

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 110,265 (2009)	15-Nov-2008

$Q(\beta^-)=1404.5$; $S(n)=6792.6$; $S(p)=6656.12$; $Q(\alpha)=8.3\times 10^2.5$ [2012Wa38](#)

Note: Current evaluation has used the following Q record 1408 56792 5 6655 11 830 50 [2003Au03](#).

For hfs data and isotope shift data, see [1998Ge13](#).

 ^{179}Lu LevelsCross Reference (XREF) Flags

A ^{179}Yb β^- decay
B $^{180}\text{Hf}(t,\alpha)$

E(level) [†]	J^π [‡]	$T_{1/2}$	XREF	Comments
0.0 ^c	7/2 ⁺	4.59 h 6	AB	$\% \beta^- = 100$ $\mu = 2.375.12$ (1998Ge13); $Q = 3.32.3$ (1998Ge13) $\Delta \langle r^2 \rangle (^{170}\text{Lu}, ^{179}\text{Lu}) = +0.586$ (1998Ge13); 10% general calibration uncertainty, negligible statistical uncertainty. $\langle r^2 \rangle^{1/2}(\text{charge}) = 5.39.3$ (2004An14). μ, Q : from collinear fast beam laser spectroscopy (1998Ge13). $T_{1/2}$: from 1963St06 . Others: 1961Ku10 (7.5 h 5; isotopic assignment seems questionable), 1951Bu25 (5 h), 1950Bu07 (8 h). J^π : $J=7/2$ from collinear fast beam laser spectroscopy (1998Ge13); π from $L(t,\alpha)=4$. Consistent with β^- decay to $J=9/2$ and $7/2$ and $5/2$ states in ^{179}Hf and with π for ^{175}Lu and ^{177}Lu .
35 ^b 5	(9/2 ⁻)		B	$T_{1/2} \geq 0.2$ ns expected based on RUL for 35 keV E1 deexcitation to g.s.
123 ^c 2	(9/2 ⁺)		B	J^π : continuation of band based on $J^\pi=7/2^+$ level.
186 ^b 1	(11/2 ⁻)		B	J^π : $L(t,\alpha)=5$; band assignment in (t,α) .
273 ^c 2	(11/2 ⁺)		B	
357 ^b 2	(13/2 ⁻)		B	
592.4 ^a 4	1/2 ⁺	3.1 ms 9	AB	$\%IT=100$ J^π : $M3\ 592\gamma$ to $7/2^+$; $\log ft=6.1$, $\log f^{1u}t < 8.5$ from $(1/2^-)$ in β^- decay. $T_{1/2}$: from ^{179}Yb β^- decay. $E=593.2$ state reported in (t,α) may be a doublet comprised of this level and the unresolved $3/2^+$ member of the $1/2[411]$ band (1992Bu12). J^π : 593 level in (t,α) is a possible doublet (see comment on 592 level); $L(t,\alpha)=2$, which dominates, cannot correspond to $J=1/2$ component.
593 ^a 2	(3/2 ⁺)		B	
653.4 ^{&} 4	(5/2 ⁺)		AB	
735 ^a 2	(5/2 ⁺) & (7/2 ⁺)		B	Possibly a doublet comprised of $5/2$ and $7/2$ members of $1/2[411]$ band (1992Bu12). $L=2$ dominates in (t,α) .
872 ^{&} 3	(9/2 ⁺)		B	
916.7 4	(1/2, 3/2, 5/2 ⁺)		A	J^π : γ to $1/2^+$.
987 ^a 2	(9/2 ⁺)		B	
1064.1 4	(1/2 ⁺ , 3/2)		A	J^π : $\log f^{1u}t < 8.5$ from $(1/2^-)$ in β^- decay; γ to $1/2^+$ and $(5/2^+)$.
1099 4			B	
1126 [@] 2	(3/2 ⁺)		B	
1189 [@] 2	(5/2 ⁺)		B	J^π : $L(t,\alpha)=2$ for possible doublet.
1204.8 4	(1/2 ⁻ , 3/2 ⁻)		A	J^π : $\log ft < 5.9$ from $(1/2^-)$ in β^- decay.
1262 3			B	
1292 3			B	
1354 3			B	
1412 4			B	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{179}Lu Levels (continued)

E(level) [†]	J^π [‡]	XREF	Comments
1473 [#] 2	(11/2) ⁻	B	J^π : L(t, α)=5.
1556.5 5	(1/2 ⁻ ,3/2 ⁻)	A	J^π : log ft <5.9 from (1/2 ⁻) in β^- decay.
1586.2 4	(1/2 ⁻ ,3/2 ⁻)	A	J^π : log ft <5.9 from (1/2 ⁻) in β^- decay.
1599 3	9/2 ⁻ ,11/2 ⁻	B	J^π : L(t, α)=5.
1679 4		B	
1771 4		B	
1820 4		B	
2048 4		B	
2115 5		B	
2136 5		B	
2216 3		B	
2239 4		B	
2336 3		B	

[†] From (t, α) for levels observed only in (t, α); from least-squares fit to E_γ otherwise.

[‡] From collective band assignments in (t, α), based on comparison of $\sigma(\theta)$ with DWBA calculations and with Nilsson model calculations (pairing and Coriolis mixing included), except as noted.

Band(A): 7/2[523]? band.

@ Band(B): 3/2[411] band. Band parameter: A=12.6.

& Band(C): 5/2[402] band. Band parameter: A=13.7.

^a Band(D): 1/2[411] band. Band parameters: A=14.3, a=-1.0.

^b Band(E): 9/2[514] band. Band parameters: A=14.2, B=-24.

^c Band(F): 7/2[404] band. Band parameters: A=13.7, B=-1.5.

 $\gamma(^{179}\text{Lu})$

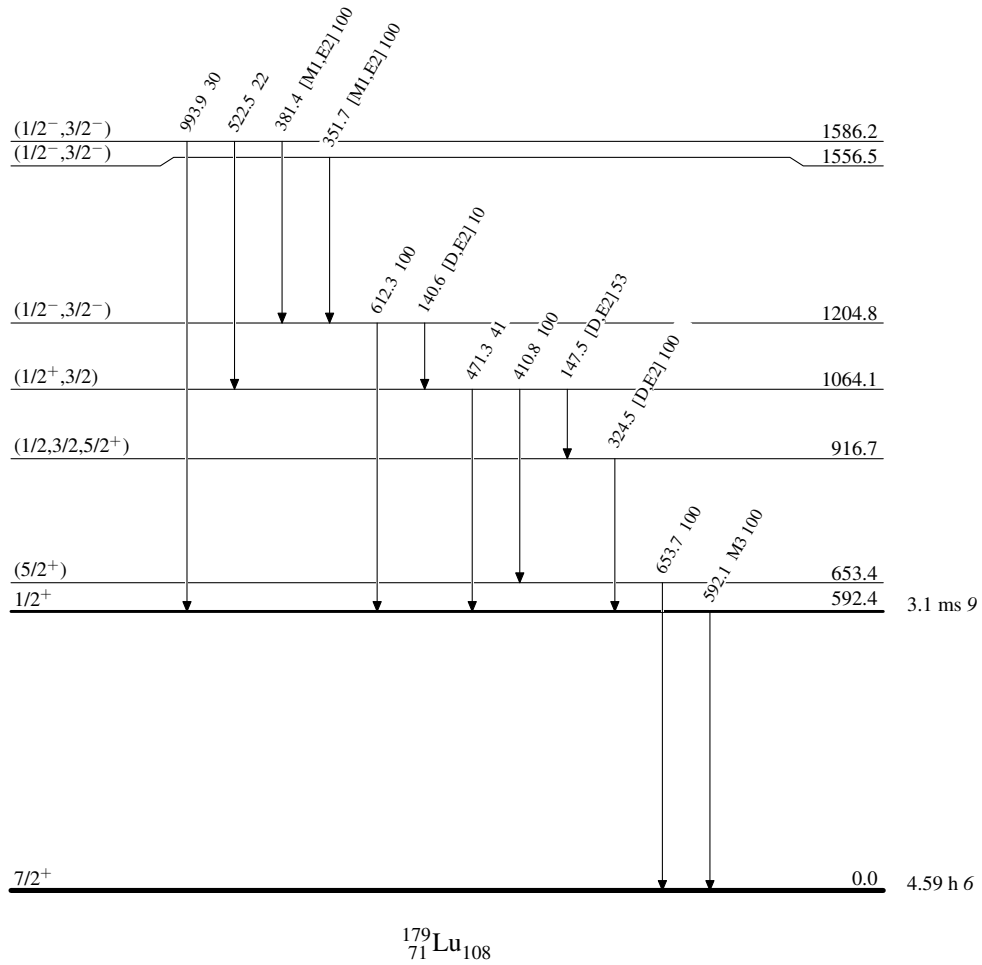
$E_i(\text{level})$	J^π_i	E_γ [†]	I_γ [†]	E_f	J^π_f	Mult.	α [‡]	Comments
592.4	1/2 ⁺	592.1 4	100	0.0	7/2 ⁺	M3	0.206	B(M3)(W.u.)=0.69 20
								Mult.: from $\alpha(K)\text{exp}=0.17$ 5 and $\alpha(K)\text{exp}/\alpha(L)\text{exp}=0.23$ 2 in β^- decay.
653.4	(5/2 ⁺)	653.7 4	100	0.0	7/2 ⁺			
916.7	(1/2,3/2,5/2 ⁺)	324.5 2	100	592.4	1/2 ⁺	[D,E2]	0.08 6	
1064.1	(1/2 ⁺ ,3/2)	147.5 2	53 6	916.7	(1/2,3/2,5/2 ⁺)	[D,E2]	0.7 6	
		410.8 3	100 12	653.4	(5/2 ⁺)			
		471.3 3	41 12	592.4	1/2 ⁺			
1204.8	(1/2 ⁻ ,3/2 ⁻)	140.6 2	10 1	1064.1	(1/2 ⁺ ,3/2)	[D,E2]	0.8 7	
		612.3 4	100 6	592.4	1/2 ⁺			
1556.5	(1/2 ⁻ ,3/2 ⁻)	351.7 2	100	1204.8	(1/2 ⁻ ,3/2 ⁻)	[M1,E2]	0.08 4	
1586.2	(1/2 ⁻ ,3/2 ⁻)	381.4 2	100 7	1204.8	(1/2 ⁻ ,3/2 ⁻)	[M1,E2]	0.06 3	
		522.5 4	22 7	1064.1	(1/2 ⁺ ,3/2)			
		993.9 7	30 7	592.4	1/2 ⁺			

[†] From ^{179}Yb β decay.

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

Adopted Levels, Gammas**Level Scheme**

Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Band(A): 7/2[523]? band

(11/2)⁻ 1473

Band(B): 3/2[411] band

(5/2)⁺ 1189

(3/2⁺) 1126

Band(D): 1/2[411] band

(9/2⁺) 987

Band(C): 5/2[402] band

(9/2⁺) 872

(5/2)⁺ & (7/2⁺) 735

(5/2⁺) 653.4

(3/2)⁺ 593
1/2⁺ 592.4

Band(E): 9/2[514] band

(13/2⁻) 357

Band(F): 7/2[404] band

(11/2⁺) 273

(11/2)⁻ 186

(9/2⁺) 123

(9/2⁻) 35

7/2⁺ 0.0