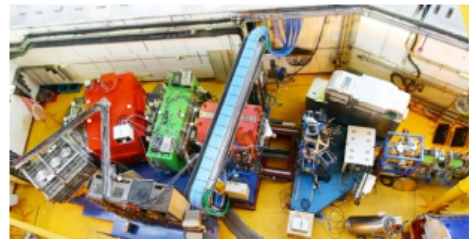
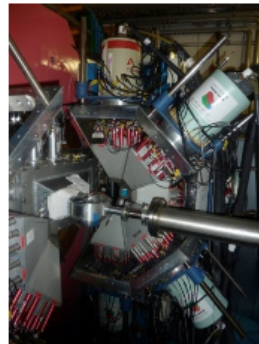
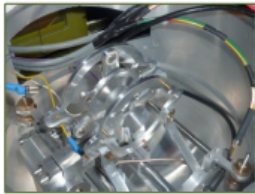
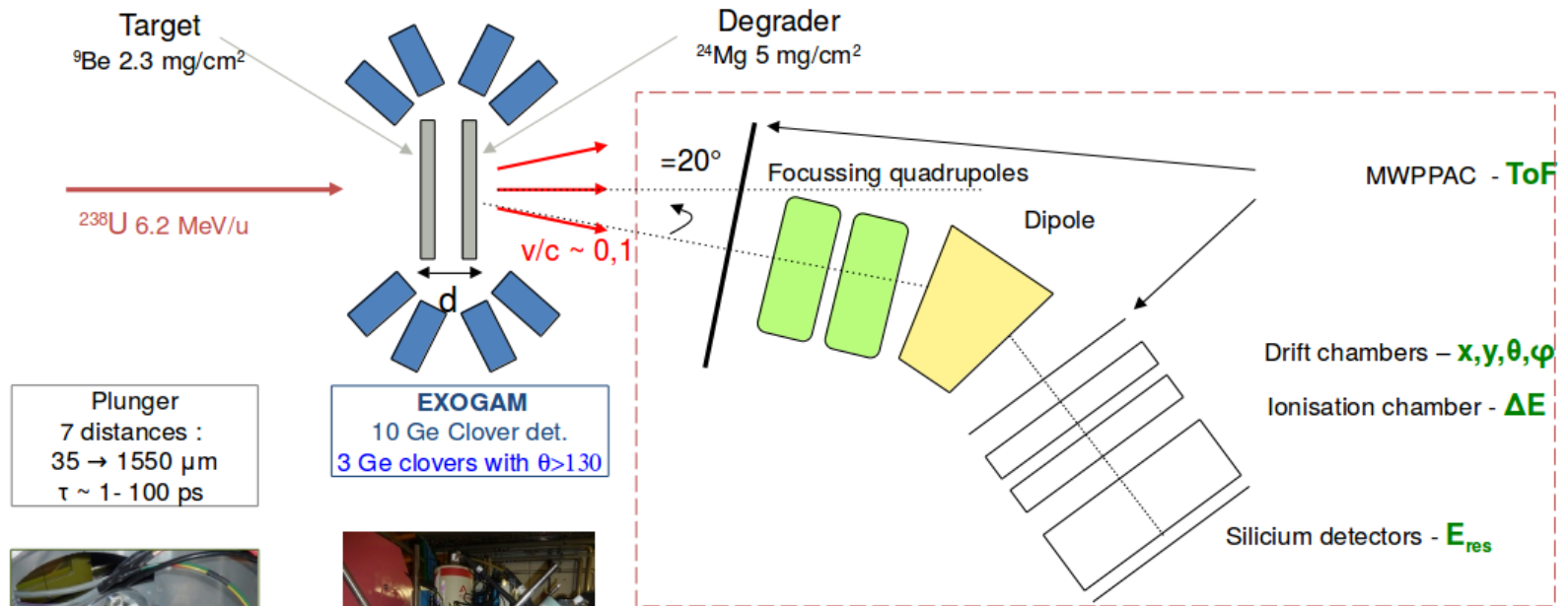


*Lifetime measurement in  $^{98}\text{Zr}$*

*Purnima Singh  
CEA Saclay*

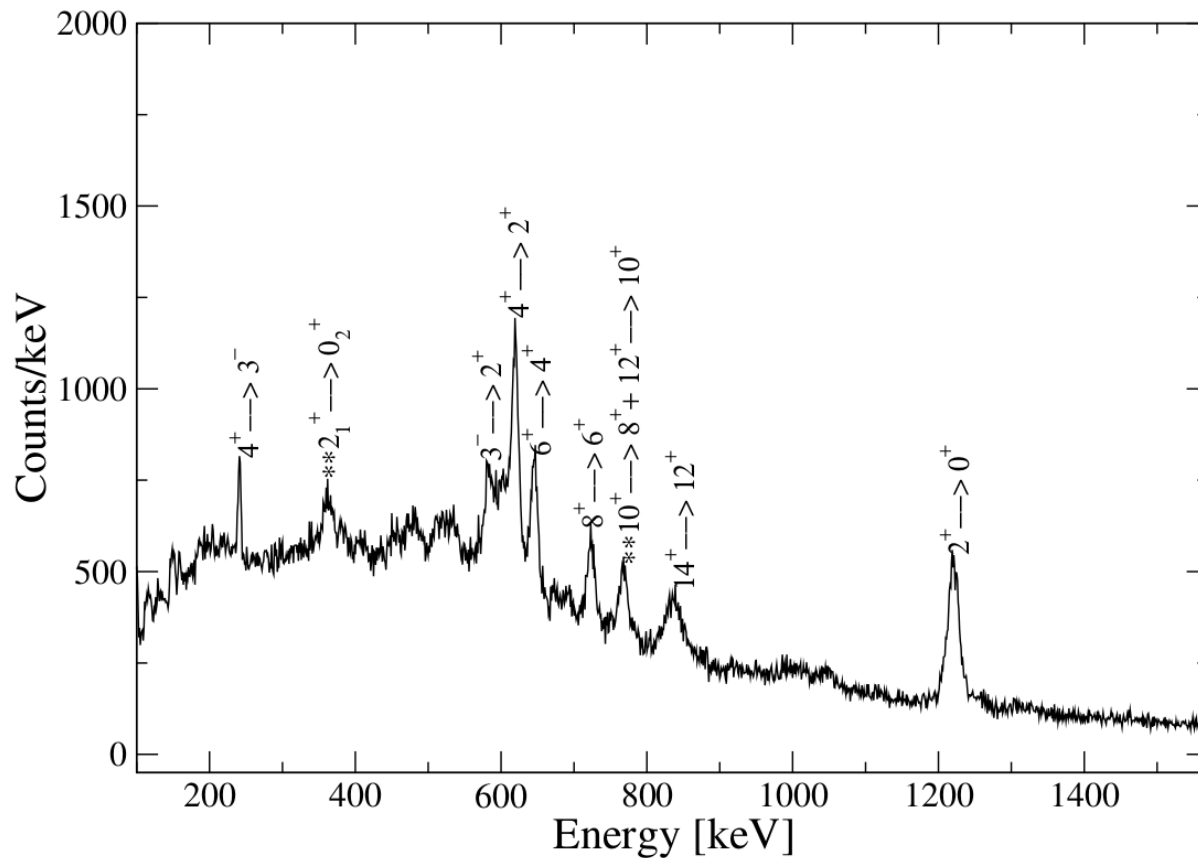
# Experimental Details

- Fusion-fission reaction  $^{238}\text{U} + ^9\text{Be}$  in inverse kinematics
- VAMOS to identify fission fragments in  $(Z, A)$
- Spectroscopy with EXOGAM & RDDS lifetimes from plunger set-up

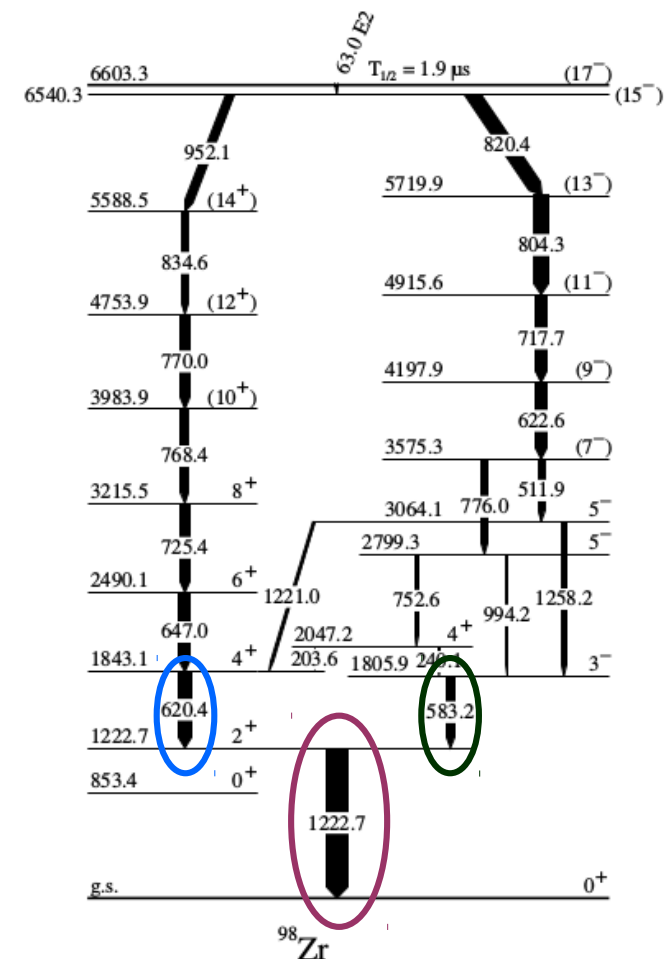


**VAMOS spectrometer**  
Fission fragment identification  
in  $q, M$  and  $Z$

# Spectrum: $^{98}\text{Zr}$



## Level scheme of $^{98}\text{Zr}$



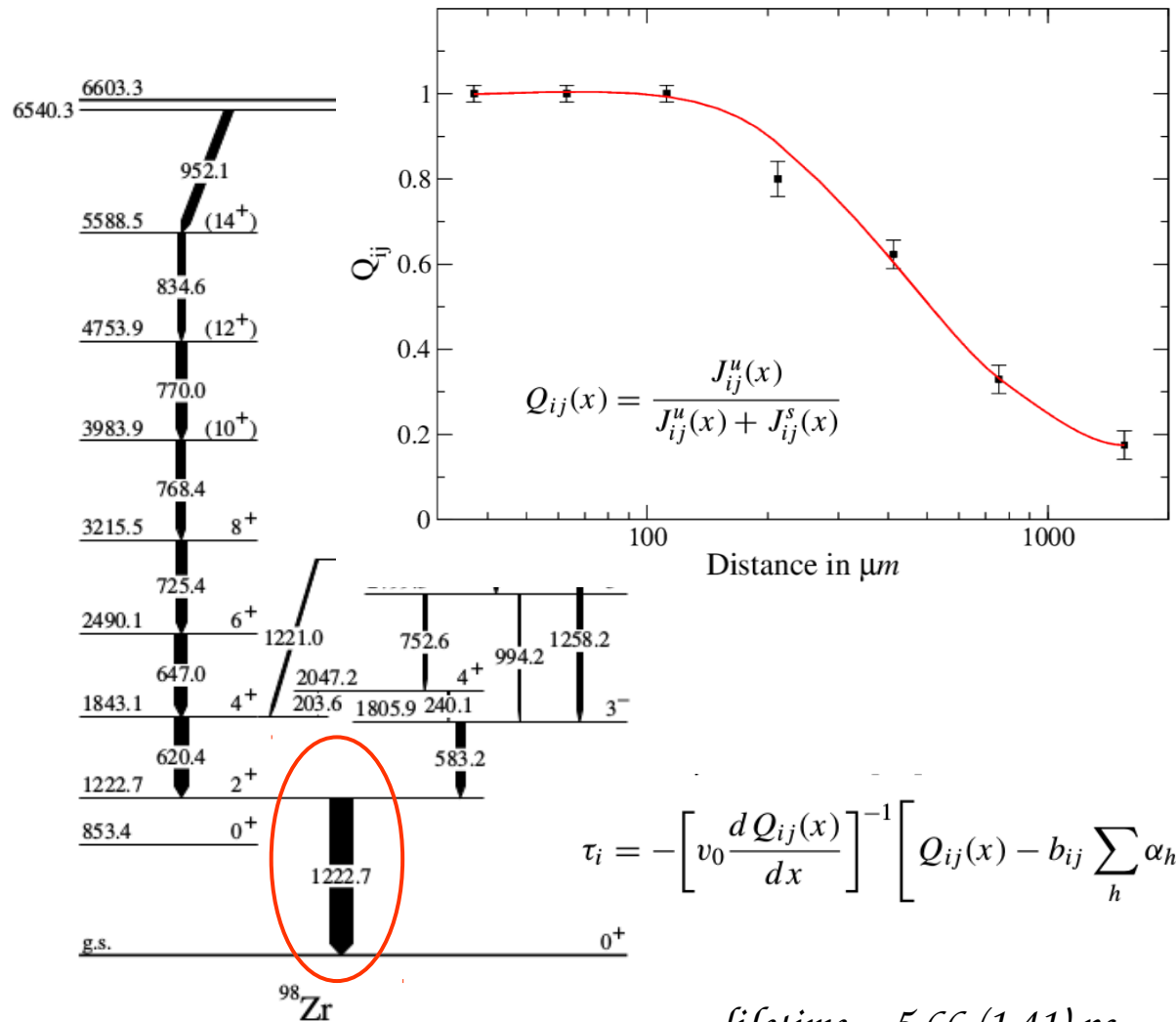
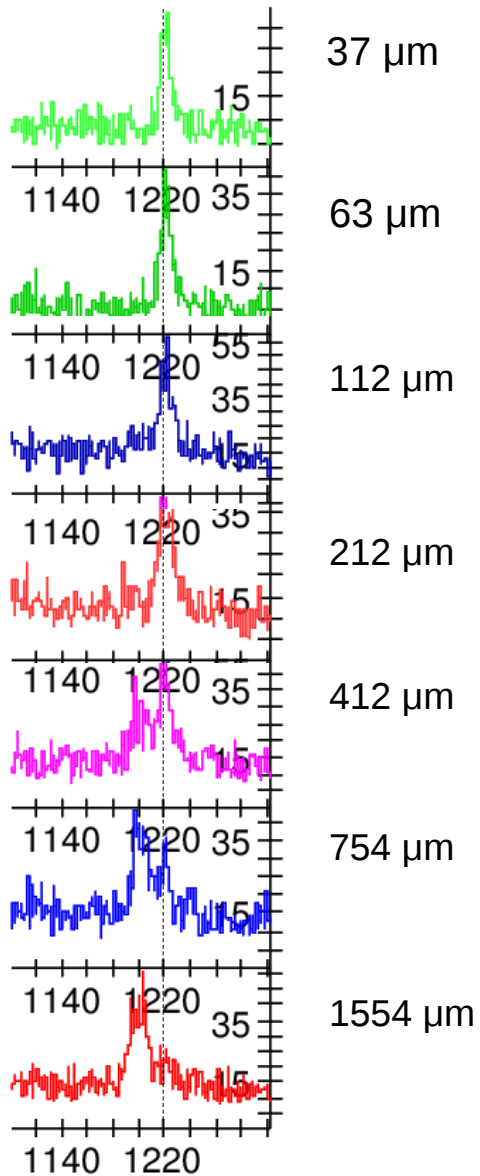
$2^+$  level fed by two transitions

620~55%

583~20%

# Lifetime measurement

1223 keV transition

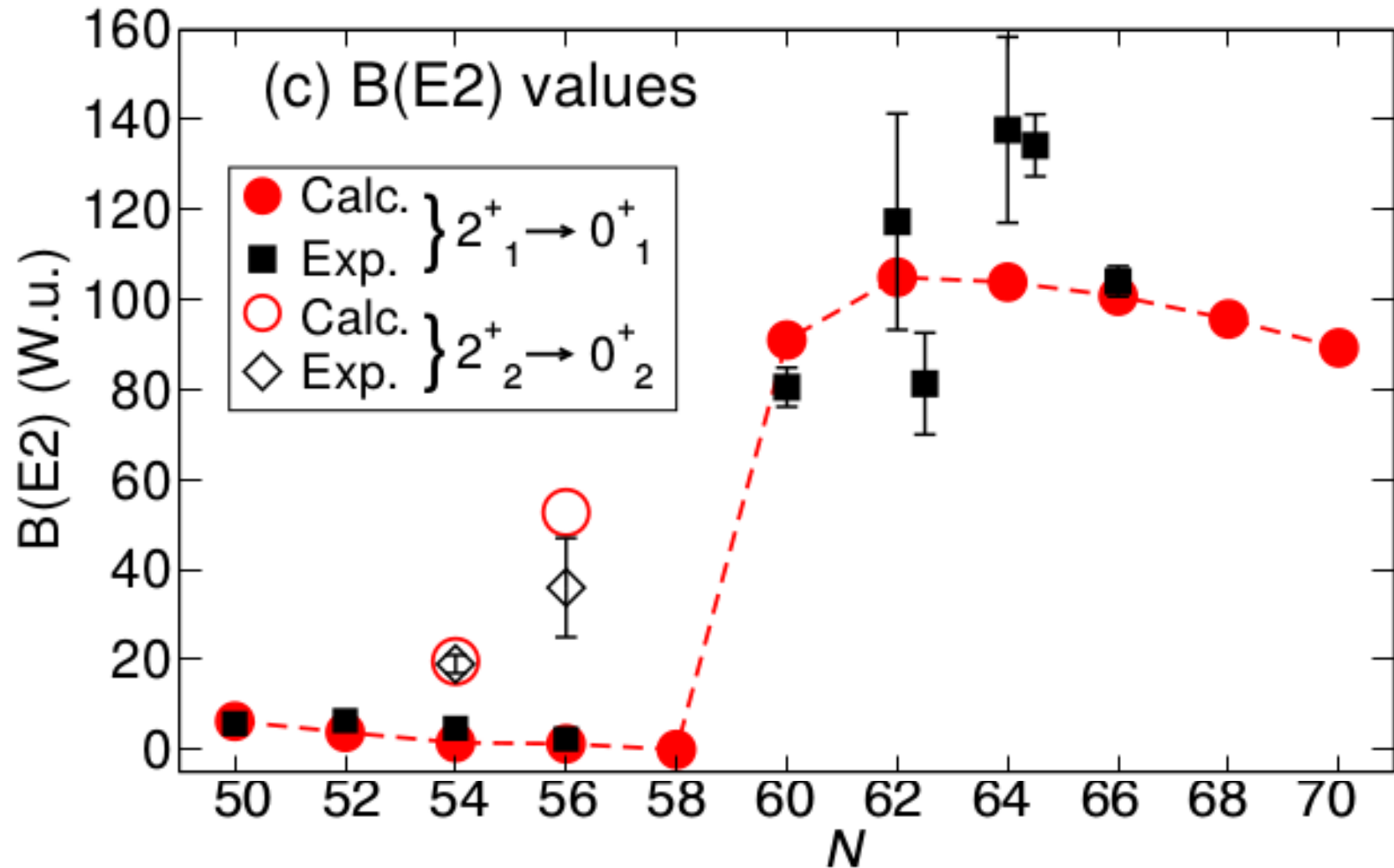


$$\tau_i = - \left[ v_0 \frac{dQ_{ij}(x)}{dx} \right]^{-1} \left[ Q_{ij}(x) - b_{ij} \sum_h \alpha_{hi} Q_{hi}(x) \right]$$

lifetime = 5.66 (1.41) ps

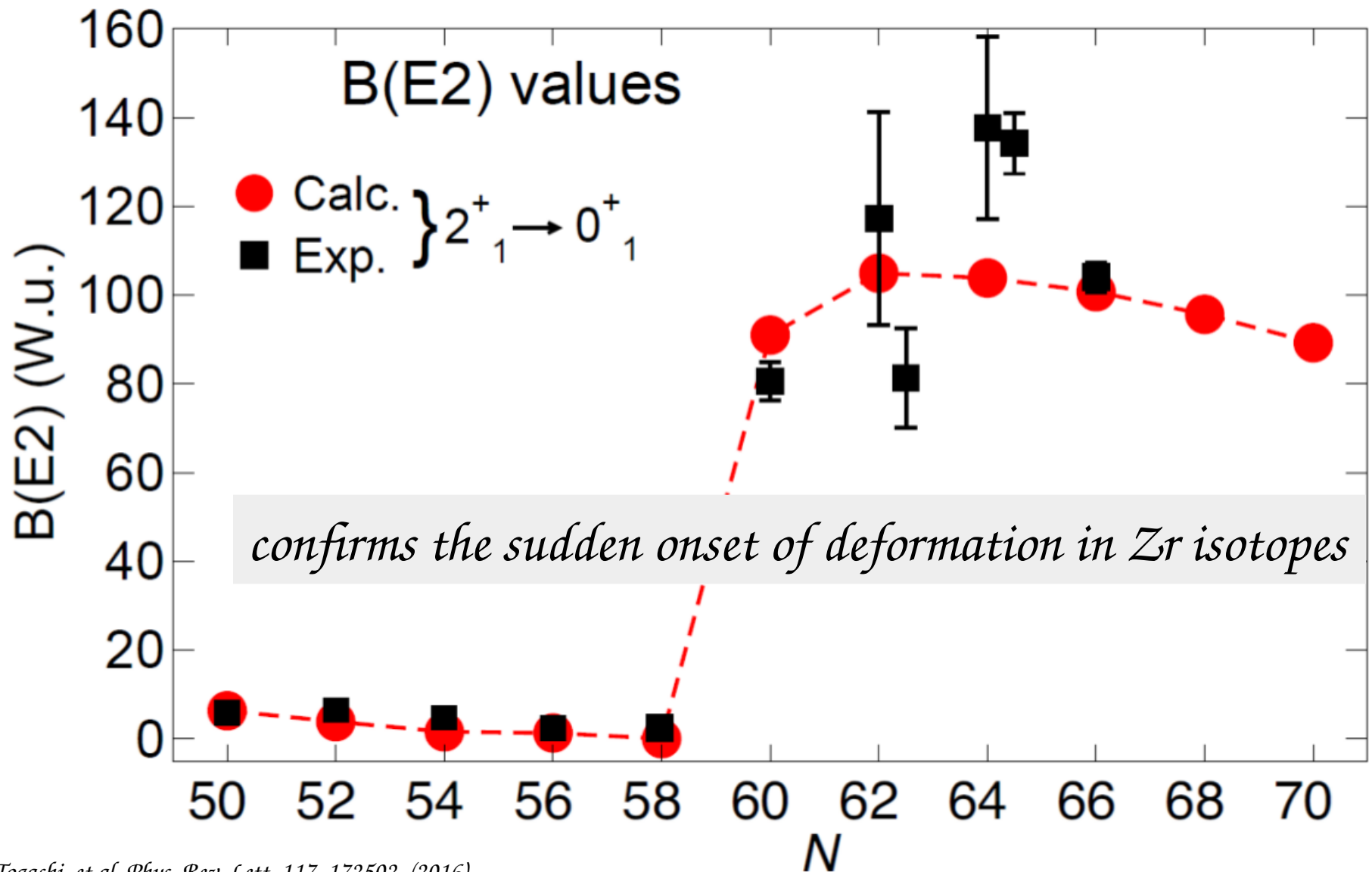
# Results

*MCSM calculations for Zr isotopes by Togashi et al*



# Results

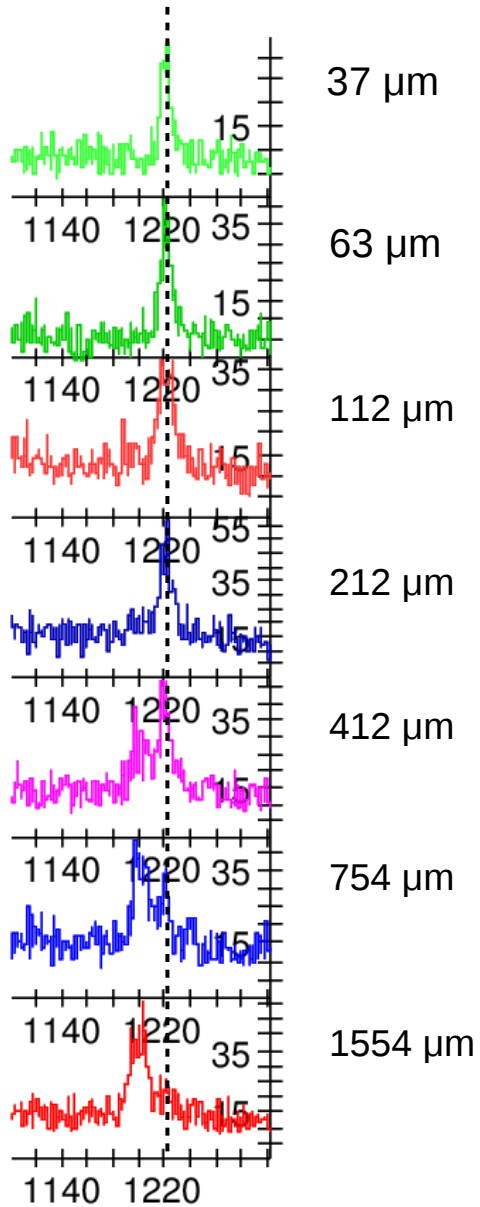
*MCSM calculations for Zr isotopes by Togashi et al*



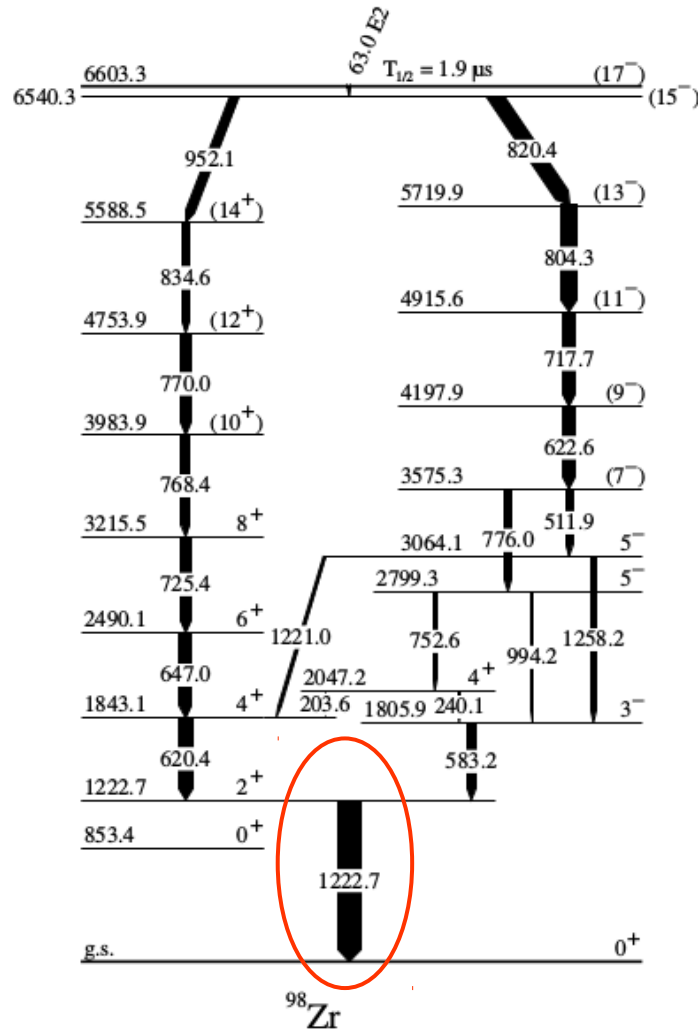
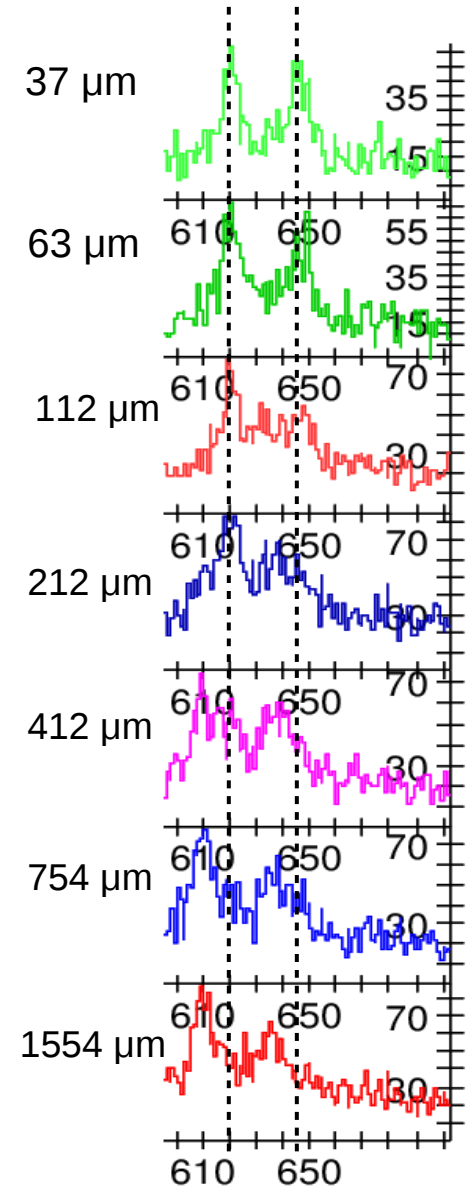
*Thank you*

# Lifetime measurement

1223 keV transition



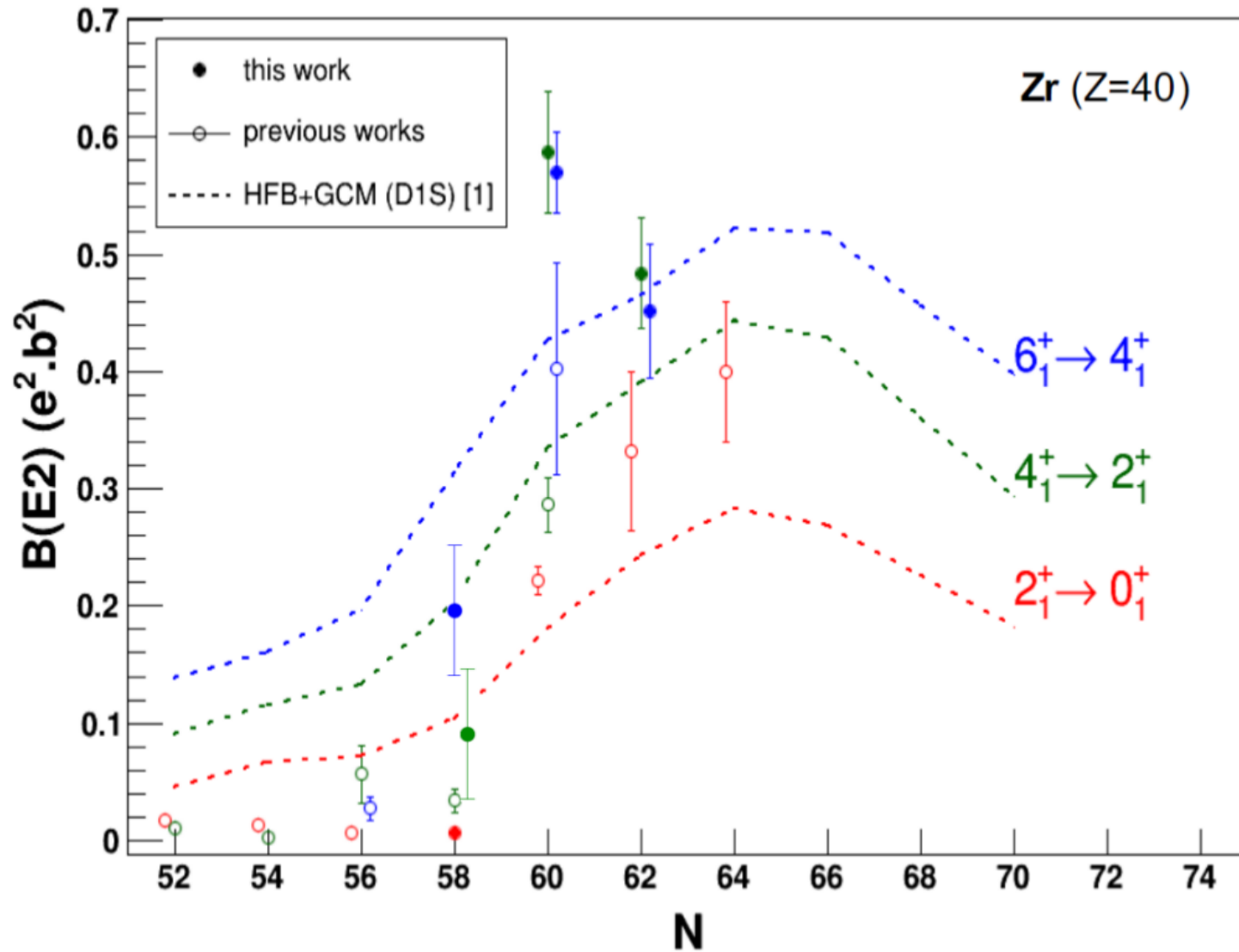
620, 647 keV transitions



lifetime = 5.66 (1.41) ps



# Results

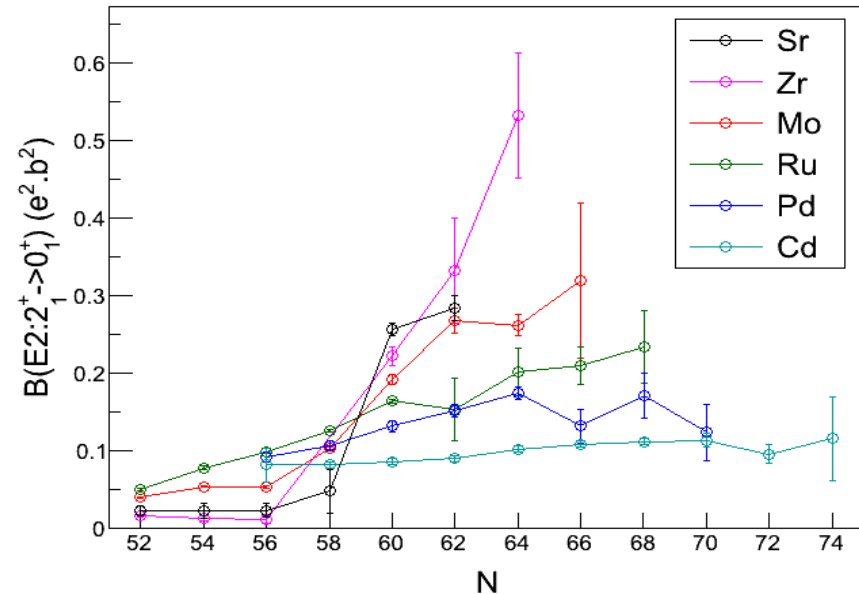
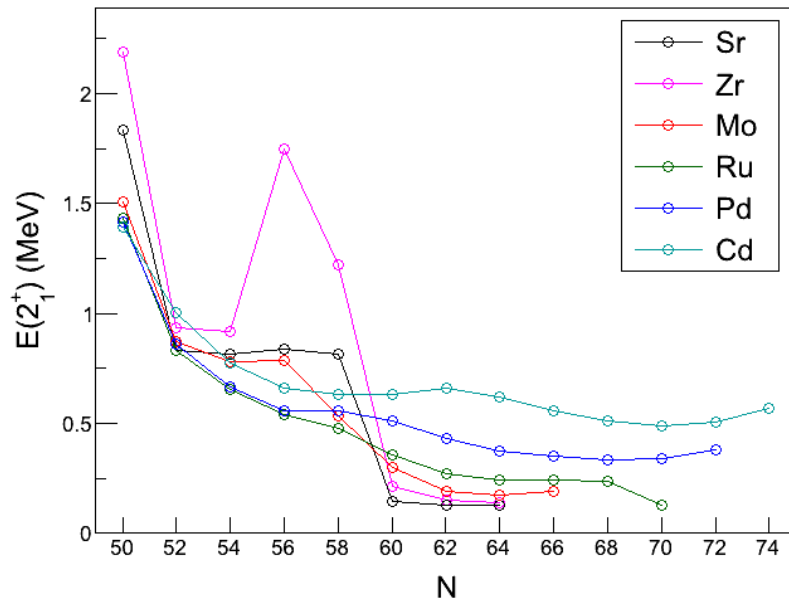


# Shape evolution in neutron-rich nuclei around $A \sim 100$

Well known for exhibiting variety of shapes

- considerably sensitivity to  $Z, \mathcal{N}$
- Shape coexistence

Different predictions regarding shape evolution



Lack of precise information on  $B(E2)$  value of  $^{98}\text{Zr}$

Only an upper limit in previous works; 11ps, L. Bettermann, et al *Phys. Rev. C* 82, 044310 (2010)