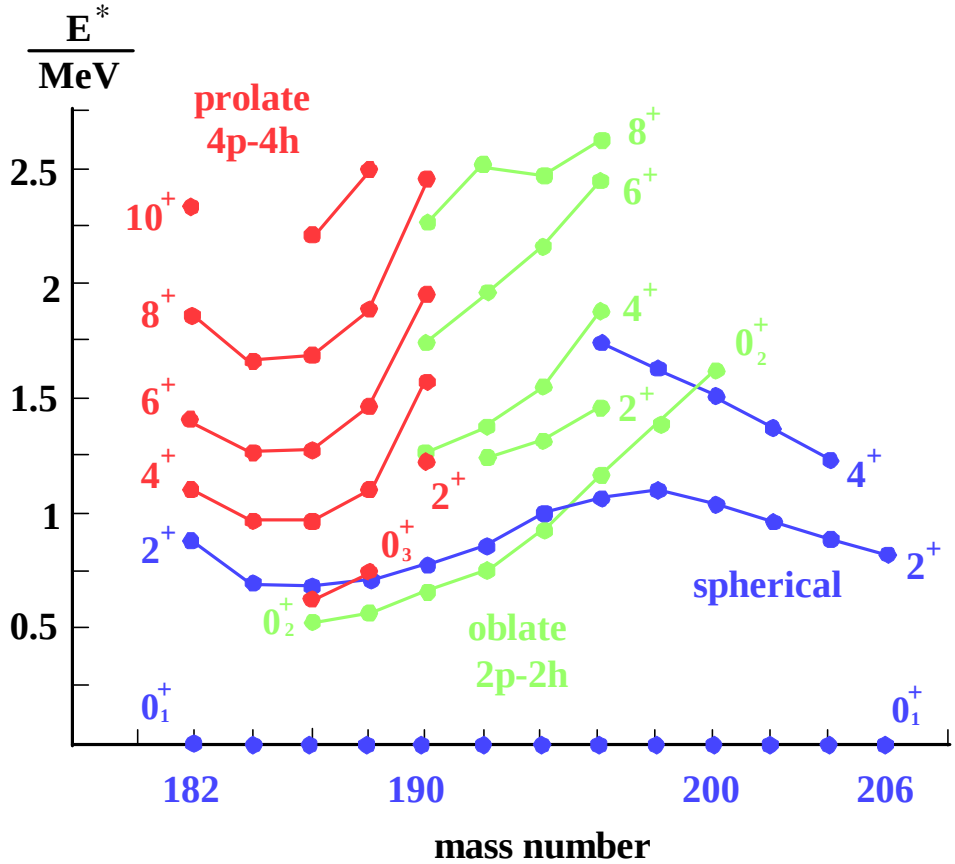
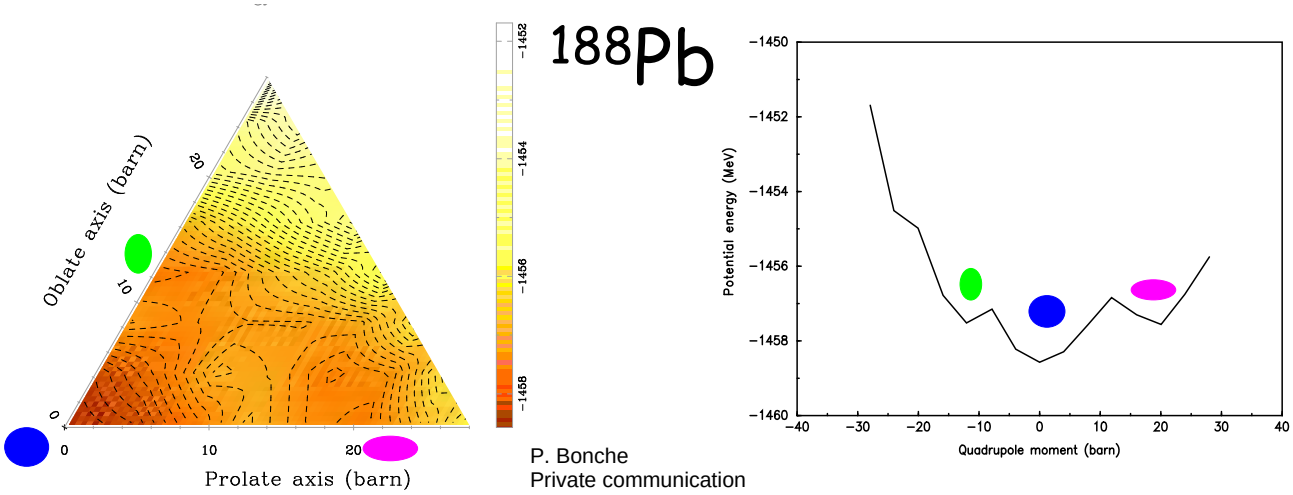
Shape coexistence study with CE **and** γ spectroscopy

The ^{188}Pb case

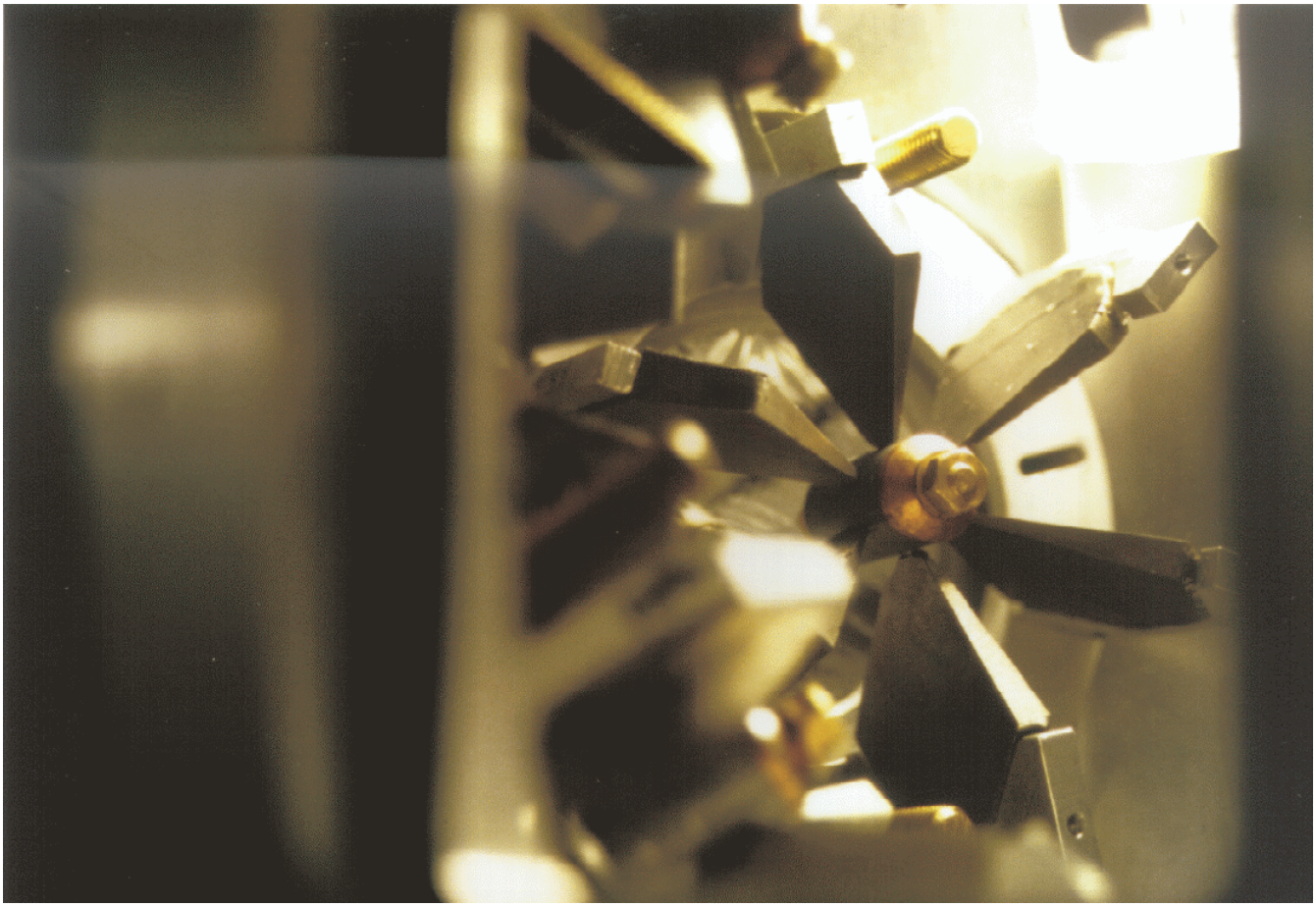
Y. Le Coz (CEA Saclay)

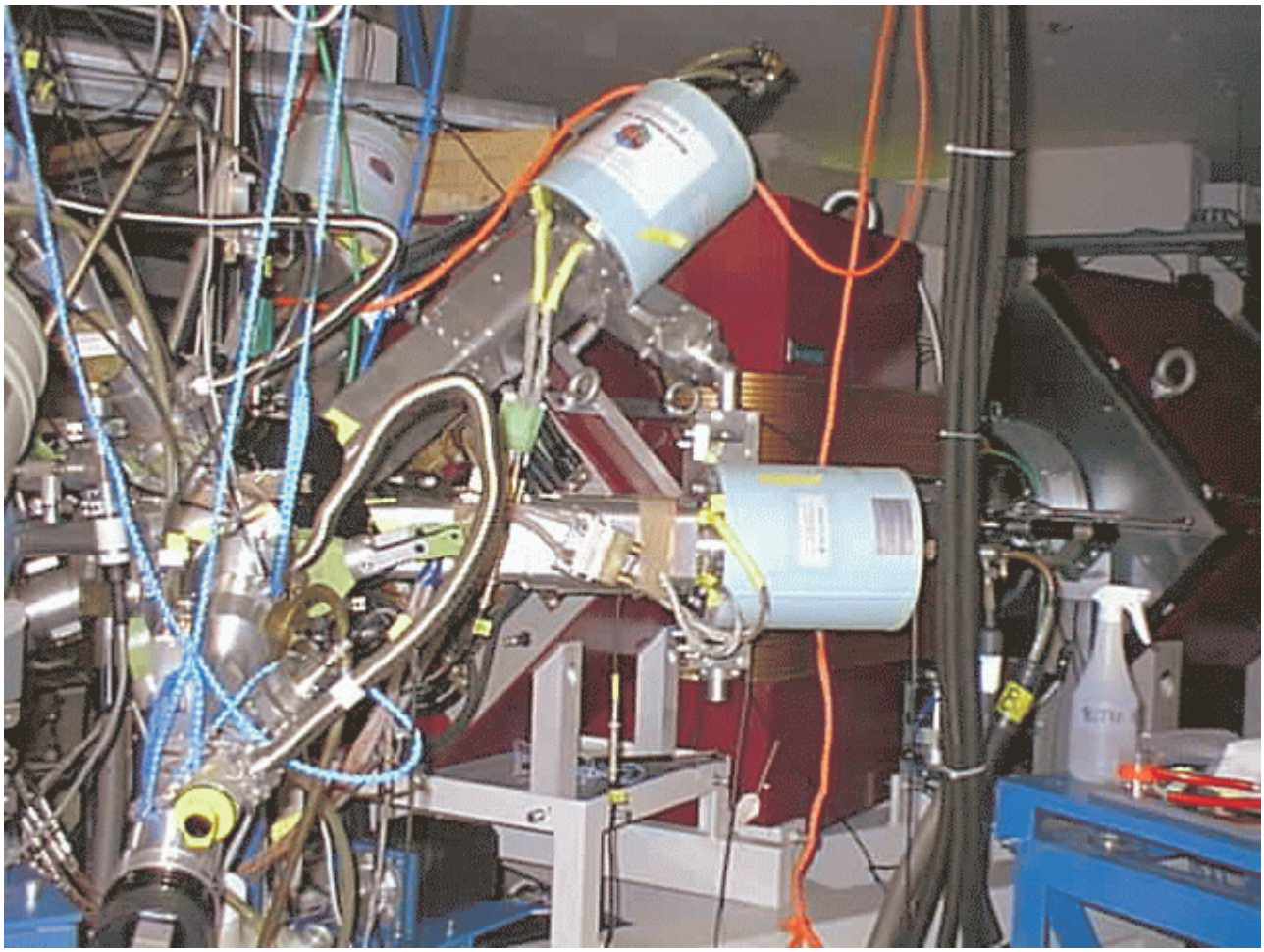
Shape coexistence in Pb isotopes





P. Bonche
Private communication





Internal Conversion Electron Mini-Orange Spectrometer ICEMOS

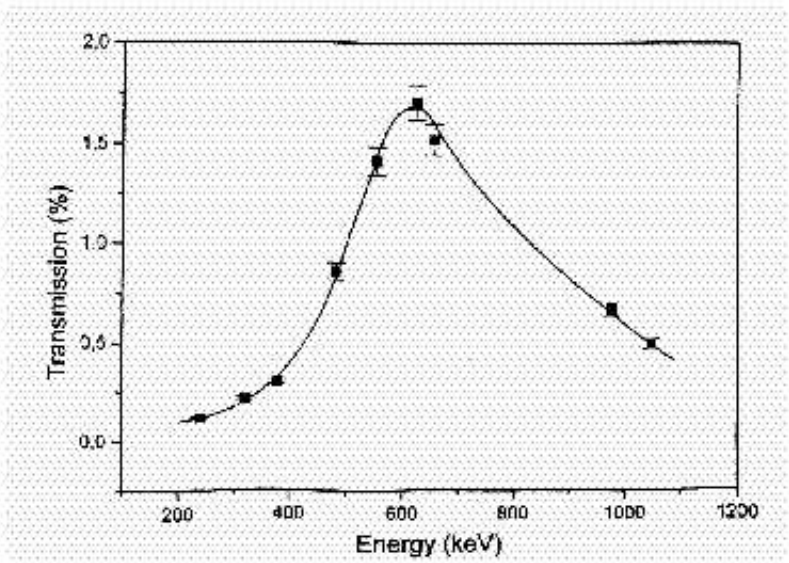
Performances

3 individual Mini-Orange Spectrometers

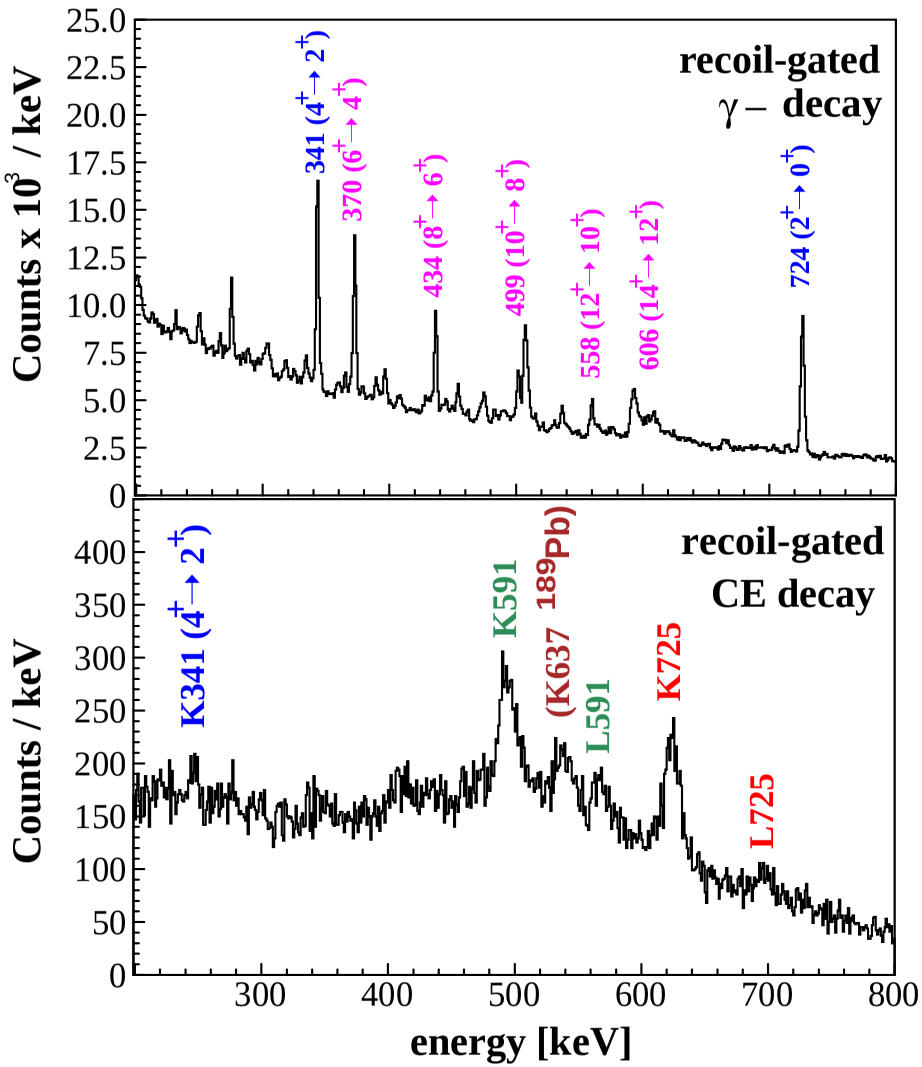
Cooled Si-Li detectors 300mm^2, 3 or 6 mm thick

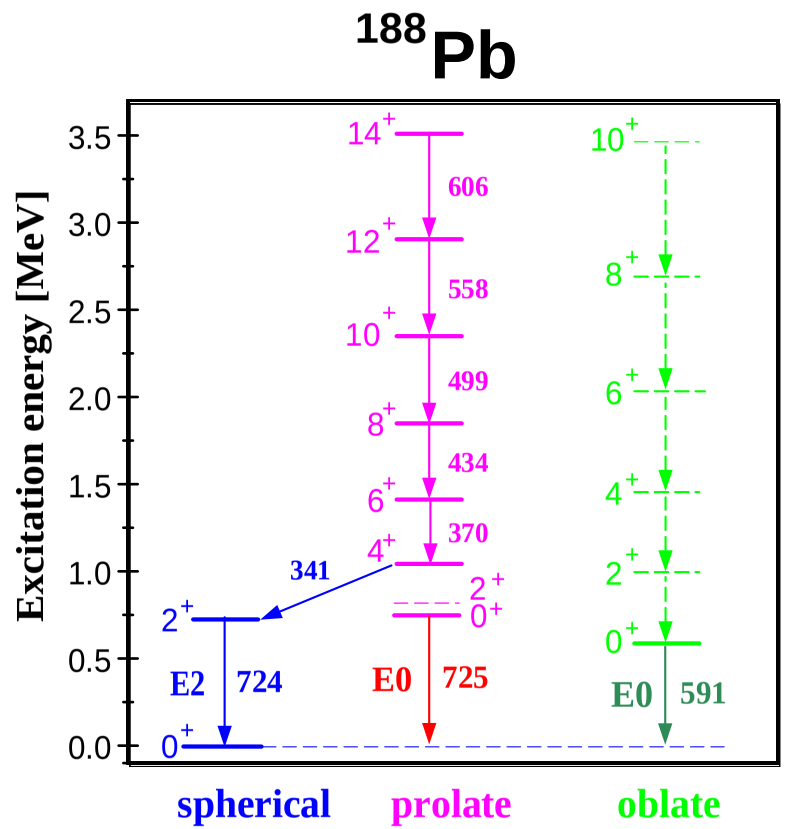
Efficiency 3×1.5%= 4.5%

Transmission window:



Experimental results





J. Heese et al.
Phys. Lett. B302 (1993)

Y. Le Coz et al.
EPJ dir. A3, 1-6 (1999)

Results

- Spin-parity of the prolate states measured
- E0 decay from 2 excited 0^+ states observed

0_2^+ @ 591(2) KeV : oblate band head

0_3^+ @ 725(2) KeV :

Rotational structure has been interpreted as a prolate deformed structure (Hosse et al.)

$E^*_{0_3^+}$ (VMI)$\sim$ 710 keV

- 2-level mixing calculations :

Neglecting Obl.-Prol. interaction :

$$\text{mixing } \alpha^2_{Prol.-Sph.} \sim 2\%$$

Neglecting Obl.-Sph. interaction :

$$\text{mixing } \alpha^2_{Prol.-Obl.} \sim 11\%$$

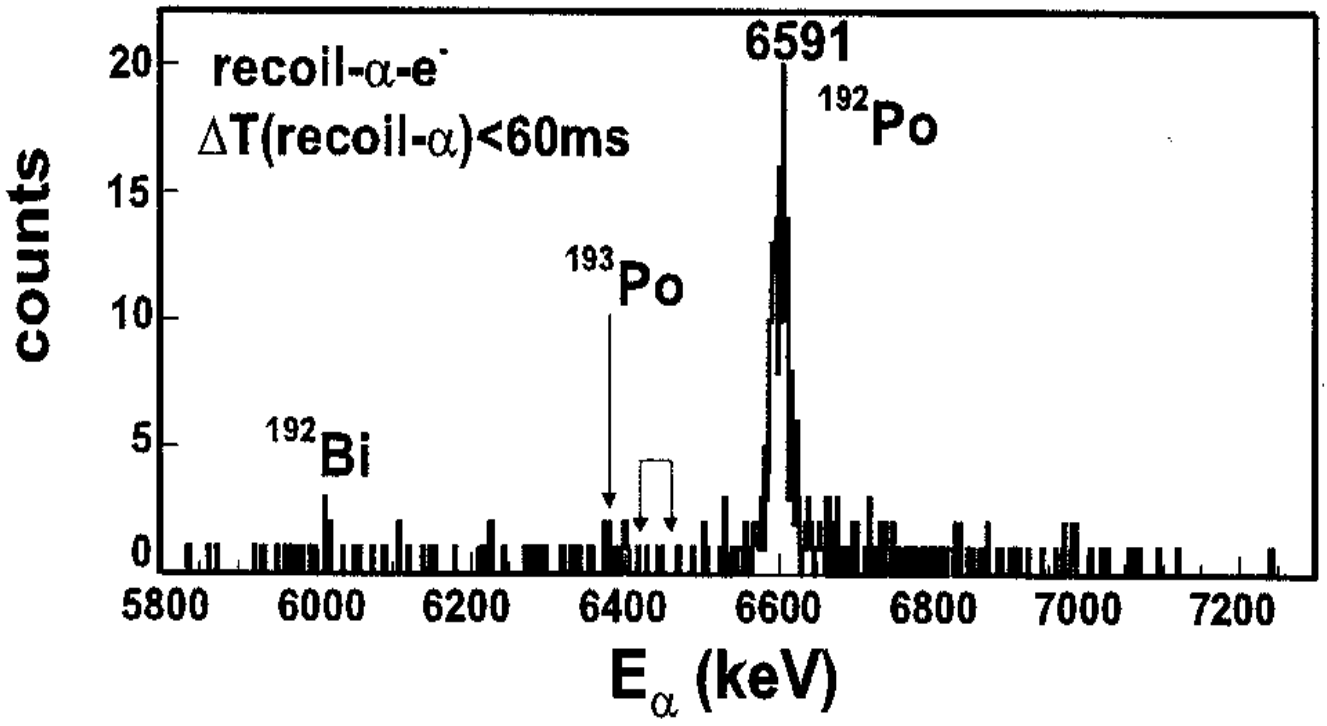
$\rightarrow$ full 3-level mixing calculation needed

$\downarrow$

Excitation energy of the unperturbed 0_2^+ state ?

Last results on ^{188}Pb…

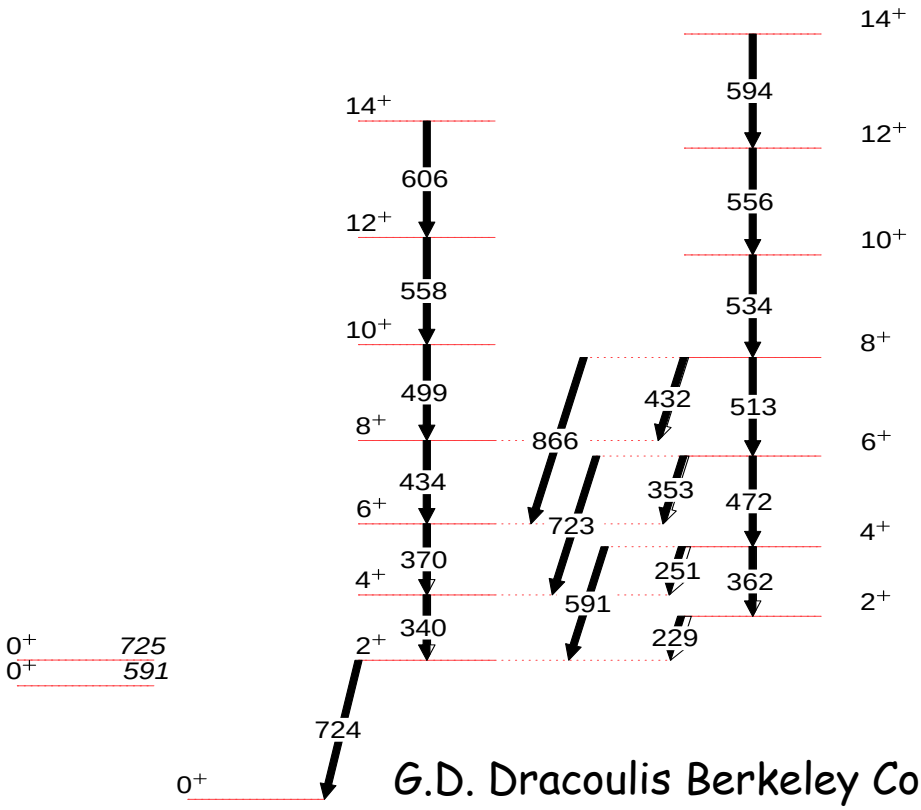
α spectroscopy of ^{192}Po at SHIP



K. Van de Vel (private communication)

- 591 keV confirmed
- 725 keV not observed …

Last results on ^{188}Pb…



Oblate band !

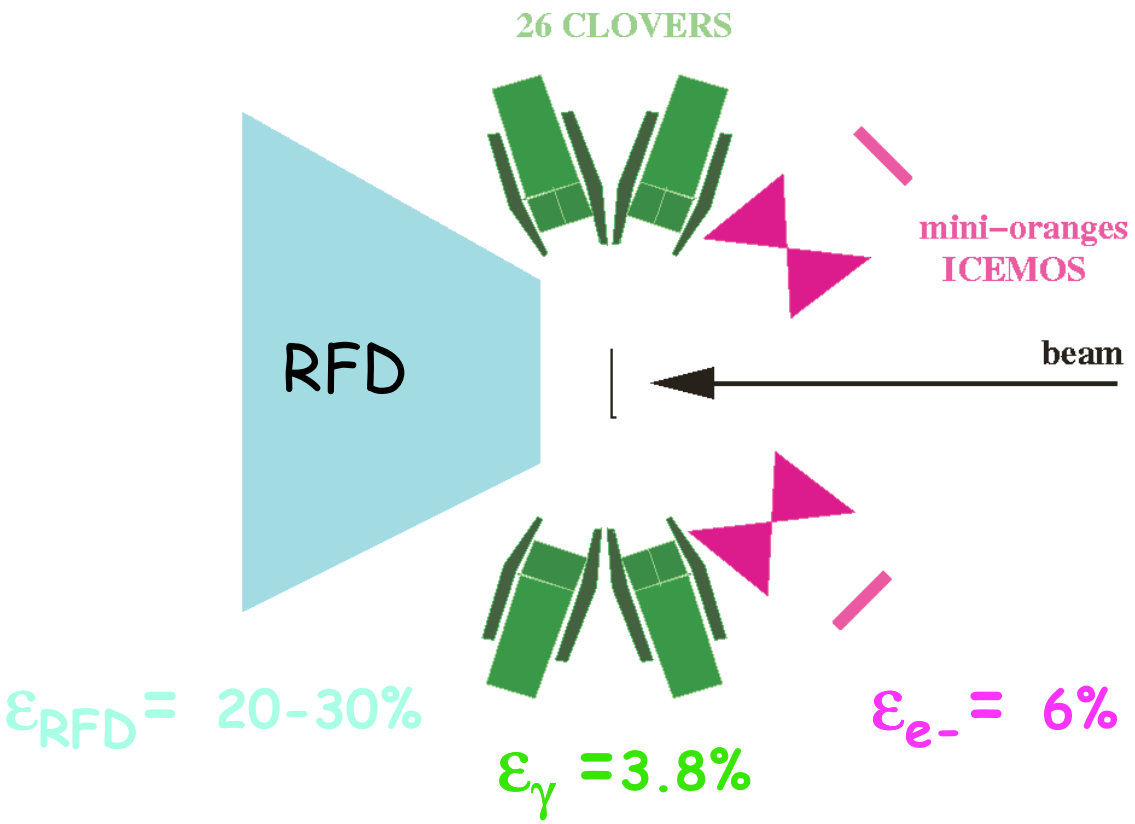
G.D. Dracoulis Berkeley Conference 2002

Electron-γ experiment CRUCIAL:

- **to confirm our result (or not…)**
- **to assign spin-parity for the oblate band**
- **to extract ρ(E0, J→J) and B(E2, J→J) values**

First unambiguous proof of triple shape coexistence in Pb

Electron-γ spectroscopy
How, where, when?



Ires Strasbourg?

Icemos available
Clovers available (before Legnaro)?
RFD available?
Electronics? Acquisition?