

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni		NDS 109,2501 (2008)	1-Apr-2008

$Q(\beta^-) = -3504$ 11; $S(n) = 9417$ 11; $S(p) = 3519$ 14; $Q(\alpha) = -3186$ 11 [2012Wa38](#)

Note: Current evaluation has used the following Q record $-3.45\text{E}+3$ 159410 1535190 $14-3.17 \times 10^{33}$ [2003Au03](#).

α : [Additional information 1](#).

 ^{96}Rh LevelsCross Reference (XREF) Flags

- A ^{96}Pd ε decay
- B ^{96}Rh IT decay (1.51 min)
- C $^{96}\text{Ru}(p, n\gamma)$
- D $^{64}\text{Zn}(^{40}\text{Ca}, \alpha 3p n\gamma)$

E(level) #	J^π	$T_{1/2}$	XREF	Comments
0.0	6^+	9.90 min 10	ABCD	$\% \varepsilon + \% \beta^+ = 100$ J^π : log $ft = 5.4$ to 6^+ and 5^+ levels in ^{96}Ru , M3 γ from 3^+ . $T_{1/2}$: from 1975Gu01 . Others: 9.5 min 3 (1971Do08), 9.25 min 10 (1970As08). $\%IT = 60$ 5; $\% \varepsilon + \% \beta^+ = 40$ 5
51.98 9	3^+	1.51 min 2	ABCD	J^π : log $ft = 5.5$ to 4^+ and 5.6 to 2^+ levels in ^{96}Ru . $T_{1/2}$: from 1975Gu01 in IT decay. Other values: 1.45 min 20 (1971Do08), 1.55 min 15 (1970As08).
114.29 11	(4^+)		C	
125.62 15	(7^+)		CD	
167.45 5	(5^+)		C	
176.39 9	(2^+)		A CD	
513.99 10	$(2^-, 3, 4)$		C	
535.26 12	$(2^-, 3, 4)$		C	
578.98 18	(3^-)		C	
598.40 15	(3^-)		C	
660.99 17	$(3, 4)$		C	
665.08 21	$(3^-, 4^-)$		C	
714.8 3	(8^+)		D	
773.5 5			D	
775.19 19	(2^+)		A CD	
904.6 7			D	
938.76 17	$1^+ \dagger$		A CD	
1185.2? 10	$1^+ \dagger$		A	
1274.78 22	$1^+ \dagger$		A D	
1296.6 3			D	
1392.71 22	(9^+)		D	
1555.10 25	(8^+)		D	
1564.2 3	$1^+ \dagger$		A	
1657.0 3			D	
1801.7 4	$1^+ \dagger$		A	
1919.46 25	(10^+)		D	
2019.3 3	(11^+)		D	
2105.7 3	(8^-)		D	
2132.6 3	(9^-)		D	
2264.3 5			D	
2289.5 3	(10^-)		D	
2320.9 3	$(10)^+$		D	

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Adopted Levels, Gammas (continued) ^{96}Rh Levels (continued)

E(level) [#]	J ^π [‡]	XREF	E(level) [#]	J ^π [‡]	XREF	E(level) [#]	J ^π [‡]	XREF
2533.6 3	(12 ⁺)	D	3294.3 3	(12 ⁻)	D	4227.7 5		D
2536.9 4		D	3643.0 3	(13 ⁻)	D	4424.5 4	(15 ⁻)	D
2585.6 5	(12 ⁺)	D	3743.7 3	(14 ⁺)	D	4546.5 5		D
2675.2 3	(11 ⁺)	D	3960.3 5		D	5017.0 5	(16 ⁺)	D
2724.8 3	(11 ⁻)	D	4161.8 3	(14 ⁻)	D	5560.0 4	(15 ⁺)	D
2801.2 5		D	4194.9 6		D			

[†] J^π=1⁺ from log ft<5.9 via 0⁺ parent for Δ T Ne 0; other values of J^π from γ(θ), shell model and syst (1990Pi01).

[‡] Mainly from from γ(θ), shell model and syst (1990Pi01), unless otherwise noted.

[#] From least-squares fit to E_γ.

 $\gamma(^{96}\text{Rh})$

E _i (level)	J _i ^π	E _γ	I _γ	E _f	J _f ^π	Mult. [@]	α	Comments
51.98	3 ⁺	51.98 9	100	0.0	6 ⁺	M3	641 11	α(K)=374 6; α(L)=215 4; α(M)=44.5 8; α(N)=7.01 12; α(O)=0.183 3; α(N+..)=7.20 13 B(M3)(W.u.)=1.52 14 E _γ : weighted average of 52.0 1 (⁹⁶ Rh IT decay (1.51 min)) and 51.8 3(⁹⁶ Ru(p, nγ)). Mult.: from α(K)exp in it Decay.
114.29	(4 ⁺)	62.29 [‡] 6	100 [‡]	51.98	3 ⁺			
125.62	(7 ⁺)	125.62 [†] 15	100 [†]	0.0	6 ⁺	D		
167.45	(5 ⁺)	167.45 [‡] 5	100 [‡]	0.0	6 ⁺			
176.39	(2 ⁺)	124.40 [‡] 3	100 [‡]	51.98	3 ⁺	[M1]	0.187	α(K)=0.1626 23; α(L)=0.0198 3; α(M)=0.00368 6; α(N)=0.000609 9; α(O)=3.04×10 ⁻⁵ 5 α(N+..)=0.000640 9
513.99	(2 ⁻ , 3, 4)	337.8 [‡] 3	10 [‡] 4	176.39	(2 ⁺)			
		462.01 [‡] 5	100 [‡] 8	51.98	3 ⁺			
535.26	(2 ⁻ , 3, 4)	483.28 [‡] 8	100 [‡]	51.98	3 ⁺			
578.98	(3 ⁻)	65.00 [‡] 15	1.0×10 ² [‡] 3	513.99	(2 ⁻ , 3, 4)			
		526.7 [‡] 6	81 [‡] 10	51.98	3 ⁺			
598.40	(3 ⁻)	421.89 [‡] 17	29 [‡] 13	176.39	(2 ⁺)			
		546.53 [‡] 16	≤100 [‡]	51.98	3 ⁺			
660.99	(3, 4)	546.53 [‡] 16	≤100 [‡]	114.29	(4 ⁺)			
		609.6 [‡] 3	24 [‡] 8	51.98	3 ⁺			
665.08	(3 ⁻ , 4 ⁻)	66.67 [‡] 15	1.0×10 ² [‡] 3	598.40	(3 ⁻)			
		613.2 [‡] 8	7.×10 ¹ [‡] 5	51.98	3 ⁺			
714.8	(8 ⁺)	589.0 [†] 4	100 [†]	125.62	(7 ⁺)	D+Q		
773.5		647.9 [†] 5	100 [†]	125.62	(7 ⁺)			
775.19	(2 ⁺)	598.7 3	65 21	176.39	(2 ⁺)			E _γ : weighted average of 598.8 3 (⁹⁶ Pd ε decay) and 598.6 5 (⁹⁶ Ru(p, nγ)).
		723.5 3	1.0×10 ² 3	51.98	3 ⁺			E _γ : weighted average of 723.4 3 (⁹⁶ Pd ε decay) and 723.7 5 (⁹⁶ Ru(p, nγ)).
904.6		131.1 [†] 4	100 [†]	773.5		D		

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Adopted Levels, Gammas (continued)

$\gamma(^{96}\text{Rh})$ (continued)							Comments
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult. @	
938.76	1 ⁺	163.8 [#] 6 762.27 16	0.46 [#] 13 100 5	775.19 (2 ⁺) 176.39 (2 ⁺)			E _γ : weighted average of 762.3 2 (⁹⁶ Pd ε decay), 762.6 5 (⁹⁶ Ru(p,nγ)) and 762.1 3 (⁶⁴ Zn(⁴⁰ Ca,α3pnγ)).
		887.1 [#] 5	5.1 [#] 5	51.98 3 ⁺			
1185.2?	1 ⁺	1008.8 ^{#&} 10	100 [#]	176.39 (2 ⁺)			
1274.78	1 ⁺	336.1 [#] 5 499.7 [#] 3 1098.1 3	5.5 [#] 11 100 [#] 4 97 5	938.76 1 ⁺ 775.19 (2 ⁺) 176.39 (2 ⁺)			E _γ : weighted average of 1098.7 6 (⁹⁶ Pd ε decay) and 1098.0 3 (⁶⁴ Zn(⁴⁰ Ca,α3pnγ)).
		1223.4 [#] 7	7.5 [#] 18	51.98 3 ⁺			
1296.6		1170.9 3	100	125.62 (7 ⁺)			
1392.71	(9 ⁺)	1267.13 [†] 20	100 [†]	125.62 (7 ⁺)		Q	
1555.10	(8 ⁺)	840.2 [†] 3	51 [†] 7	714.8 (8 ⁺)		D+Q	
		1429.53 [†] 25	100 [†] 12	125.62 (7 ⁺)		D+Q	
1564.2	1 ⁺	289 [#] 1 625.3 [#] 4 788.9 [#] 5	<9.0 [#] 47 [#] 9 100 [#] 12	1274.78 1 ⁺ 938.76 1 ⁺ 775.19 (2 ⁺)			
		1388.5 [#] 6	88 [#] 12	176.39 (2 ⁺)			
1657.0		942.1 4	100	714.8 (8 ⁺)			
1801.7	1 ⁺	862.3 [#] 7 1026.7 [#] 5 1625.6 [#] 6	11 [#] 4 18 [#] 5 100 [#] 11	938.76 1 ⁺ 775.19 (2 ⁺) 176.39 (2 ⁺)			
1919.46	(10 ⁺)	526.72 [†] 20 622.83 [†] 25	100 [†] 3 13 [†] 3	1392.71 (9 ⁺) 1296.6		D	
2019.3	(11 ⁺)	99.82 [†] 15 626.7 [†] 2	≈48 [†] 100 [†] 6	1919.46 (10 ⁺) 1392.71 (9 ⁺)		D Q	
2105.7	(8 ⁻)	1980.0 [†] 3	100 [†]	125.62 (7 ⁺)		D	
2132.6	(9 ⁻)	(26.8 [†]) 475.56 [†] 20 577.5 [†] 3 739.7 [†] 3	[†] 18.0 [†] 20 72 [†] 9 100 [†] 14	2105.7 (8 ⁻) 1657.0 1555.10 (8 ⁺) 1392.71 (9 ⁺)		 D D+Q	
2264.3		871.6 ^{†&} 5	100 [†]	1392.71 (9 ⁺)			
2289.5	(10 ⁻)	156.88 [†] 15	100 [†]	2132.6 (9 ⁻)		D	
2320.9	(10 ⁺)	928.2 [†] 4	100 [†]	1392.71 (9 ⁺)		D	
2533.6	(12 ⁺)	212.72 [†] 20 514.3 [†] 2	1.9 [†] 10 100 [†] 4	2320.9 (10 ⁺) 2019.3 (11 ⁺)		Q	
2536.9		404.30 [†] 25	100 [†]	2132.6 (9 ⁻)			
2585.6	(12 ⁺)	566.3 [†] 4	100 [†]	2019.3 (11 ⁺)		D	
2675.2	(11 ⁺)	141.61 [†] 25 1282.6 [†] 4	33 [†] 8 1.0×10 ² [†] 4	2533.6 (12 ⁺) 1392.71 (9 ⁺)			
2724.8	(11 ⁻)	435.36 [†] 25	100 [†]	2289.5 (10 ⁻)		D+Q	
2801.2		264.3 [†] 3	100 [†]	2536.9			
3294.3	(12 ⁻)	569.5 [†] 4	82 [†] 8	2724.8 (11 ⁻)			

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Adopted Levels, Gammas (continued)

$\gamma(^{96}\text{Rh})$ (continued)						
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult. @
3294.3	(12 ⁻)	1004.72 [†] 20	1.0×10 ² [†] 3	2289.5	(10 ⁻)	
3643.0	(13 ⁻)	348.53 [†] 25	100 [†] 6	3294.3	(12 ⁻)	D+Q
		918.2 [†] 3	33 [†] 4	2724.8	(11 ⁻)	Q
3743.7	(14) ⁺	1210.17 [†] 20	100 [†]	2533.6	(12 ⁺)	Q
3960.3		216.6 [†] & 3	100 [†]	3743.7	(14) ⁺	
4161.8	(14 ⁻)	518.75 [†] 25	100 [†] 8	3643.0	(13 ⁻)	D
		867.4 [†] 4	18 [†] 5	3294.3	(12 ⁻)	
		1628.32 [†] 20	26 [†] 8	2533.6	(12 ⁺)	Q
4194.9		451.2 [†] & 5	100 [†]	3743.7	(14) ⁺	
4227.7		484.0 [†] 3	100 [†]	3743.7	(14) ⁺	
4424.5	(15 ⁻)	262.7 [†] 3	100 [†] 17	4161.8	(14 ⁻)	
		781.44 [†] 25	24 [†] 3	3643.0	(13 ⁻)	
4546.5		802.8 [†] 4	100 [†]	3743.7	(14) ⁺	
5017.0	(16 ⁺)	1273.2 [†] 3	100 [†]	3743.7	(14) ⁺	Q
5560.0	(15 ⁺)	1816.27 [†] 25	100 [†]	3743.7	(14) ⁺	D

[†] From $^{64}\text{Zn}(^{40}\text{Ca},\alpha^3\text{pn}\gamma)$.

[‡] From $^{96}\text{Ru}(\text{p},\text{n}\gamma)$.

From ^{96}Pd ε decay.

@ From $^{64}\text{Zn}(^{40}\text{Ca},\alpha^3\text{pn}\gamma)$, except as noted.

& Placement of transition in the level scheme is uncertain.

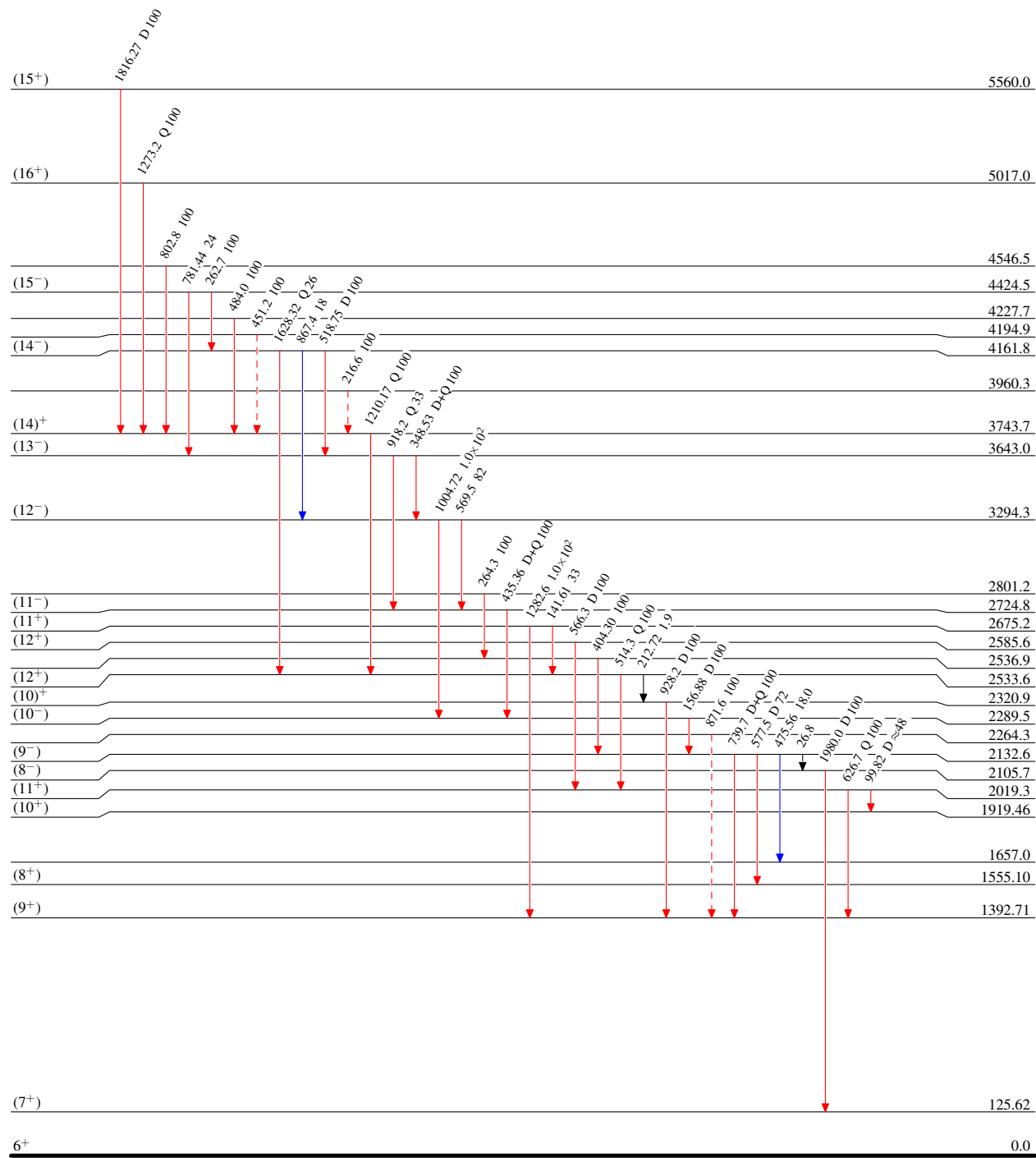
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Type not specified

- $I_\gamma < 2\% \times I_\gamma^{\max}$
 —→ $I_\gamma < 10\% \times I_\gamma^{\max}$
 —→ $I_\gamma > 10\% \times I_\gamma^{\max}$
 - - - - -→ γ Decay (Uncertain)



9.90 min 10

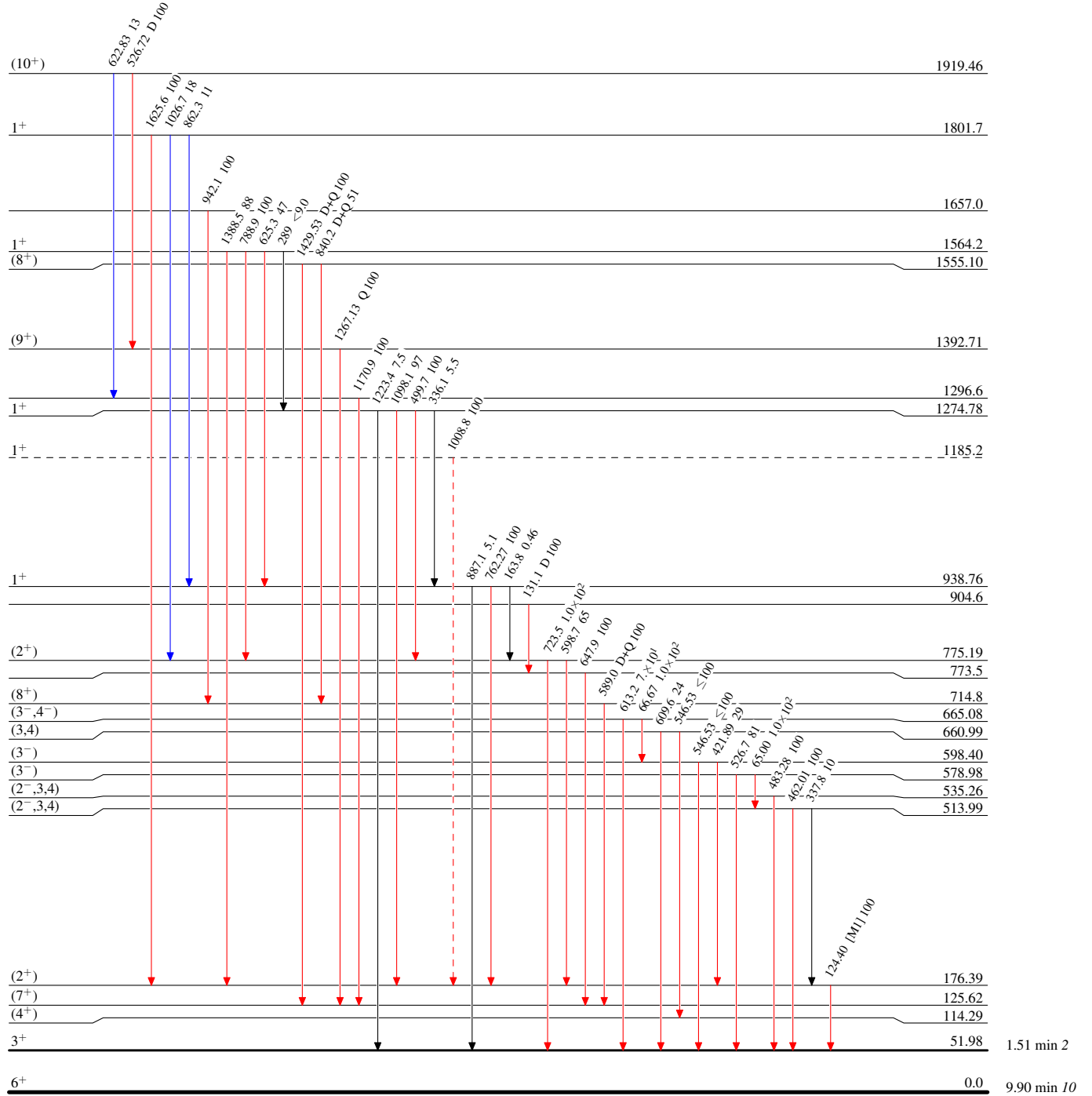
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Type not specified

- ▶ $I_\gamma < 2\% \times I_\gamma^{\max}$
—▶ $I_\gamma < 10\% \times I_\gamma^{\max}$
—▶ $I_\gamma > 10\% \times I_\gamma^{\max}$
- - - - -▶ γ Decay (Uncertain)



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}

