

<sup>254</sup>No  $\alpha$  decay

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Y. Akaoli	NDS 94,131 (2001)	1-Aug-2001

Parent: <sup>254</sup>No: E=0.0; J <sup>$\pi$</sup> =0<sup>+</sup>; T<sub>1/2</sub>=51 s 10; Q( $\alpha$ )=8226 13; % $\alpha$  decay=90 4

<sup>250</sup>Fm Levels

E(level)	J <sup><math>\pi</math></sup>	Comments
0.0 <sup>†</sup>	0 <sup>+</sup>	
(44 <sup>†</sup> 5)	2 <sup>+</sup>	E(level): from systematics of 2 <sup>+</sup> levels.

<sup>†</sup> Band(A): K=0<sup>+</sup> g.s. band.

$\alpha$  radiations

E $\alpha$	E(level)	HF	Comments
(8050 15)	(44)		E $\alpha$ : this $\alpha$ transition to the expected 2 <sup>+</sup> state has not been observed. E $\alpha$ (to 44 level)=8050 15 is from E $\alpha$ (to g.s.) and E(2 <sup>+</sup> level)=44 5 which is obtained from systematics of 2 <sup>+</sup> levels. I $\alpha$ : calculations by assuming that Hf(8050 $\alpha$ to 2 <sup>+</sup> )=4.5 10, which is extrapolated from Hf(8402 $\alpha$ from <sup>256</sup> No to 2 <sup>+</sup> state In <sup>252</sup> Fm)=4.8 8, give I $\alpha$ =14 4. A similar trend to HF's for $\alpha$ 's from <sup>254</sup> Fm and <sup>252</sup> Fm nuclei is assumed In this extrapolation.
8093 13	0.0	1.0	E $\alpha$ : the measured energies are E $\alpha$ (to g.s.)=8100 20 (1967Gh01), 8110 30 (1967Mi03), 8086 20 (1985He22). These energies were used In the mass adjustment by 1995Au04, and Q( $\alpha$ )( <sup>254</sup> No)=8226 13 is recommended. E $\alpha$ (to g.s.)=8093 13 is calculated from this Q( $\alpha$ ). Earlier measurement: E $\alpha$ =8100 50 (1966Za04). I $\alpha$ : since only one $\alpha$ has been observed, No I $\alpha$ is adopted here. From the arguments given below, one May deduce I $\alpha$ (8093 $\alpha$ )=80 5 per 100 $\alpha$ decays: by assuming that I $\alpha$ 's of the expected weaker $\alpha$ transitions to higher-energy levels would Be within the uncertainties of I $\alpha$ (to g.s.) and I $\alpha$ (to 2 <sup>+</sup> state), I $\alpha$ (8093 $\alpha$ ) May Be deduced from I $\alpha$ (to g.s.)+I $\alpha$ (to 44 level)=100 and relative hindrance factors. Hf( $\alpha$ to 44 level)/Hf( $\alpha$ to g.s.)=4.5 10 yields I $\alpha$ (to g.s.)=86 4 per 100 $\alpha$ decays. one can estimate I $\alpha$ (8093 $\alpha$ ) also from the systematics of r <sub>0</sub> values (see 1998Ak04) which suggests r <sub>0</sub> =1.460 10; I $\alpha$ (8093 $\alpha$ )=75 5 is obtained for r <sub>0</sub> ( <sup>250</sup> Fm)=1.460 10, In agreement with I $\alpha$ (8093 $\alpha$ )=86 4 obtained from Hf( $\alpha$ to 44 level)=4.5 10. Unweighted average these two is I $\alpha$ (8093 $\alpha$ )=80 5.

${}^{254}\text{No}$   $\alpha$  decay**Band(A): K=0<sup>+</sup> g.s. band**2<sup>+</sup>                      440<sup>+</sup>                      0.0 ${}^{250}_{100}\text{Fm}_{150}$