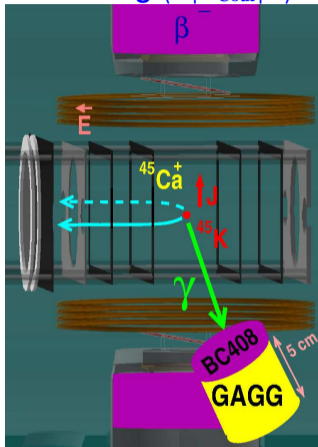




Measuring $\langle F | V_{\text{Coul}} | A \rangle$



Not yet β asymmetry to determine $1/2, 3/2, 5/2^+$

- $A_{\text{recoil}} \propto A_{\beta} + B_{\nu}$ $A_{\text{recoil}} \stackrel{p_{\text{recoil}} \gg m_{\beta}}{=} 5/8(A_{\beta} + B_{\nu})$
S. Treiman Phys Rev 1958

- So $A_{\text{recoil}} = 0$ for pure Gamow-Teller

$$A_{\text{recoil}} = 2\sqrt{\frac{J}{J+1}} G_V M_V / G_A M_A \text{ linear in } M_V / M_A$$

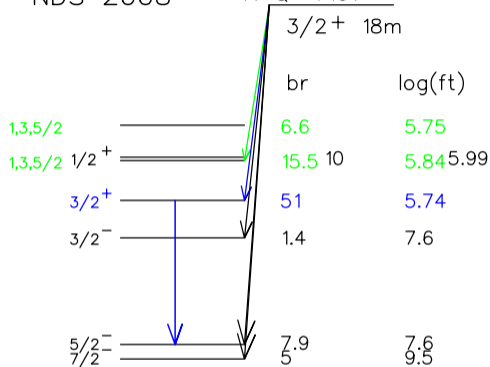
- Recoil- γ coincidences to select antianalog?

| | ^{47}K | ^{45}K |
|--|-----------------|-----------------|
| $t_{1/2}$ | 18 s | 18 m |
| ISAC Yield UC _x | 7e6/s | 2e7/s |
| N atoms (trap 10 s) | 40,000 | 100,000 |
| Decay rate | 1000/s | 50/s |
| with $\epsilon_{\beta}=2\%$ | 20/s | 1/s |
| $\epsilon_{\text{ion}}=0.5$ $^{47}\text{Ca}^+$ | 500/s | 25/s |
| e^- - $\text{Ca}^{+2}\dots$ | 40/s | 0.2/s |
| γ - Ca^+ , $\epsilon_{\gamma}=0.5\%$ photopeak | 5/s | 0.25/s |
| A_{recoil} with e^- - $\text{Ca}^{+2}\dots$, $\sigma = 0.01$ | 2 hr | 40 hr |
| with γ - $\text{Ca}^{+1}\dots$ | 16 hr | too long |

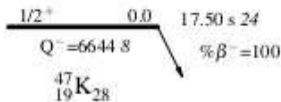
 **Some $^{45,47}\text{K}$ details**

NDS 2008

^{45}K $Q=4197$

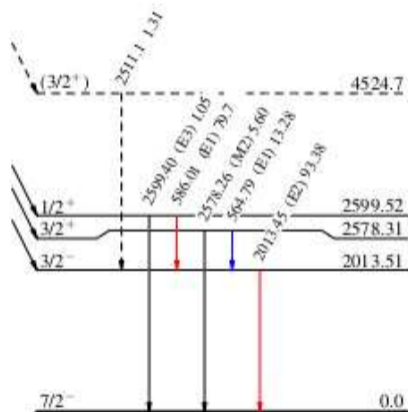


**51% branch to $3/2^+$ state in ^{45}Ca .
 Could have a large 'antianalog' component,
 $\langle F | V_{\text{coul}} | A \rangle \sim 5$ to 50 keV ?**



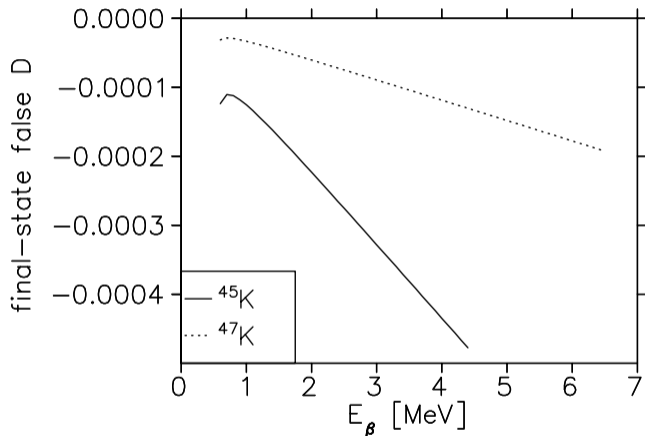
| $ \beta^- $ | $\text{Log } ft$ |
|-------------|------------------|
| 1.18 | 5.4 |

| | |
|------|------|
| 79.8 | 4.82 |
| 18.7 | 5.46 |
| <2.0 | >6.7 |



$^{47}\text{Ca}_{27}$

Final-state (false) D



For ^{56}Co final-state $E_1=0.0002$ (Calaprice 1977)

Holstein PRC 5 1529 (1972)

- Assumes weak magnetism b and induced tensor d are single-particle values, not suppressed like $M_A \Rightarrow$ Should be an upper limit
- Needs a calculation, but should be OK