

²⁶¹Bh α decay 2010He11

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

Parent: ²⁶¹Bh: E=0.0; J ^{π} =(5/2⁻); T_{1/2}=11.8 ms +39-24; Q(α)=10502 50; % α decay=?

²⁶¹Bh-Q(α): From 2011AuZZ.

²⁶¹Bh-J ^{π} : Predicted configuration=5/2⁻ [512].

²⁶¹Bh-T_{1/2}: From 2010He11.

Additional information 1.

²⁶¹Bh produced by the ²⁰⁹Bi(⁵⁴Cr,2n), E=271 MeV, nuclear reaction bombarding targets on a rotating wheel. Evaporation residues were detected with position-sensitive silicon detectors, alpha particles with silicon detectors, and γ rays with a germanium clover detector of four crystals. Measured E γ , x rays, $\alpha\gamma$ coin, half-lives, alpha-decay branching ratios. Detected Db K x ray at 136.5-, 138.5-, and a γ ray at 225.3 keV in $\alpha\gamma$ coin measurements. No evidence for an isomer in ²⁶¹Bh was found.

²⁵⁷Db Levels

E(level)	J ^{π}	T _{1/2}	Comments
0.0	(9/2 ⁺)	2.3 s 2	J ^{π} : Predicted configuration=9/2 ⁺ [624]. T _{1/2} : From 2009He20. Other values: 1.5 s +9-4 (2010He11); 1.82 s +27-21 (2008Ga25); 1.50 s +19-15 (2001He35); Others: 1999He11, 1989Mu09.
≈250	(7/2 ⁻)		J ^{π} : Predicted configuration=7/2 ⁻ [514].
≈370	(1/2 ⁻)	0.67 s 6	J ^{π} : Predicted configuration=1/2 ⁻ [521]. T _{1/2} : From 2009He20. Other values: 0.36 s +22-9 (2010He11); 0.58 s +13-9 (2008Ga25); 0.76 s +15-11 (2001He35). E(level): Based on EL(5/2 ⁻)≈600 keV and EL(5/2 ⁻) - EL(1/2 ⁻)≈230 keV, using an estimated 70 keV for E(cc) of the 470-keV (3/2 ⁻) to 370- keV (1/2 ⁻) expected γ -ray transition.
≈470	(3/2 ⁻)		E(level): Predicted from theory: 3/2 member of 1/2 ⁻ [521] rotational band.
≈600	(5/2 ⁻)		J ^{π} : Predicted configuration=5/2 ⁻ [512]. E(level): Estimated from Q(α)=10502 keV (2011AuZZ) and E α =9900-10400 keV to this level.

α radiations

E α	E(level)	I α
≈10.0×10 ³	≈600	100

γ (²⁵⁷Db)

E γ	E _f (level)	J _i ^{π}	E _f	J _f ^{π}	Mult.	Comments
(≈100)	≈470	(3/2 ⁻)	≈370	(1/2 ⁻)	[M1]	
(≈160)	≈600	(5/2 ⁻)	≈470	(3/2 ⁻)	[M1]	
(≈230)	≈600	(5/2 ⁻)	≈370	(1/2 ⁻)	[E2]	
(≈250)	≈250	(7/2 ⁻)	0.0	(9/2 ⁺)	(E1)	E γ : E γ =225.3 keV observed in $\alpha\gamma$ coin measurement may be transition from 7/2 ⁻ to 9/2 ⁺ . E γ ≈250 keV used here.
(≈350)	≈600	(5/2 ⁻)	≈250	(7/2 ⁻)	[M1]	

^{261}Bh α decay $^{2010}\text{He11}$

Legend

Decay Scheme

-----> γ Decay (Uncertain)

