

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli		NDS 114, 1041 (2013)	1-Mar-2012

S(n)=8362 SY; S(p)=1303 SY; Q(α)=9206 20 [2012Wa38](#) $\Delta S(n)=314$, $\Delta S(p)=204$ ([2012Wa38](#)).**Additional information 1.**

Calculations, compilations:

Calculated $T_{1/2}$: [2012Po01](#), [2011Qi12](#), [2011He12](#), [2010Do08](#), [2010Sa36](#), [2010Si27](#).Favored α decay: [1993Bu09](#).g.s. properties: [1997Mo25](#), [1995Mo29](#).Calculated $Q(\alpha)$: [2011Sa40](#), [2010Ad19](#), [2009Do22](#), [2008Do12](#), [2008Ro06](#), [2007Zh41](#).Single-particle Nilsson levels: [2004Pa40](#), [2004HeZZ](#), [1994Cw02](#).[1994Cw02](#) calculate the following single-particle Nilsson level sequence: g.s., 9/2[624]; 0.23 MeV, 7/2[514]; 0.29 MeV, 5/2[512]; 0.46 MeV, 1/2[521].Spontaneous fission: [2004Pe23](#).Assignment: $^{209}\text{Bi}(^{50}\text{Ti},2n)$, parent of ^{253}Lr ([1985He22](#), [1986He28](#), [2001He35](#), [2008Ga25](#)), measured σ ([2012Ca06](#), [2005Zu02](#), [2004Ad32](#)). $^{236}\text{U}(^{27}\text{Al},6n)$, parent of ^{253}Lr ([1992An16](#)).The 5-s activity assigned to ^{257}Db by [1976Og02](#) was reassigned to ^{258}Rf and ^{258}Db by [1986He28](#). **^{257}Db Levels****Cross Reference (XREF) Flags**[A](#) ^{261}Bh α decay

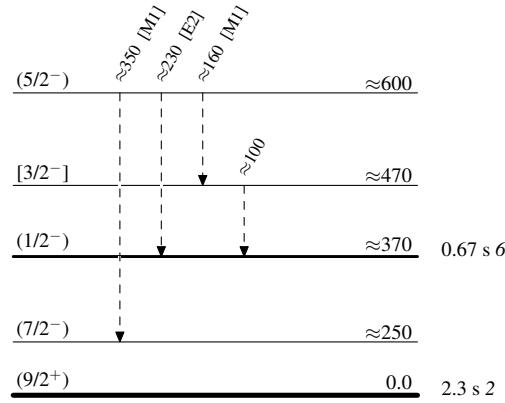
E(level)	J $^\pi$	T $_{1/2}$	XREF	Comments
0.0 [†]	(9/2 $^+$)	2.3 s 2	A	% α \geq 94; %SF \leq 6 J $^\pi$: Predicted configuration=9/2 $^+$ [624]. T $_{1/2}$: From 2009He20 . % α ,%SF: From 2001He35 . Emitted alpha particles: 9063 keV 20, 8956 keV 20 (2010He11); 9066 keV 20, 8965 keV 20, 8874 keV 20? (2009He20); 9074 keV 10, 8967 keV 15 (2001He35). Others: 1999He07 , 1986He28 , 1985He22 .
\approx 250	(7/2 $^-$)		A	J $^\pi$: Predicted configuration=7/2 $^-$ [514].
\approx 370	(1/2 $^-$)	0.67 s 6	A	E(level): E γ =225.3 keV observed in $\alpha\gamma$ coin measurement (2010He11). % α \geq 87; %SF \leq 13 % α ,%SF: From 2001He35 . J $^\pi$: Predicted configuration= 1/2 $^-$ [521]. T $_{1/2}$: From 2009He20 . See ^{261}Bh α decay for other values. Emitted alpha particles: 9168 keV 20 (2010He11); 9155 keV 20 (2009He20); 9163 keV 10 (2001He35). Others: 1999He07 , 1986He28 , 1985He22 .
\approx 470	[3/2 $^-$]		A	J $^\pi$: Expected 3/2 member of 1/2 $^-$ [521] rotational band.
\approx 600	(5/2 $^-$)		A	J $^\pi$: Predicted configuration=5/2 $^-$ [512]. Emitted alpha particles: 10000 keV (I α =100%) (2010He11).

[†] % α , %SF, % ε +% β^+ : [1999He11](#), [2001He35](#) determined %SF \leq 6 for presumably combined decay of two isomers. [1985He22](#), [1986He28](#), [2000Ho27](#) determined % α =83 11 and %SF=17 11 for the combined decay of the 2.3 s and 0.67 s isomers. %SF \approx 20 ([1976Og02](#)) From log $f_t \approx$ 6 and $Q(\varepsilon) \approx$ 4500 T $_{1/2}$ (ε + β^+) \approx 200 s. Therefore, % ε +% β^+ is expected to be small.

Adopted Levels, Gammas (continued) $\gamma(^{257}\text{Db})$

E _i (level)	J ^π _i	E _γ	E _f	J ^π _f	Mult.
≈470	[3/2 ⁻]	(≈100)	≈370	(1/2 ⁻)	
≈600	(5/2 ⁻)	(≈160)	≈470	[3/2 ⁻]	[M1]
		(≈230)	≈370	(1/2 ⁻)	[E2]
		(≈350)	≈250	(7/2 ⁻)	[M1]

Legend

Adopted Levels, Gammas**Level Scheme**- - - - - ► γ Decay (Uncertain) $^{257}_{105}\text{Db}_{152}$