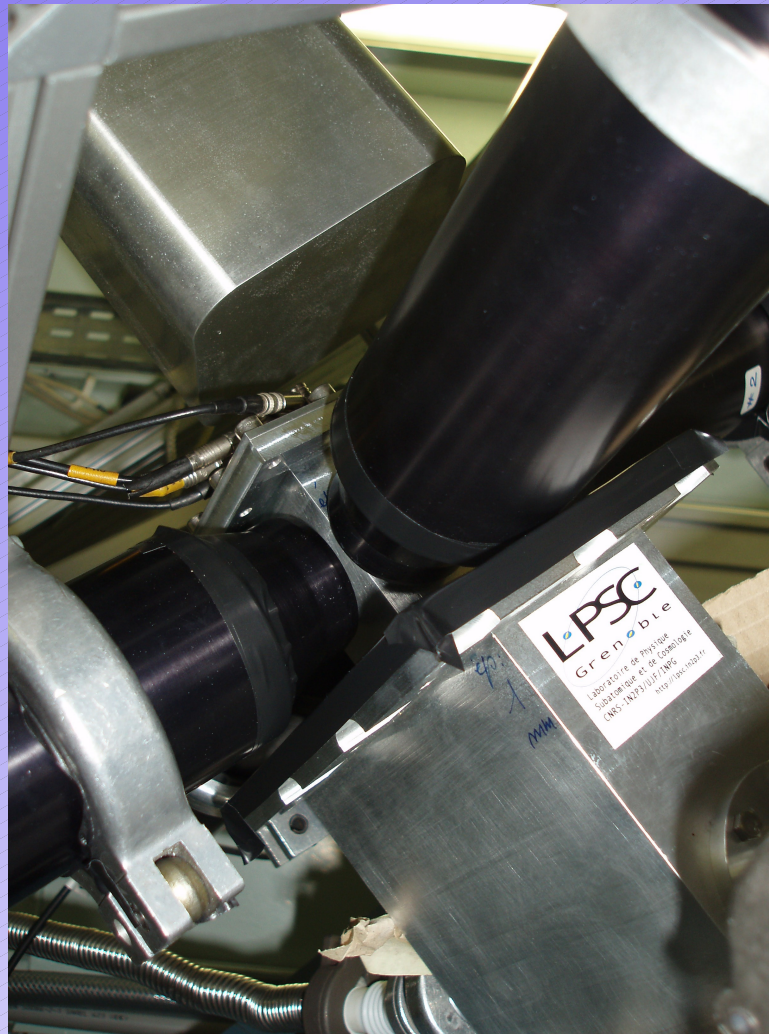
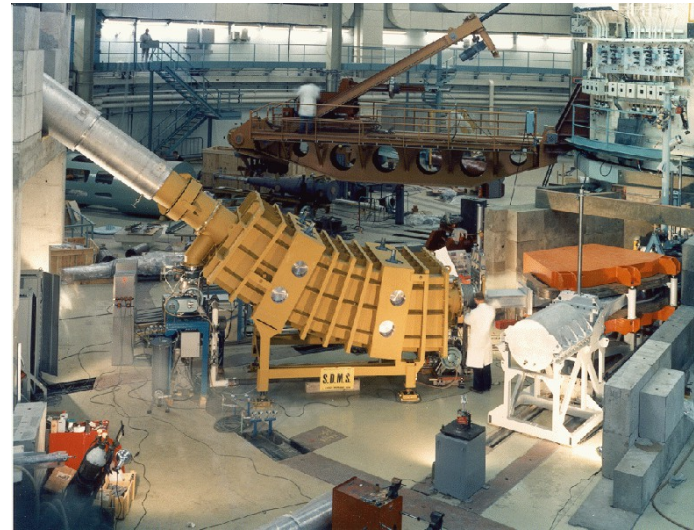
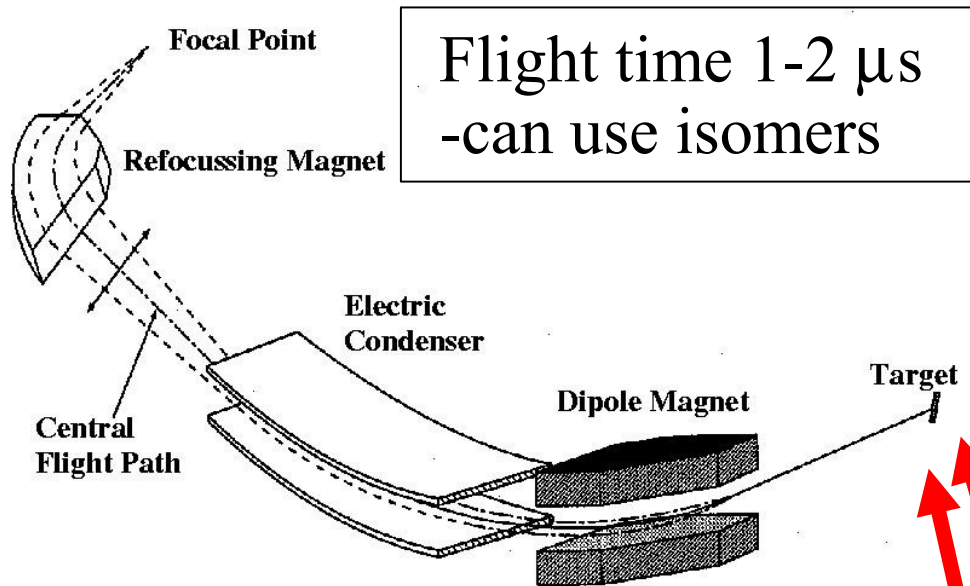


# Fast-timing studies of states below $\mu$ s isomers at the ILL

Gary Simpson LPSC



# The Lohengrin Fission-Product Spectrometer



**Separates according to  $A/q$  and  $E/q$**

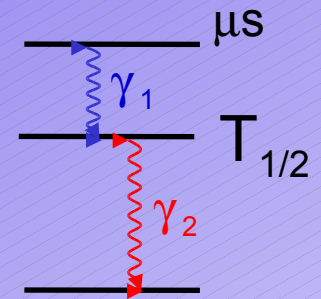
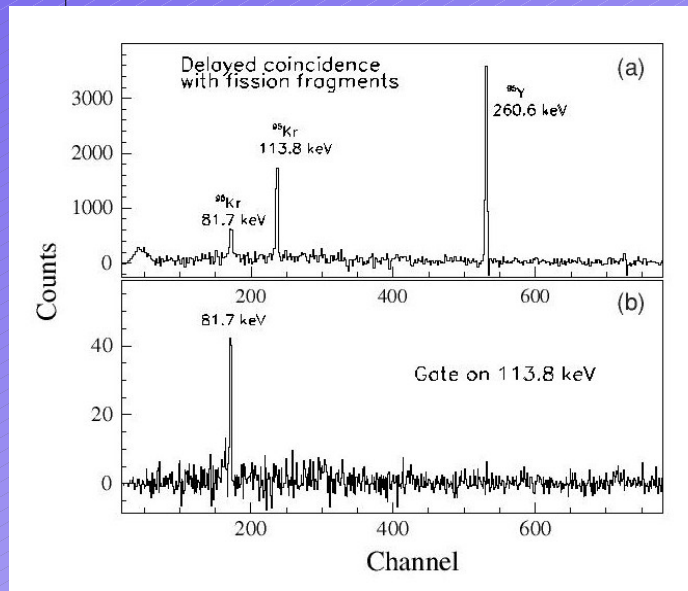
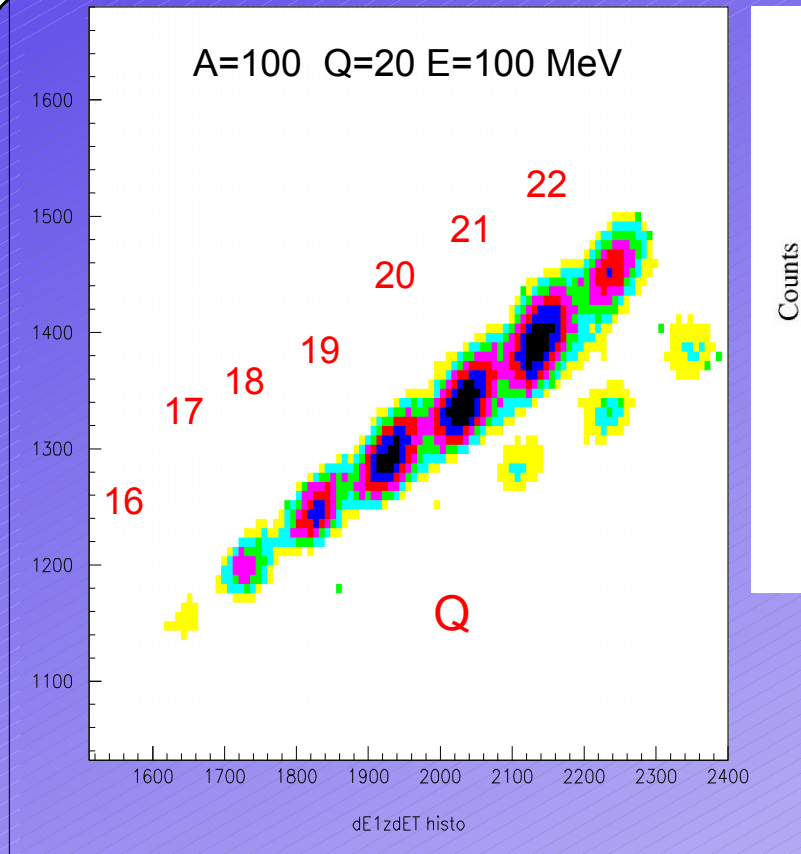
**No ion source - no chemical selectivity**

**$\sim 2 \times 10^{12}$  fissions/s  
(3.5 mg of  $^{239}\text{Pu}$  742 b)**

**$A/\delta A \sim 250$**

**Solid angle  $< 2 \times 10^{-5}$**

**Rates at focal point  
 $\sim 3000$  ions of  $^{132}\text{Sn}$  /s**

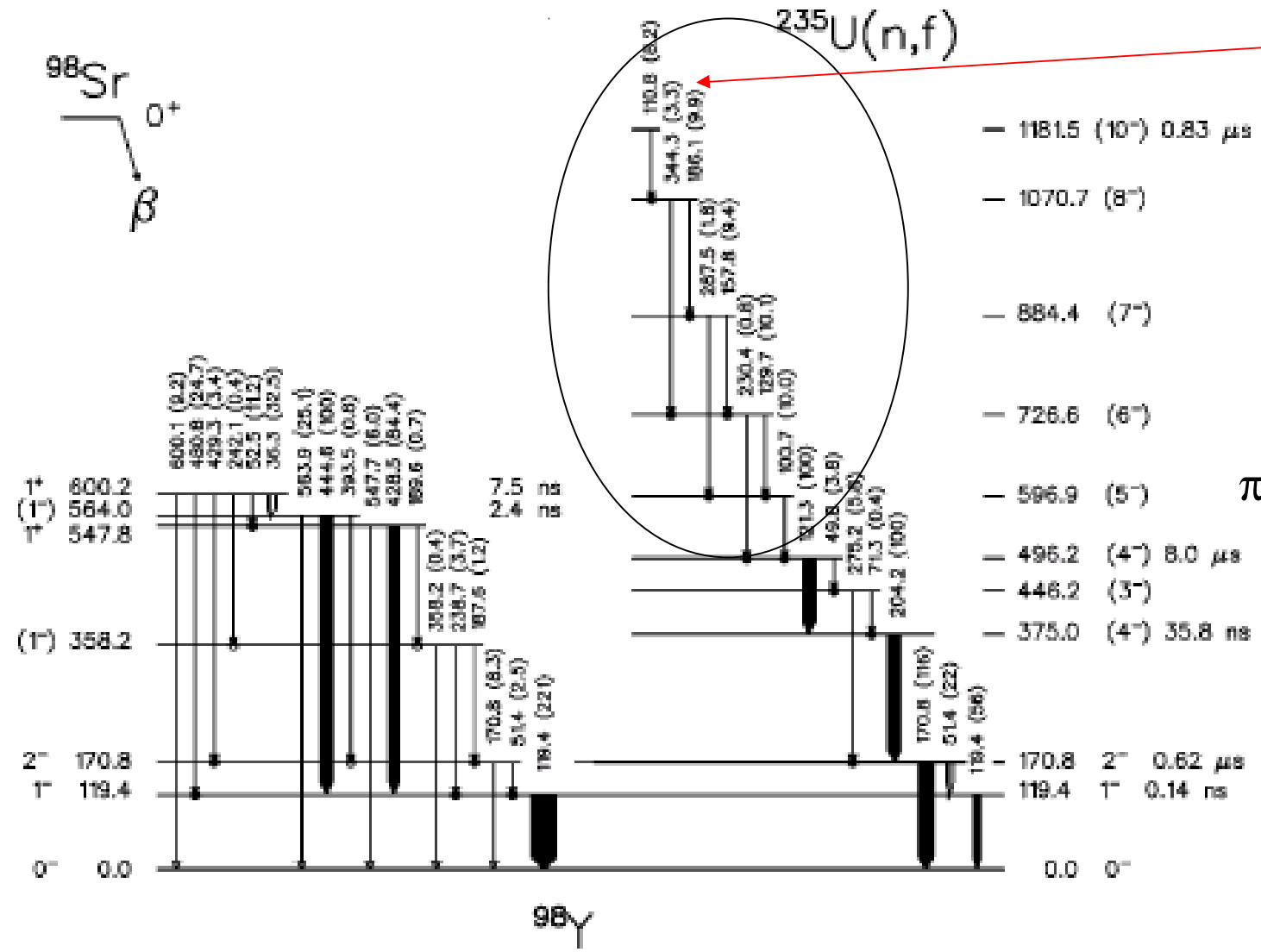


## Regions studied

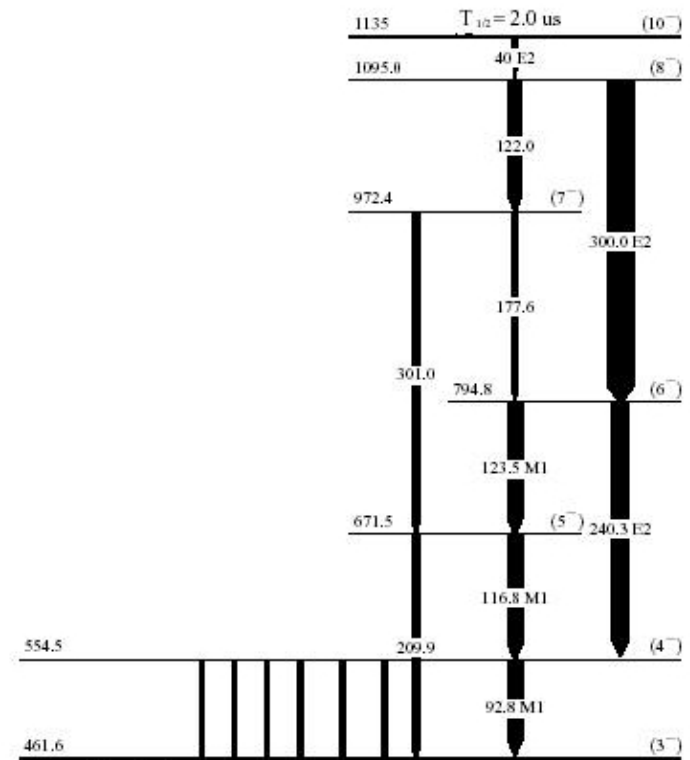
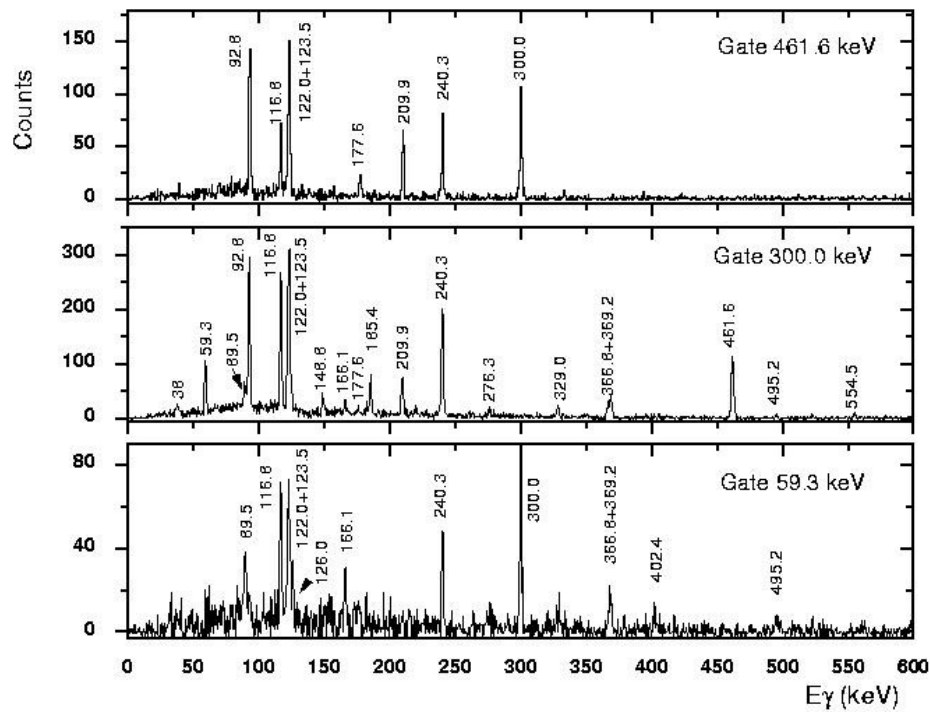
- $^{132}\text{Sn}$
- $^{100}\text{Zr}$



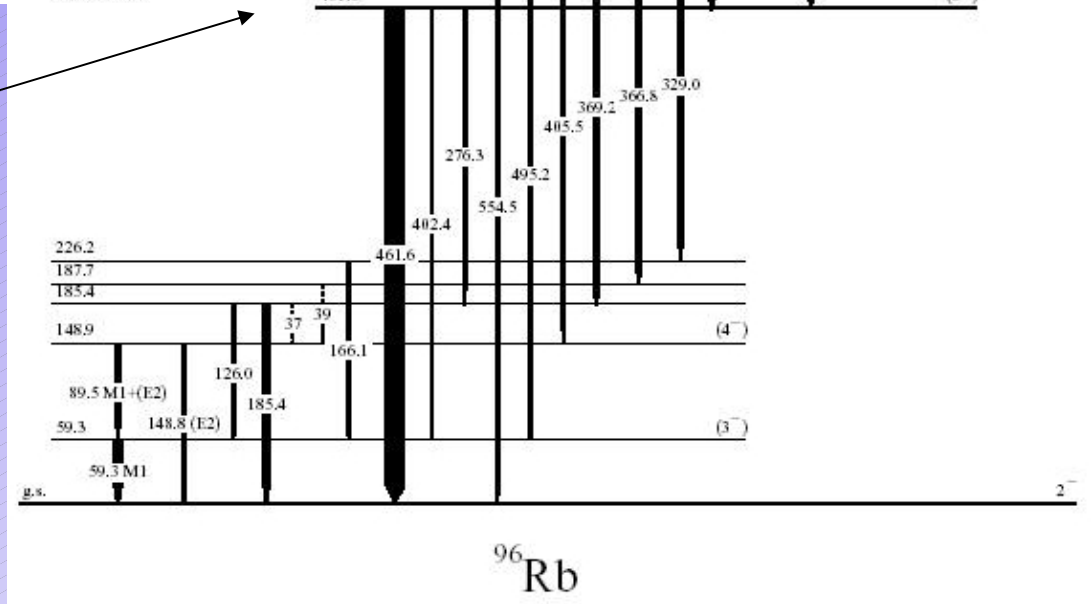
$\pi(g_{9/2}) \nu(h_{11/2})$



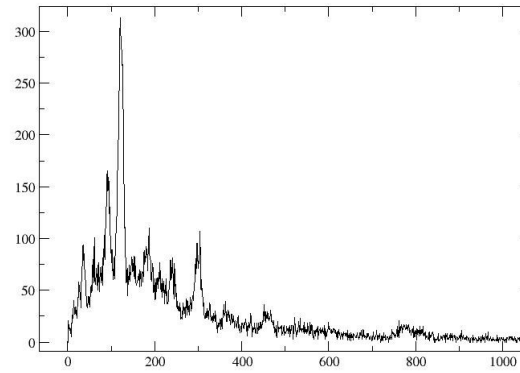
$\pi[422]5/2 \nu[541]3/2$



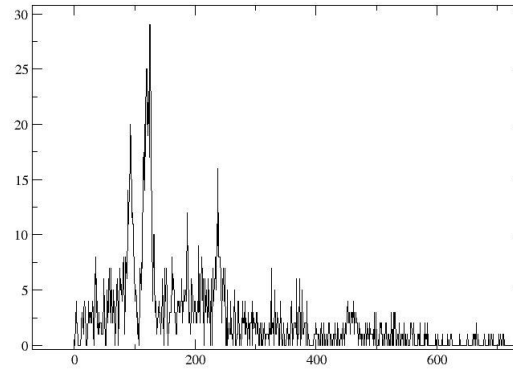
Deformed  
 $\pi[3/2 431] \nu[3/2 541]$



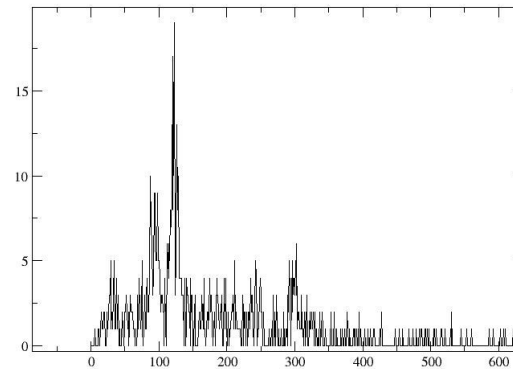
Total Projection



Gate 300 keV



Gate 461 keV



Analysis slow as Janine Genevey retired!

New software had to be written  
-Auto-gain matching

Data for at least 3 publications

Large number of  $\text{LaBr}_3$  detectors in France  
– Possibility of fast-timing at SPIRAL-2