

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](#)

ΔS(n)=314, ΔS(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(α): [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: ²⁰⁹Bi(⁵⁰Ti,2n), parent of ²⁵³Lr ([1985He22](#),[1986He28](#),[2001He35](#),[2008Ga25](#)), measured σ ([2012Ca06](#),[2005Zu02](#),[2004Ad32](#)). ²³⁶U(²⁷Al,6n), parent of ²⁵³Lr ([1992An16](#)).

The 5-s activity assigned to ²⁵⁷Db by [1976Og02](#) was reassigned to ²⁵⁸Rf and ²⁵⁸Db by [1986He28](#).

²⁵⁷Db Levels

Cross Reference (XREF) Flags

A ²⁶¹Bh α decay

E(level)	J ^π	T _{1/2}	XREF	Comments
0.0 [†]	(9/2 ⁺)	2.3 s 2	A	%α≥94; %SF≤6 J ^π : 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 .
≈250	(7/2 ⁻)		A	J ^π : Predicted configuration=7/2 ⁻ [514]. E(level): E _γ =225.3 keV observed in αγ coin measurement (2010He11).
≈370	(1/2 ⁻)	0.67 s 6	A	%α≥87; %SF≤13 %α,%SF: From 2001He35 . J ^π : 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 .
≈470	[3/2 ⁻]		A	J ^π : Expected 3/2 member of 1/2 ⁻ [521] rotational band.
≈600	(5/2 ⁻)		A	J ^π : Predicted configuration=5/2 ⁻ [512]. Emitted alpha particles: 10000 keV (Iα=100%)(2010He11).

[†] %α, %SF, %ε+%β⁺: [1999He11](#), [2001He35](#) determined %SF≤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≈20 ([1976Og02](#)) From log ft≈6 and Q(ε)≈4500 T_{1/2}(ε+β⁺)≈200 s. Therefore, %ε+%β⁺ is expected to be small.

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

$E_i(\text{level})$	J_i^π	E_γ	E_f	J_f^π	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]

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Legend

Level Scheme-----► γ Decay (Uncertain)