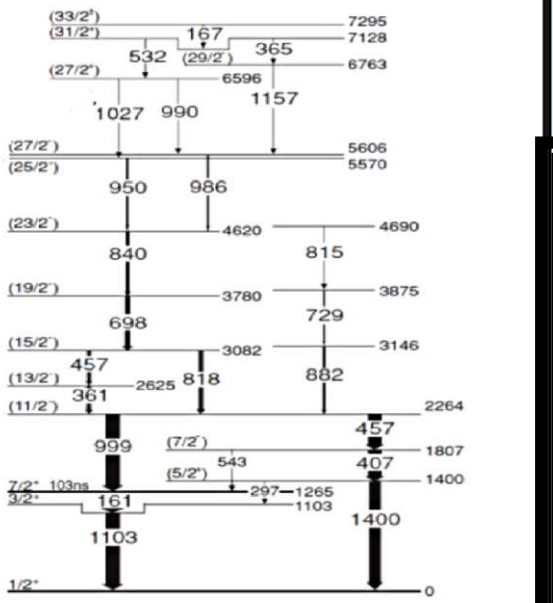
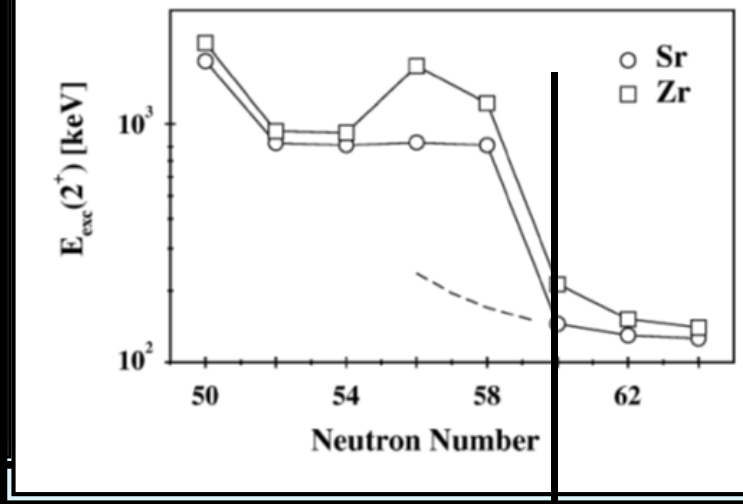
SPECTROSCOPY OF NEUTRON-RICH ^{96}Y ISOTOPE PRODUCED IN FISSION INDUCED BY COLD NEUTRONS

Ł. Iskra - *The Institute of Nuclear Physics, Krakow, Poland*

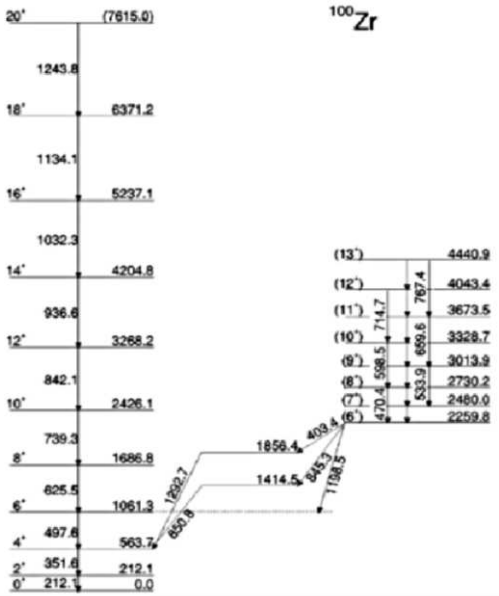
Scientific motivation

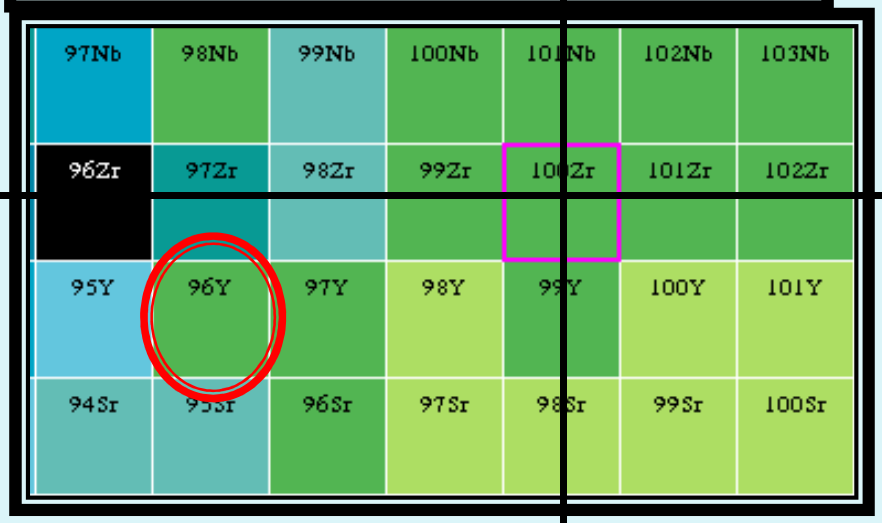
M. Matejska-Minda, B. Fornal et al., PRC 80, 017302(2009)





H. Hua et al., PRC 69, 014317 (2004)

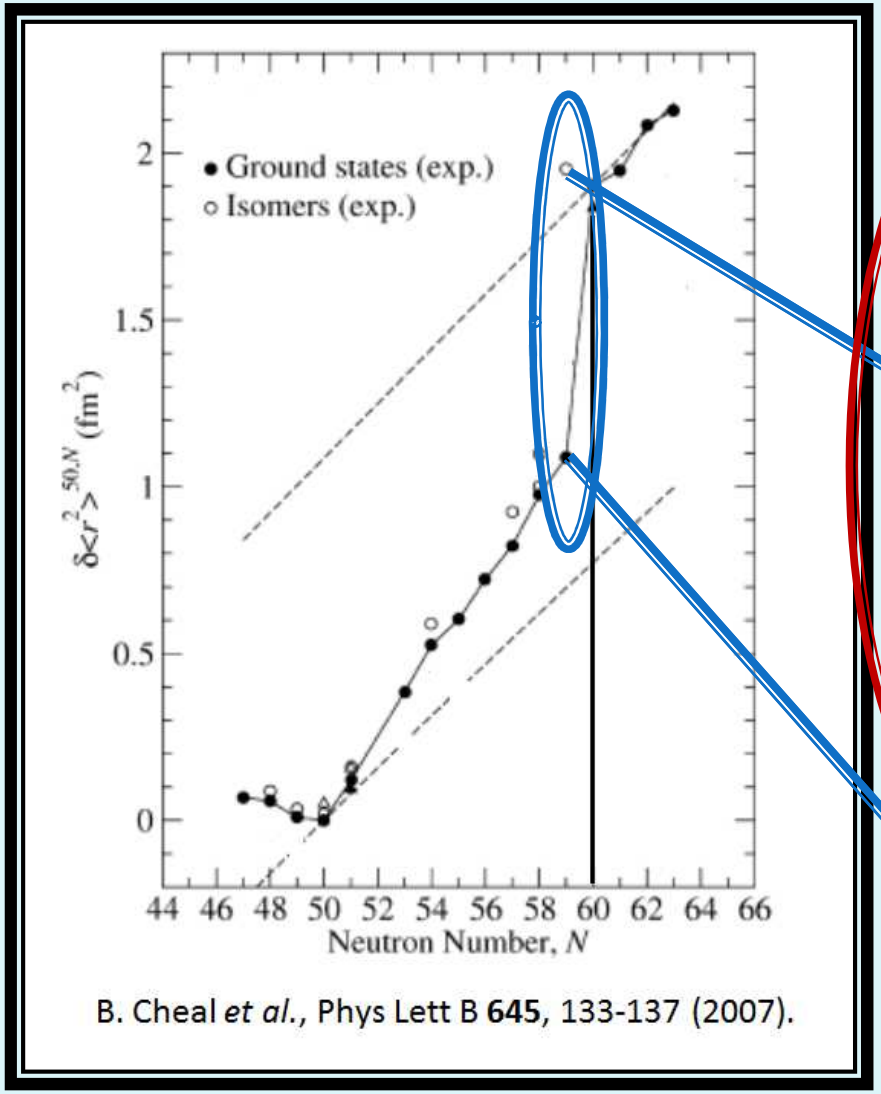


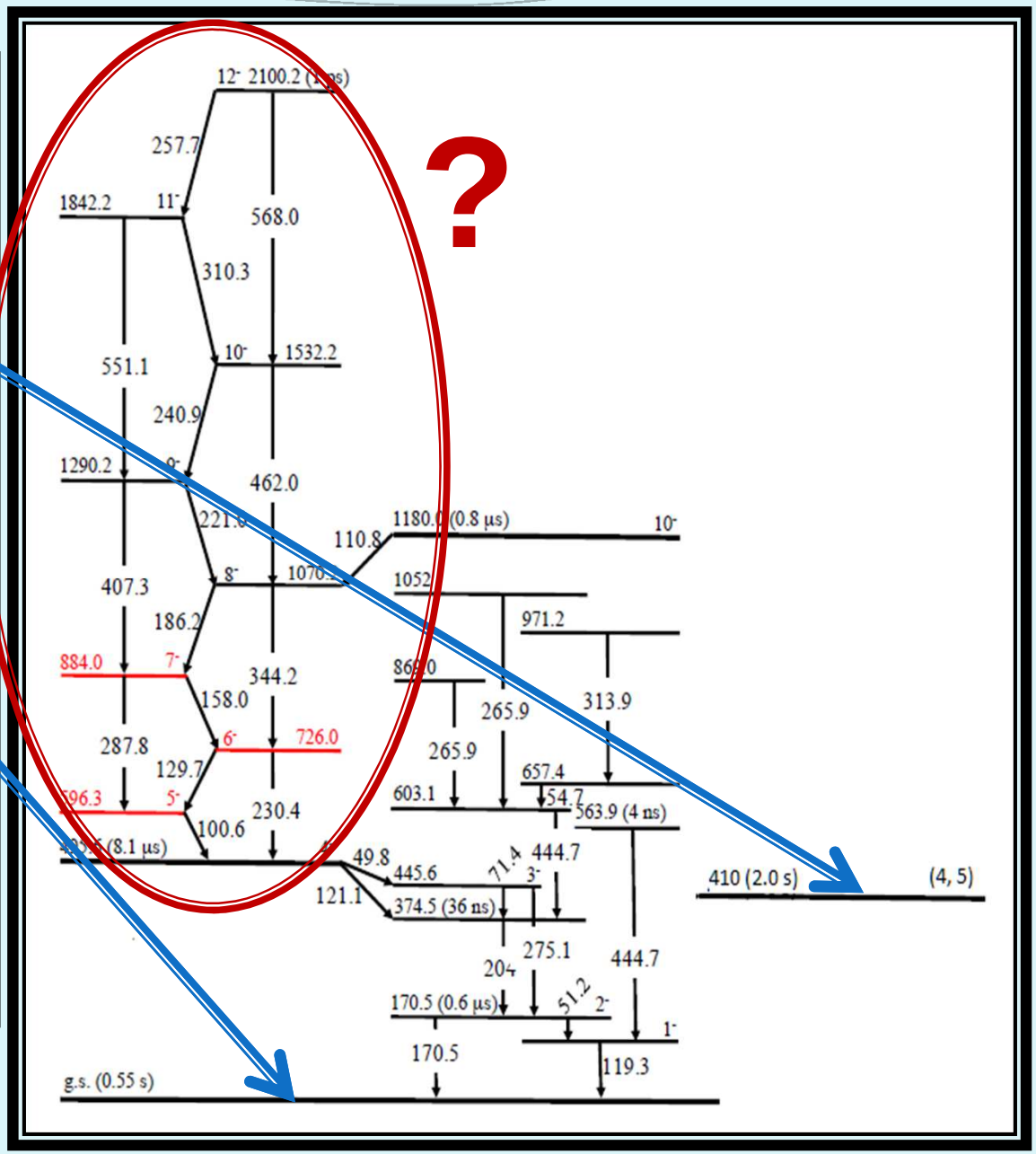


Z = 40

N = 60

Scientific motivation

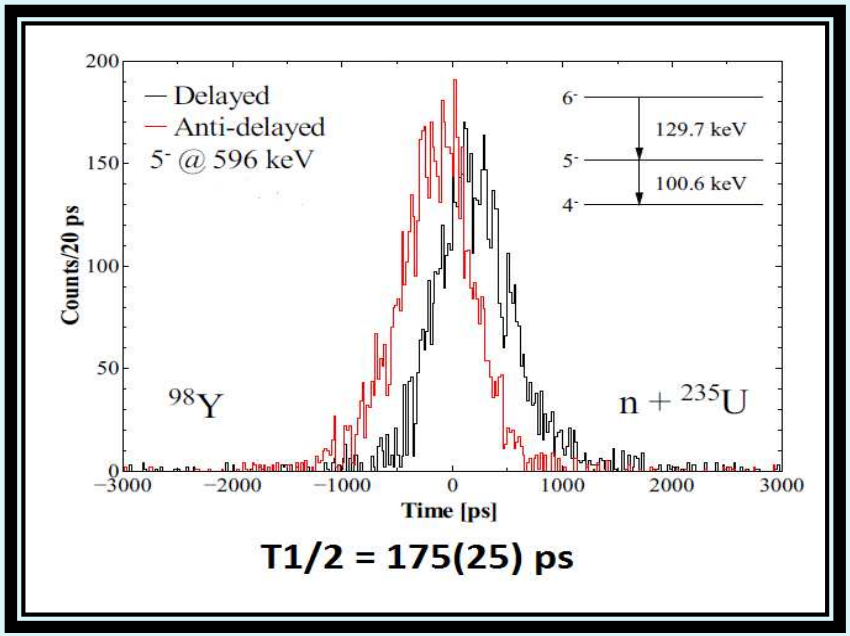


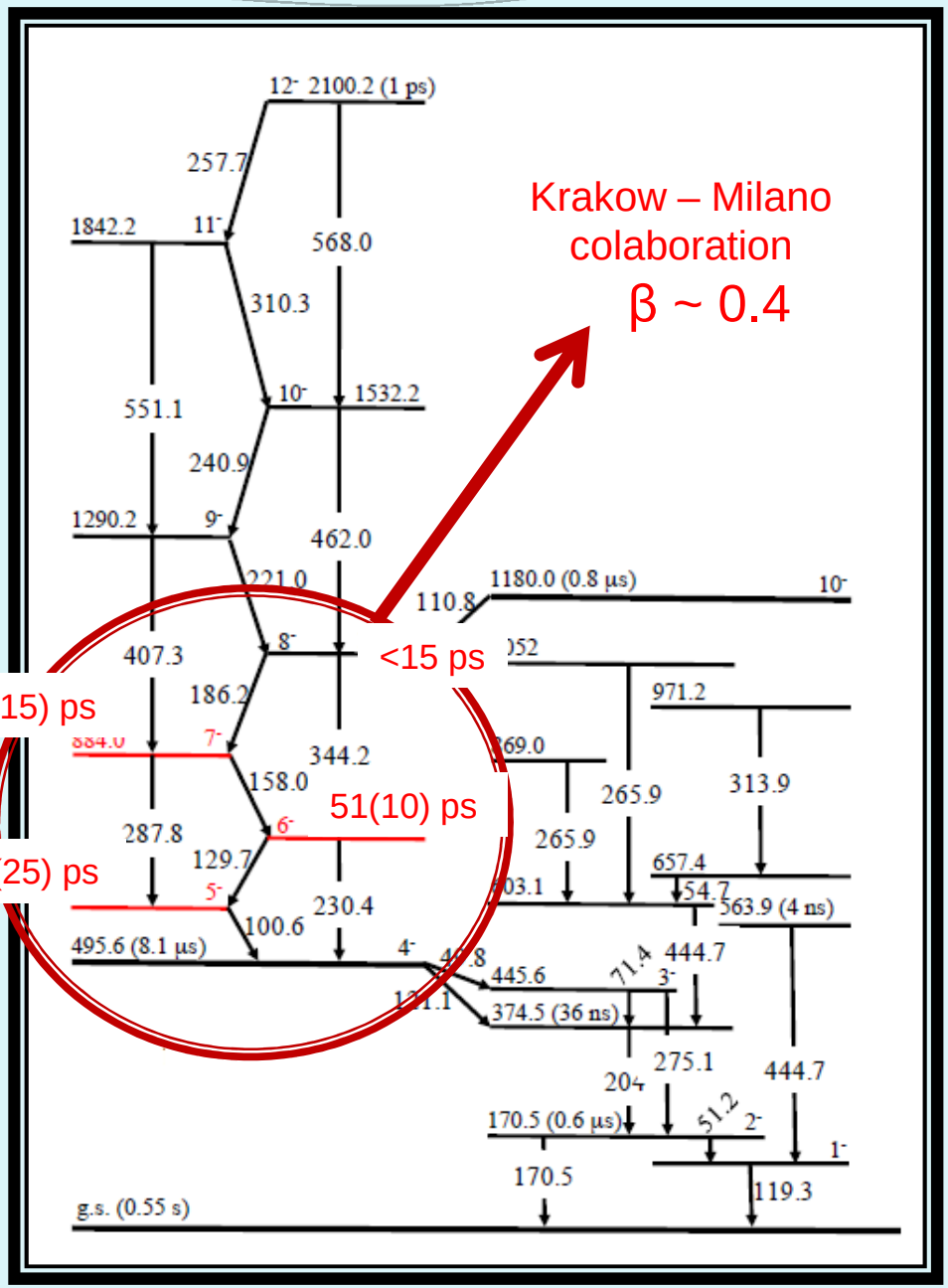


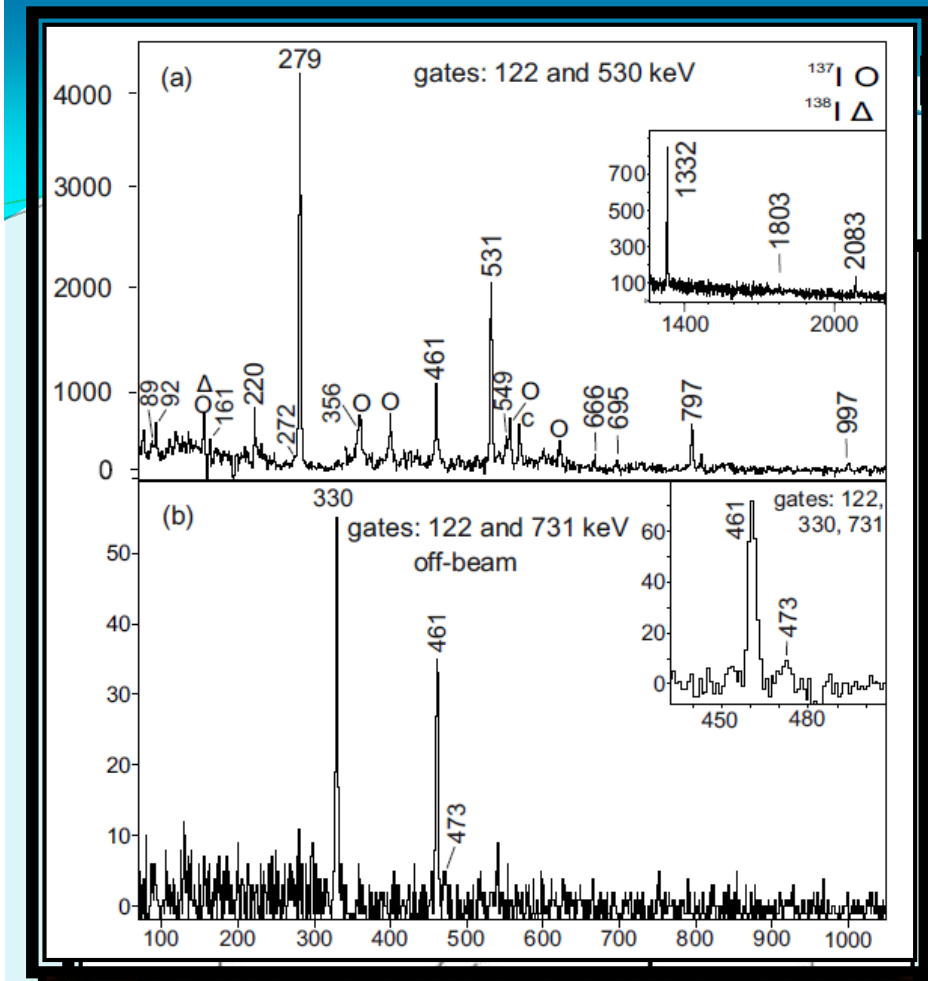
Scientific motivation

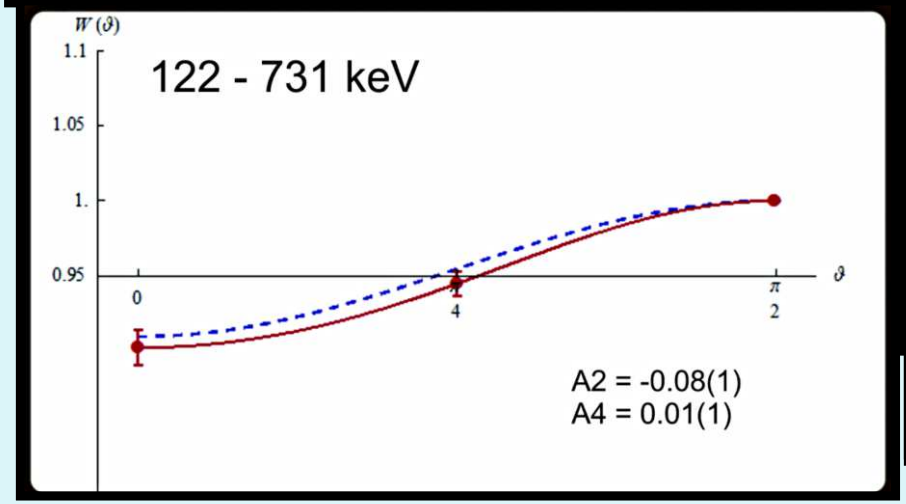
EXILL campaign – ILL (Grenoble)

- Cold nutrons from ILL reactor induced fission of on ^{235}U and ^{241}Pu targets
- 52 HPGe detectors (EXOGAM + GASP) → gamma spectroscopy
- HPGe + 16 $LaBr_3$ (FATIMA) → lifetimes measurements

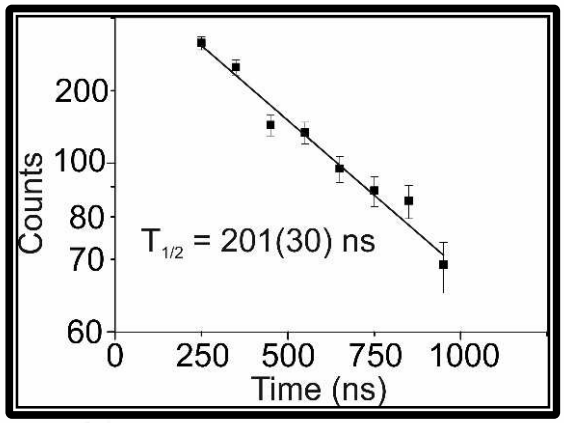






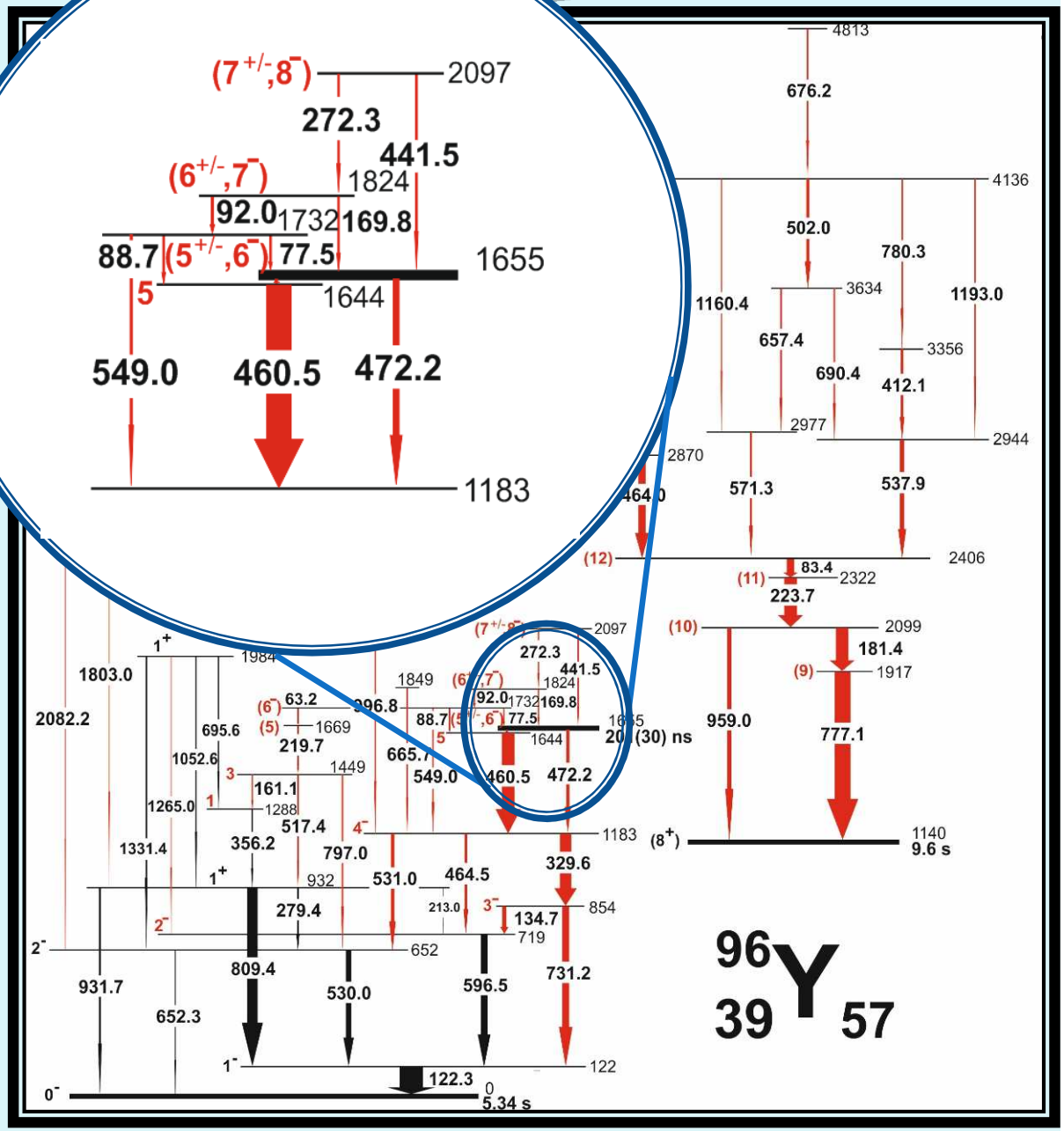


Ł. W. Iskra at el. (to be published)

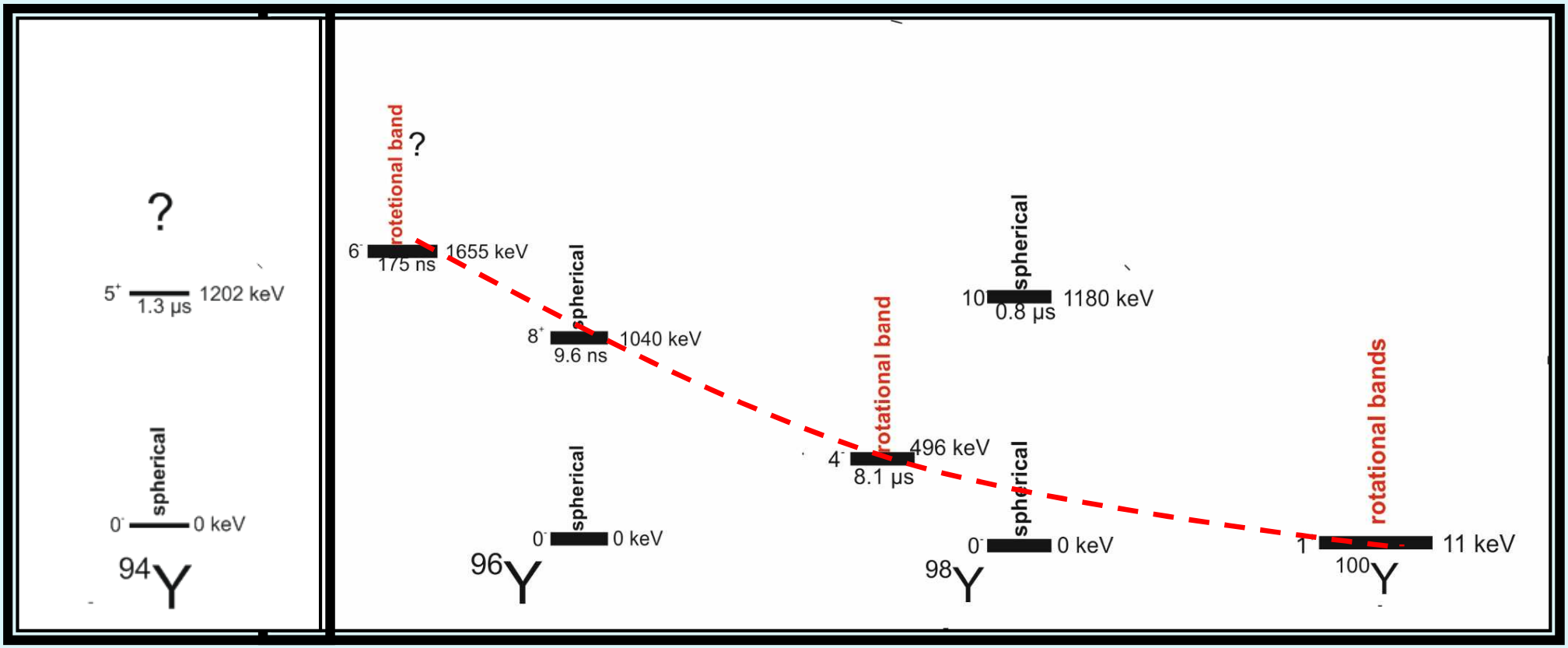


Scientific motivation

- No connections with a spherical structure above 8^+ isomer
- Large retardation of the isomeric transition – characteristic for the K or shape isomers
- Theoretical calculation based on complex Monster (Vampir) model predicts the presence of a deformed 6^- isomer as a bandhead of a rotational prolate structure
- The structure above the isomer looks like a beginning of the rotational band



Shape evolution in the Y isotopic chain



No sudden onset of deformation at N = 60 but smooth evolution !?

Summary

Using the data from fission of ^{235}U and ^{241}Pu targets it was possible to identify over 40 new gamma transitions and 22 states in the ^{96}Y isotope

Angular correlation analysis allowed to make spin-parity assignment for most of the identified levels

The analysis also revealed the presence of the new deformed isomeric state as a bandhead of the possible rotational structure

The recent results from the gamma spectroscopy study suggest that in the case of yttrium isotopic chain we observe smooth evolution of the deformation rather than sudden onset

Collaboration group

Ł. W. Iskra, B. Fornal
The Institute of Nuclear Physics, Polish Academy of Sciences, Krakow, Poland

S. Leoni, G. Bocchi, C. Porzio
Università degli Studi and INFN sez. Milano

M. Jentschel, U. Koster, C. Michelagnoli, P. Mutti, T. Soldner, A. Blanc
ILL, Grenoble, France

G. De France
GANIL, France

G. S. Simpson
LPSC, France

C. A. Ur
INFN Sezione di Padova, Italy

W. Urban
Warsaw University, Warszawa, Poland

Thank you
for your attention