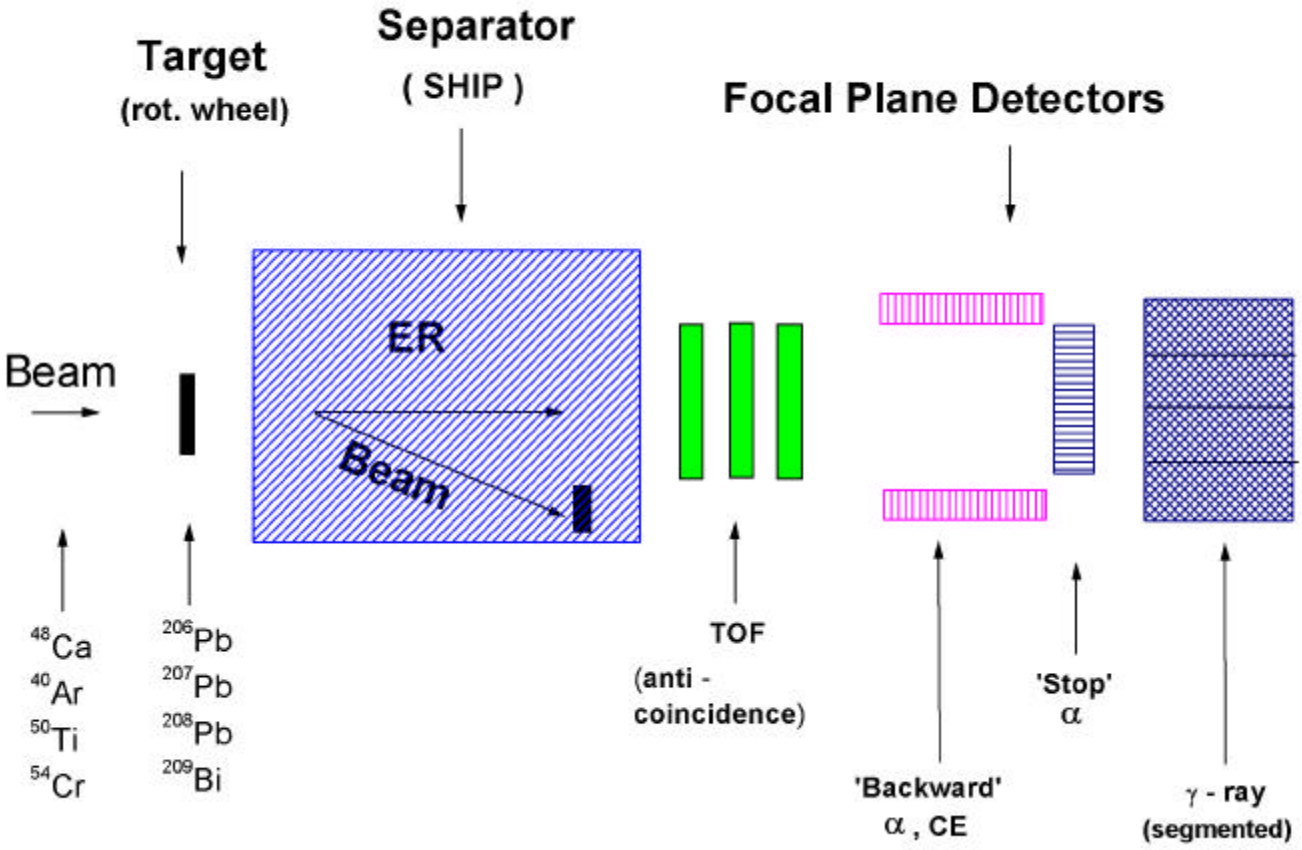

Target
(rot. wheel)
Separator
(SHIP)
Focal Plane Detectors
Beam
ER
Beam
^{48}Ca
^{40}Ar
^{50}Ti
^{54}Cr
^{206}Pb
^{207}Pb
^{208}Pb
^{209}Bi
TOF
(anti - coincidence)
'Backward'
α , CE
'Stop'
α
γ - ray
(segmented)

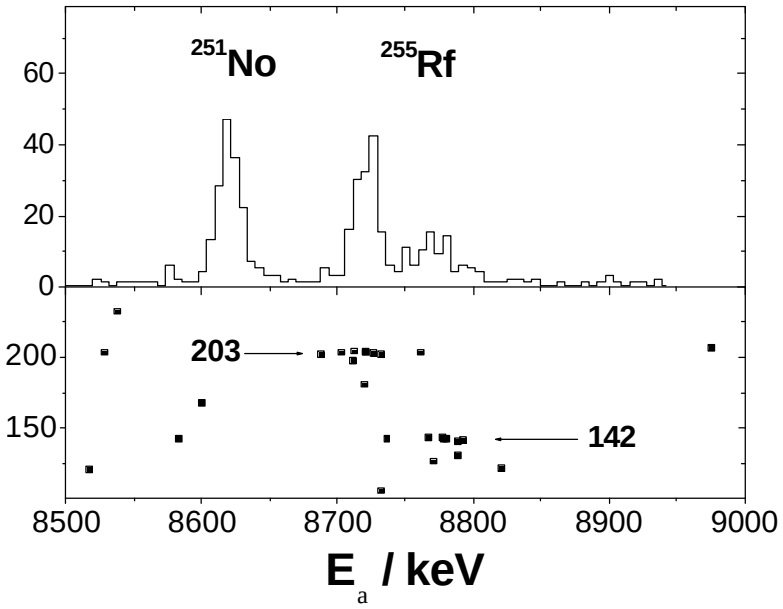
Decay Properties of ^{255}Rf

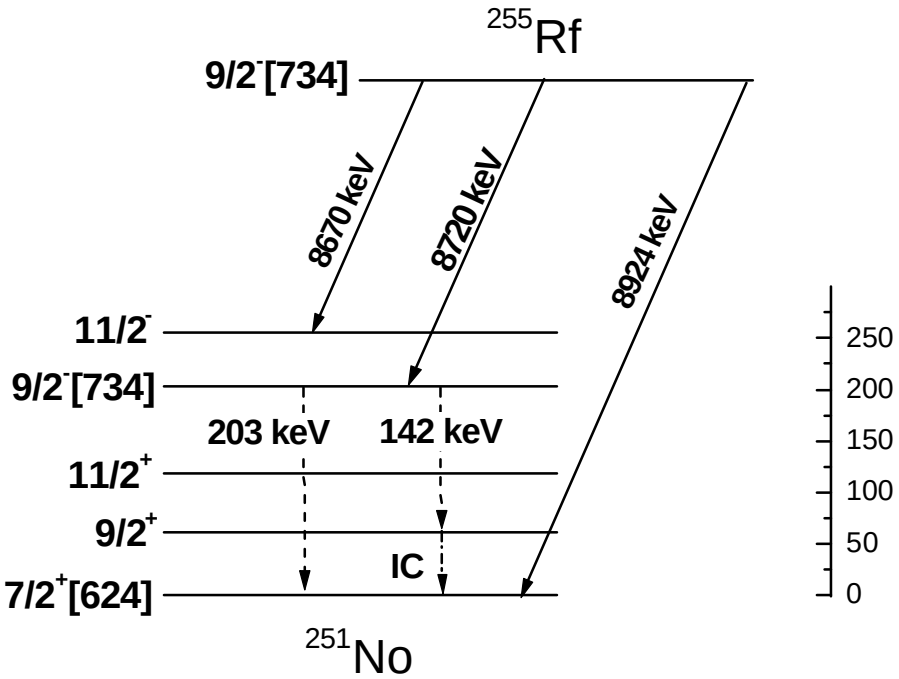
Plans: ® **improve statistics**

® **observe** g**- decay into 11/2$^+$ - member of gs band**

® **clearly observe gs ® gs** a **- transition**

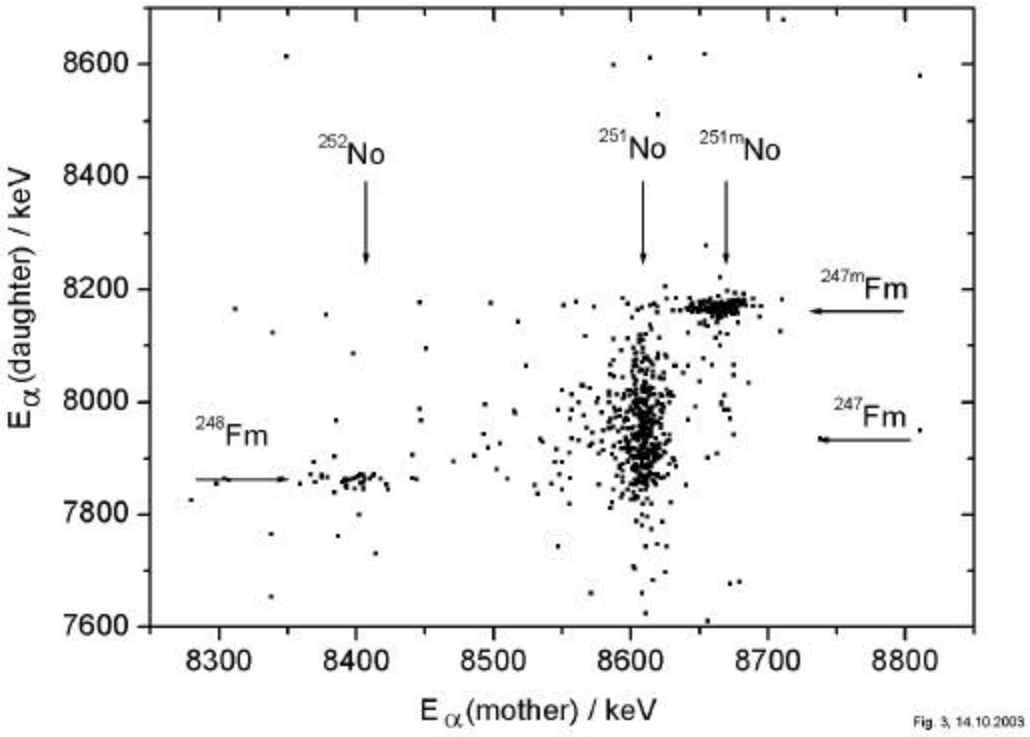
® **clearly observe** a**-decay into 11/2$^-$ - level**





Decay of ^{251}No

Reaction: ^{48}Ca (^{206}Pb, 3n) ^{251}No



a - a **- correlations :**

® **E_a(11) = 8608 keV $T_{1/2}$(1) = 0.78 s // E_a(12) = (7800-8130) keV $T_{1/2}$(2) = 29 s**

(also observed previous in decay studies of ^{255}Rf)

assignment: ^{251}No ¾ a ® ^{247}Fm ¾ a ®

® **E_a(21) = 8665 keV $T_{1/2}$(1) = 0.93 s // E_a(22) = (8170) keV $T_{1/2}$(2) = 4.3 s**

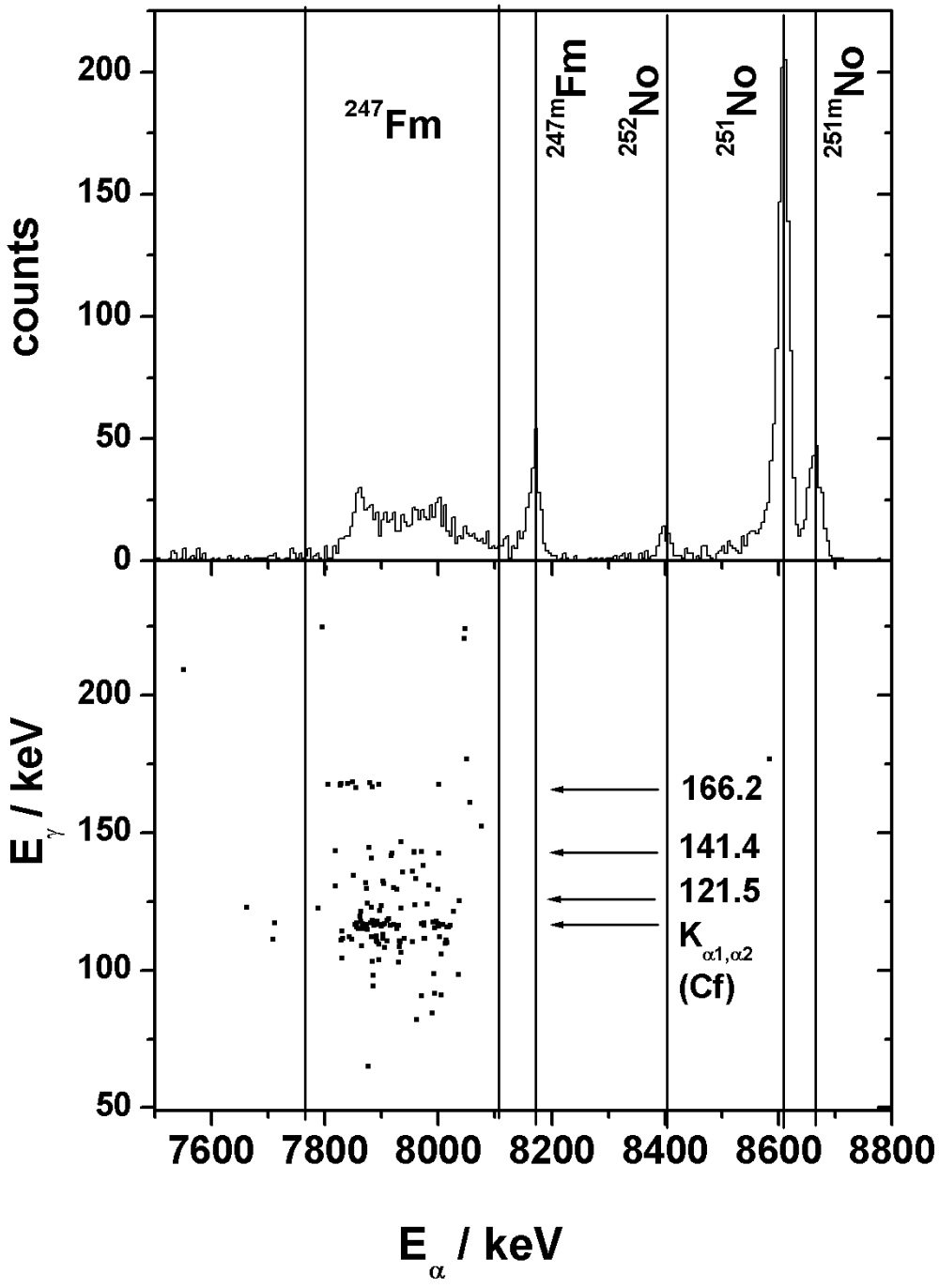
(not observed in previous decay studies of ^{255}Rf)

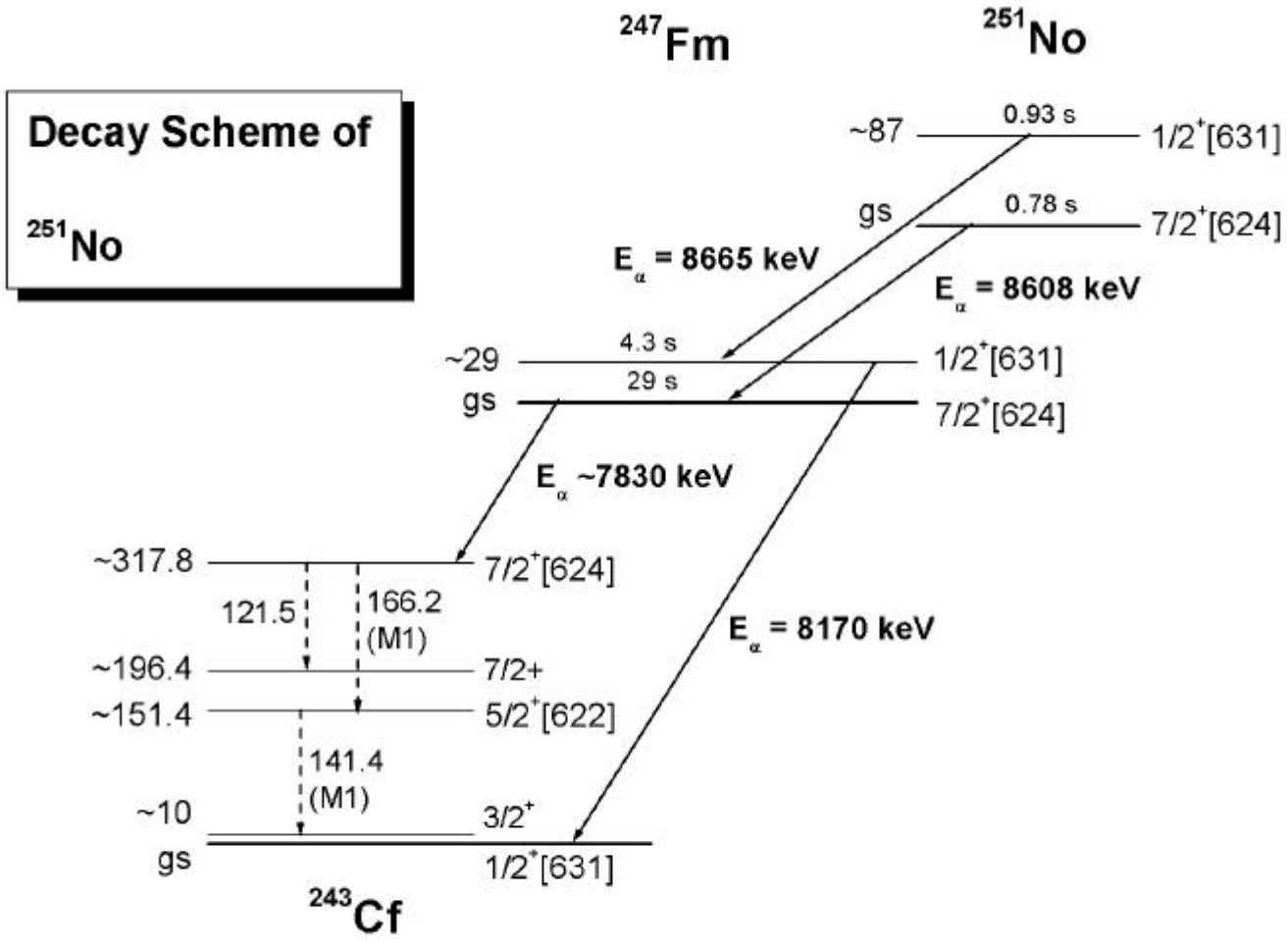
but: Ghiorso (1967): ^{12}C + ^{244}Cm, E_a = 8.68 MeV ® ^{251}No
Flerov (1967): ^{12}C + ^{239}Pu, E_a = 8.18 MeV, $T_{1/2}$ = 9 s ® ^{247m}Fm

assignment: ^{251m}No ¾ a ® ^{247m}Fm ¾ a ®

a - and a -g - coincidence measurements in the reaction ^{48}Ca + ^{206}Pb at E = 4.8 AMeV

- g-lines of 166.2, 141.4, 121.5 keV and $K_{a1,a2,b1}$ –x-rays observed in coincidence with a-decays (7.8-8.05) MeV (^{247}Fm)
- no g-lines observed in coincidence with a-decays of $^{251,251m}No$, ^{247m}Fm




Decay Scheme of
251No
247Fm
251No
~87
0.93 s
1/2+[631]
gs
0.78 s
7/2+[624]
Eα = 8665 keV
Eα = 8608 keV
~29
4.3 s
1/2+[631]
gs
29 s
7/2+[624]
Eα ~7830 keV
~317.8
7/2+[624]
121.5
166.2
(M1)
Eα = 8170 keV
~196.4
7/2+
~151.4
5/2+[622]
141.4
(M1)
~10
3/2+
gs
1/2+[631]
243Cf

Systematics of Nilsson levels in N = 149 isotones