

<sup>262</sup>Db  $\alpha$  decay (33.8 s) 2014Ha04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 144, 297 (2017)	25-Aug-2017

Parent: <sup>262</sup>Db: E=0.0; T<sub>1/2</sub>=33.8 s +44-35; Q( $\alpha$ )=9050 SY; % $\alpha$  decay=48 4

<sup>262</sup>Db-Q( $\alpha$ ): 9050 100 (syst,2017Wa10).

<sup>262</sup>Db-T<sub>1/2</sub>: From average decay time of 76  $\alpha$ - $\alpha$  correlated events (2014Ha04, earlier values deduced from fewer events: 39 s +53-14 in 2012Mo25, 24 s +14-7 in 2009Mo12, 14 s +26-10 in 2007Mo43, 28 s +140-13 in 2004Mo42). Other half-life measurements: 27 s +20-11 (1999Dr09,  $\alpha$  decay); 35.7 s +69-54 (1992Sc30); 35.3 s 123 (1989Kr17, correlated  $\alpha$  decays); 33.5 s 94 (1989Kr17, SF decay); 28 s +7-5 and 32 s +8-6 (1988Gr30,  $\alpha$  and SF decays); 35.2 s +104-72 (1979Dr07, SF decay); 32.6 s 65 (1977Be43, SF decay); 34.1 s 46 (1977Be43,  $\alpha$  decay); 40 s 10 (1971Gh01). Weighted average of all the independent values is 34.4 s +44-35 (assigning the lowest uncertainty in the data points), however the most precise value from 2014Ha04 is preferred here. In 2001Ak11 evaluation, T<sub>1/2</sub>=35 s 5.

<sup>262</sup>Db-% $\alpha$  decay: %SF=52 4 (2014Ha04), thus % $\alpha$ =48 4; no  $\epsilon$  decay from <sup>262</sup>Db was observed. Others: % $\alpha$ =49 10 (1989Kr17),  $\approx$ 67 (1977BeZM).

2014Ha04: <sup>262</sup>Db was produced in <sup>248</sup>Cm(<sup>19</sup>F,5n),E=97.4,103.1 MeV at the RILAC-RIKEN facility. The evaporation residues (EVR) were separated in flight from beam particles and majority of nuclear transfer products by the gas-filled recoil ion separator (GARIS), and transported to the rotating wheel apparatus MANON (Measurement system for Alpha-particle and spontaneous fission events ON-line). Measured time-correlated  $\alpha$ - $\alpha$  and  $\alpha$ -SF events in E $\alpha$ =8-9 MeV range and SF fragment in  $\geq$ 30 MeV using Si PIN photodiodes.

1977BeZM: measured E $\alpha$ , I $\alpha$ , T<sub>1/2</sub>.

1971Gh01:  $\alpha$  spectrum taken by 1971Gh01 had complex activities. Two  $\alpha$  peaks at 8.45 MeV and 8.66 MeV were detected with intensities of  $\approx$ 80% and  $\approx$ 20%, respectively. The 8.66-MeV  $\alpha$  was masked by  $\alpha$  peaks from <sup>258</sup>Lr decay.

<sup>258</sup>Lr Levels

E(level)	T <sub>1/2</sub>	Comments
0	3.92 s 33	T <sub>1/2</sub> : from <sup>258</sup> Lr Adopted Levels.
0+x		E(level): x=235 105 from From Q( $\alpha$ )( <sup>262</sup> Db)=9050 100 (syst,2017Wa10) and E $\alpha$ =8680 30.
153+x? 35		
224+x 50		

$\alpha$  radiations

E $\alpha$ <sup>†</sup>	E(level)	I $\alpha$ <sup>†#</sup>	HF <sup>‡</sup>	Comments
8460 40	224+x	70 5	$\approx$ 2.1	E $\alpha$ : average of 52 $\alpha$ energy values between 8.30-8.55 MeV energy range. Others: 8450 20 (1977BeZM), 8450 (1971Gh01). I $\alpha$ : others: 75 (1977BeZM), 80 (1971Gh01).
8530 <sup>@</sup> 20	153+x?			E $\alpha$ : this $\alpha$ group from 1977BeZM only, not identified clearly by 2014Ha04, even though in 1977BeZM this $\alpha$ is claimed as stronger than the 8670 $\alpha$ which was observed clearly by 2014Ha04. This $\alpha$ branch is also questioned by 1989Kr17. I $\alpha$ ,HF: 16 (1977BeZM), hindrance factor $\approx$ 25.
8680 30	0+x	30 5	$\approx$ 130	E $\alpha$ : average of 23 $\alpha$ energy values between 8.61-8.77 MeV energy range (2014Ha04). Other measured E $\alpha$ =8670 20 (1977BeZM), 8660 (1971Gh01). I $\alpha$ : others: 9 (1977BeZM), 20 (1971Gh01).

<sup>†</sup> From measurement by 2014Ha04.

<sup>‡</sup> r<sub>0</sub>(<sup>258</sup>Lr)=1.46 3, estimated value from extrapolation of known r<sub>0</sub> values for A=150-158 No, Rf and Sg isotopes.

<sup>#</sup> For absolute intensity per 100 decays, multiply by 0.48 4.

<sup>@</sup> Existence of this branch is questionable.