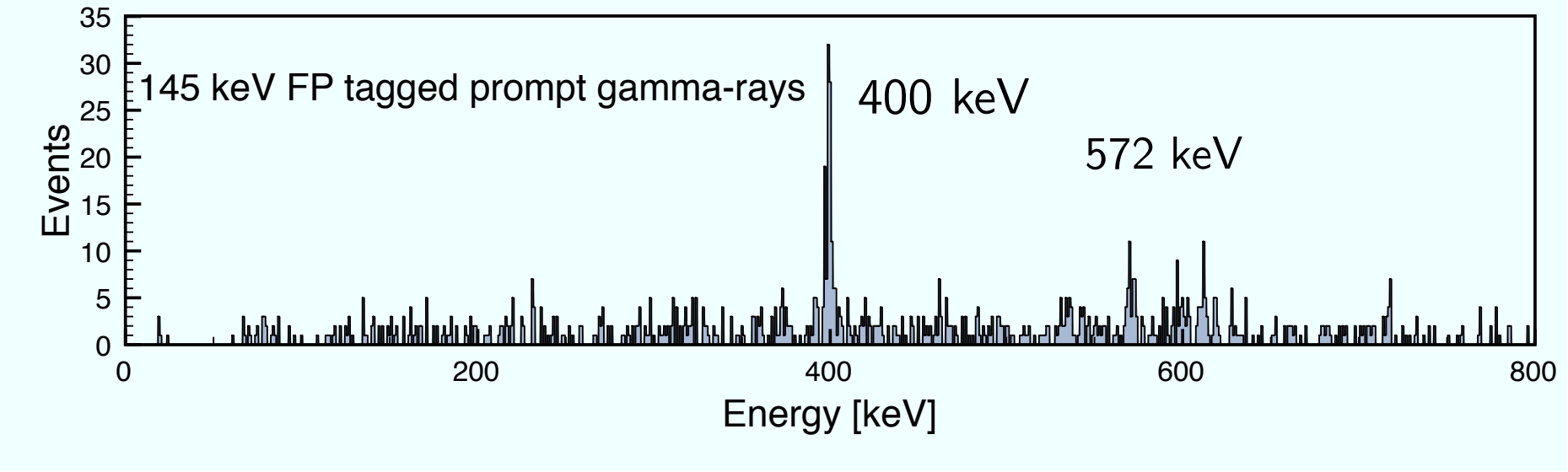
^{173}Pt Isomer Decay, I





^{173}Pt Isomer Decay, II





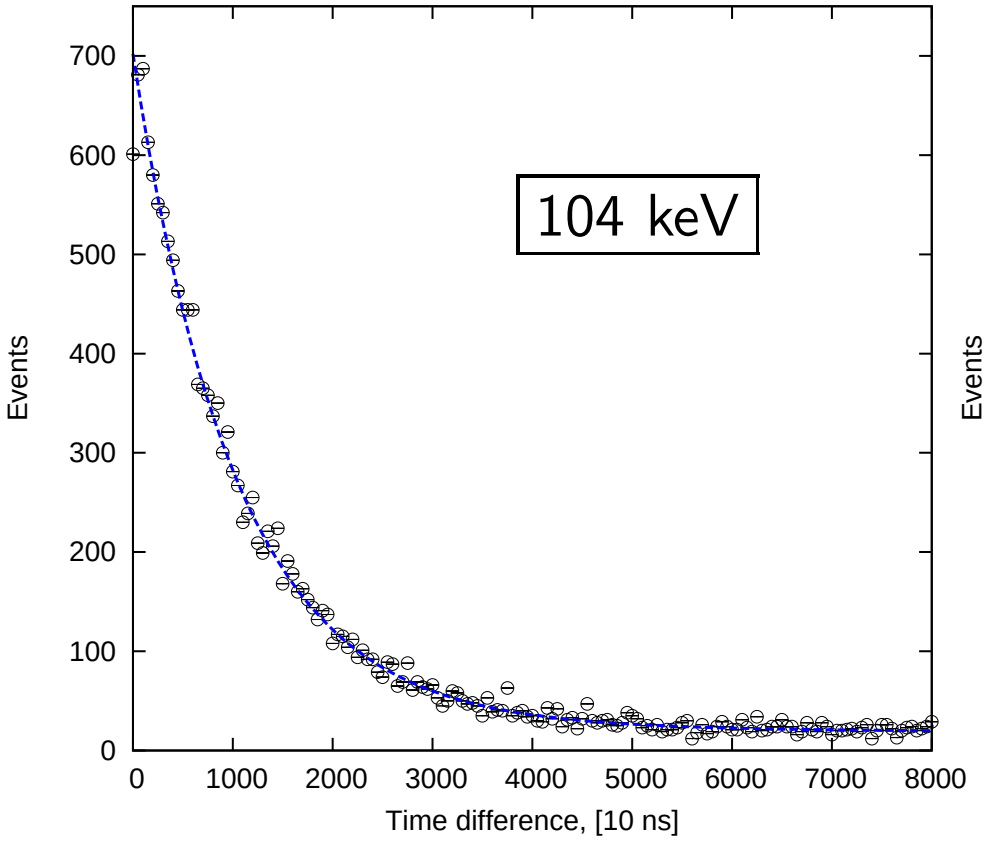
^{173}Pt Isomer Decay, III

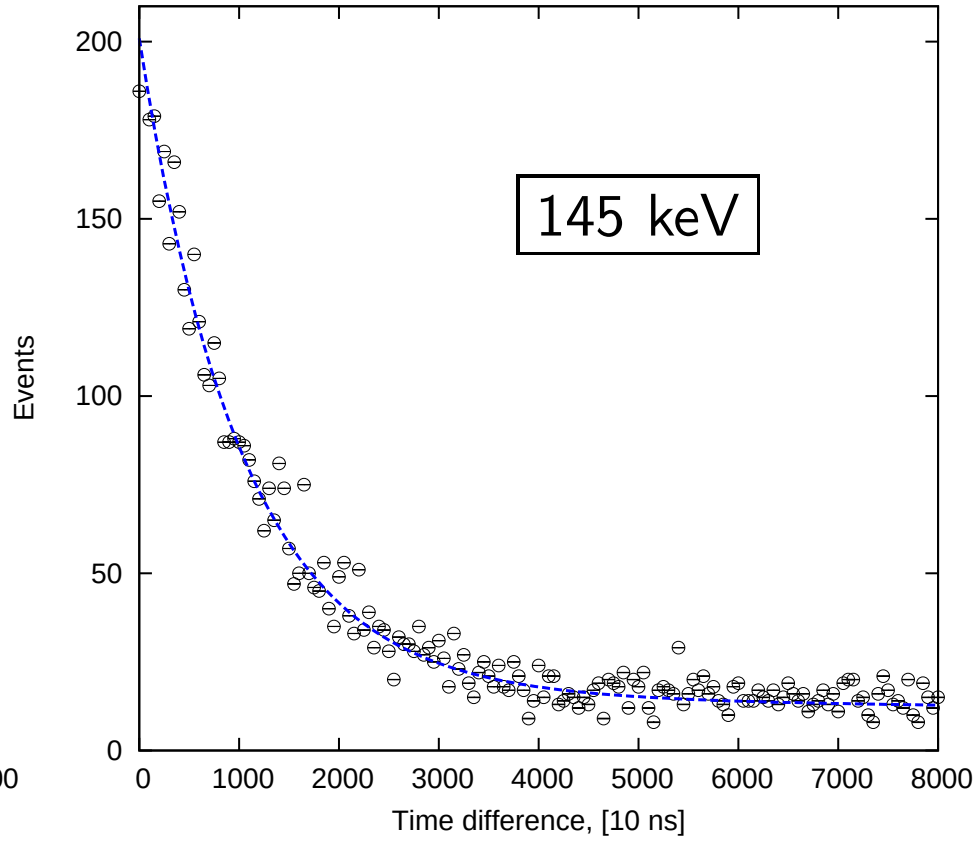
- The experimental K-shell internal conversion coefficients:
  - $\alpha_K(104\ \text{keV}) = 4.8(7)$
  - $\alpha_K(145\ \text{keV}) = 10.5(14)$

Table: Theoretical K-shell internal conversion coefficients from BrIcc.

E/(ME)L	M1	E1	E2	M2
103.6	4.95	0.3	0.68	34.2
145.1	1.90	0.13	0.37	10.5

^{173}Pt Isomer half-life



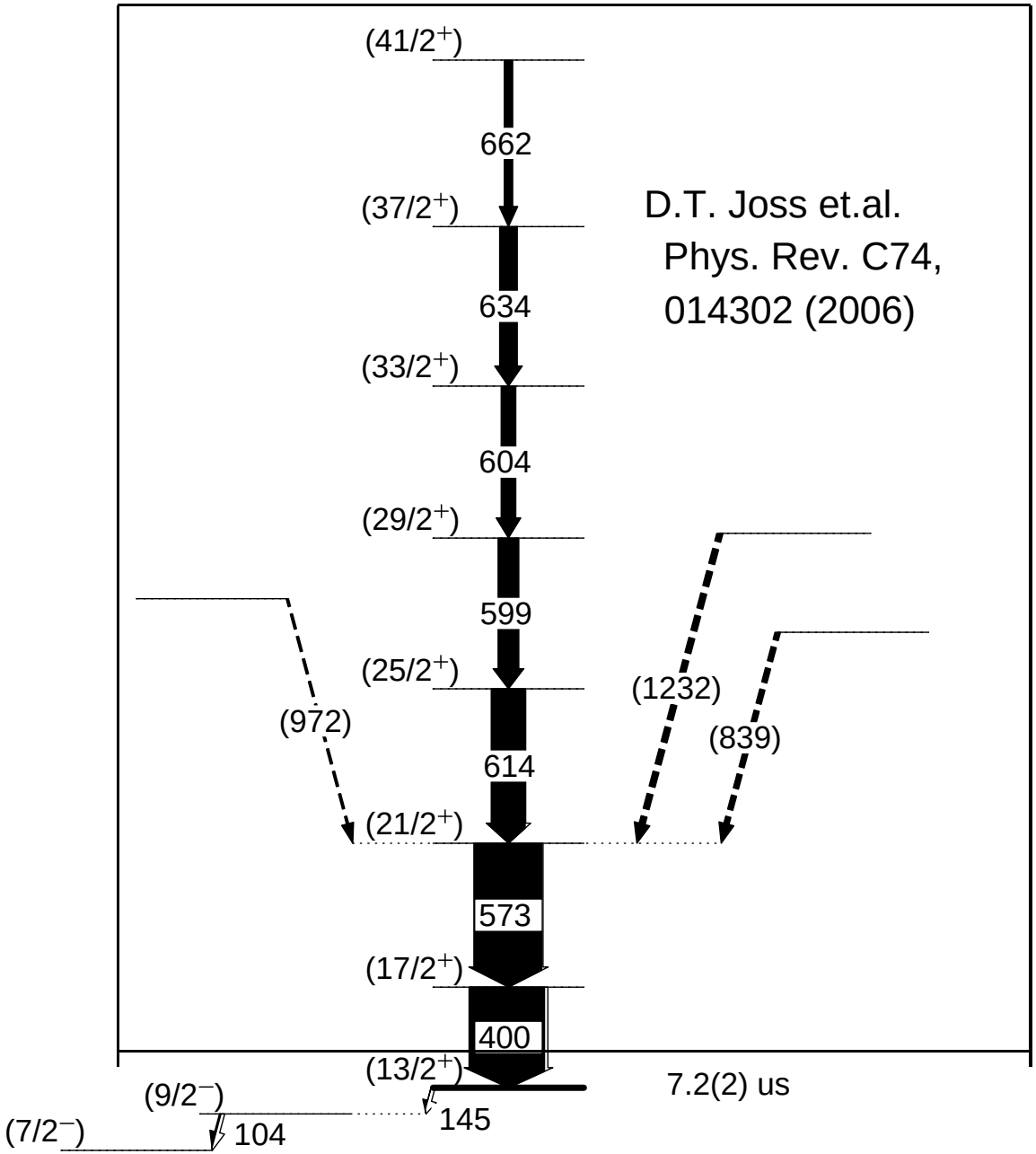


$T_{\frac{1}{2}}(104\ \text{keV}) = 7.21(8)\ \mu s$, $T_{\frac{1}{2}}(145\ \text{keV}) = 7.2(2)\ \mu s$

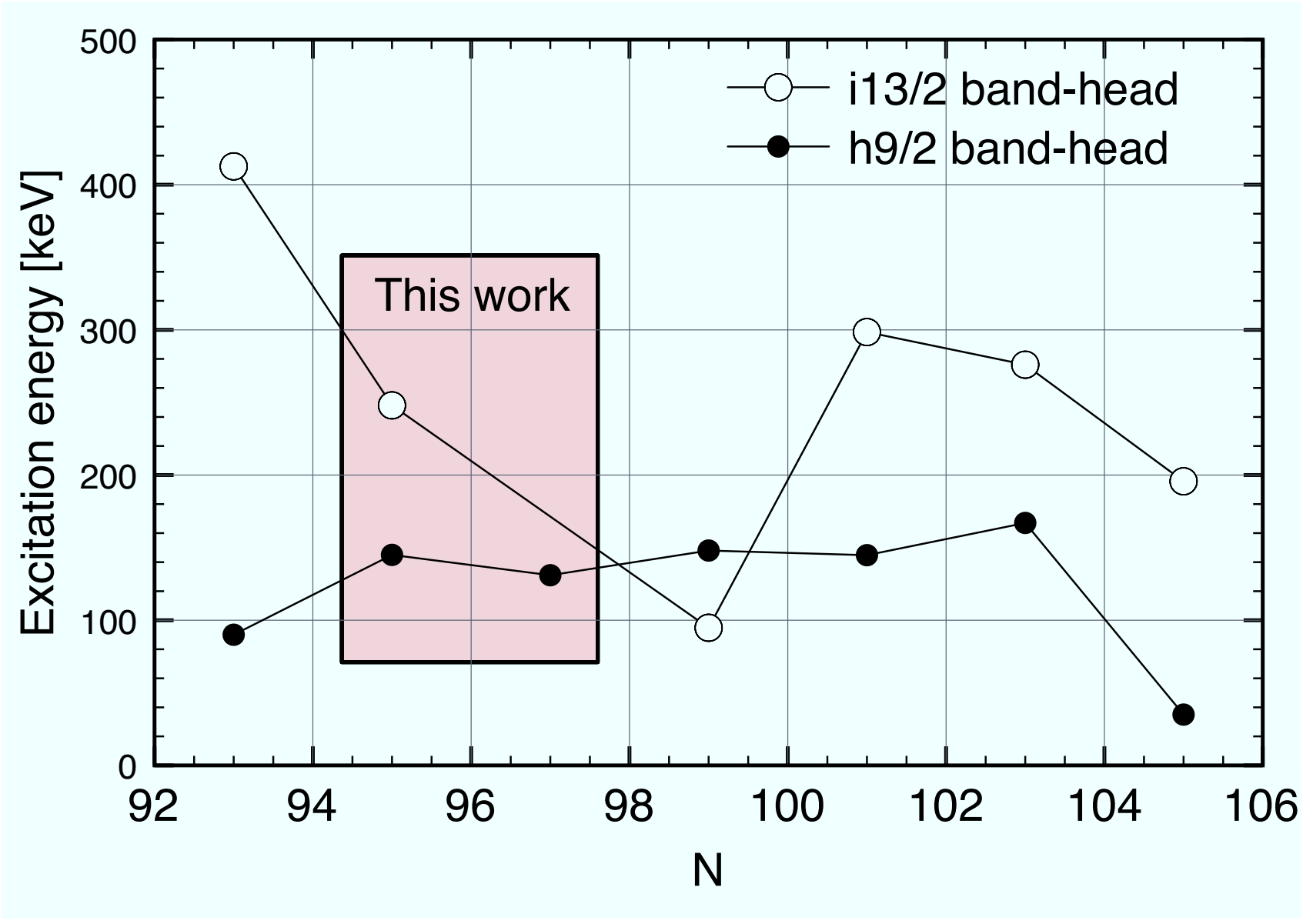
$T_{\frac{1}{2}}^{avg} = 7.2(2)\ \mu s$

B(M2, 145 keV) = 0.15(2) W.u.

^{173}Pt level-scheme



Odd Pt band-head systematics



Conclusions

- Isomer decay in ^{173}Pt seen. Half-lives of two decays agree.
- No Isomer in ^{175}Pt found from the data of JR68.

Future

- Alpha-decay fine-structure data for ^{173,175}Pt to be analyzed.
- Differential plunger life-time measurement data also available.
- 12 days of beam-time to study ^{173}Pt, ^{173}Hg and ^{173}Au has been accepted.

Thanks to

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