

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, E. A. Mccutchan		NDS 165, 1 (2020)	1-Mar-2020

$Q(\beta^-)=545.9$ 14; $S(n)=7810.4$ 21; $S(p)=11525$ 6; $Q(\alpha)=-5107.4$ 21 2017Wa10
 $S(2n)=14169.1$ 21; $S(2p)=20835$ 6 (2017Wa10).
 α : [Additional information 1](#).

 ^{90}Sr Levels

For charge radii of strontium nuclei by LASER spectroscopy, see [1987An02](#) and [1992Ne09](#).

Cross Reference (XREF) Flags

- A** $^{90}\text{Rb} \beta^-$ decay (158 s)
B $^{90}\text{Rb} \beta^-$ decay (258 s)
C $^{88}\text{Sr}(t,p)$
D $^{82}\text{Se}(^{11}\text{B}, p2n\gamma), ^{12}\text{C}(^{86}\text{Kr}, 2\alpha\gamma)$

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
0.0 [#]	0 ⁺	28.91 y 3	ABCD	$\% \beta^- = 100$ $T_{1/2}$: from 10558 y 11 obtained from weighted average of 10527 d 51 (1965An07 , decay measured over 11.2 y), 10557 d 11 (2004Sc04 , decay measured over 17 y), and 10561 d 14 (1994Ma50 , decay measured over 33 y). Conversion from days to years calculated using tropic year (1 year = 365.24 d). Others: 10702 d 584 (1958An40 , specific activity), 10227 d 146 (1965FI01 , decay), 10410 d 329 (1965FI01 , specific activity), 10513 d 14 (1992ScZZ , decay measured over 4 y), 10495 d 4 (1996Wo06 , decay measured over 6 y), 7270 d 110 (1950Po67 , decay), 10117 d 146, (1955Wi15 , specific activity), 10282 d 13 (1978La21 , decay), 10589 d 92 (1983Ra09 , decay), 10665 d 37 (1989Ko57 , decay). $\Delta \langle r^2 \rangle (^{89}\text{Sr}, ^{90}\text{Sr}) = 0.153 \text{ fm}^2$ 4, LASER spectroscopy (1992Ne09).
831.68 [#] 4	2 ⁺	7 [±] ps 2	ABCD	$\mu = -0.24$ 22 (2014Ku10) μ : from transient-field (TF) technique in inverse kinematics (2014Ku10). J^π : E2 832γ to 0 ⁺ .
1655.92 [#] 7	4 ⁺	12 [±] ps 2	ABCD	$\mu = -0.08$ 68 (2014Ku10) μ : from transient-field (TF) technique in inverse kinematics (2014Ku10). J^π : E2 824γ to 2 ⁺ .
1892.36 4	2 ⁺	2 [±] ps 1	ABC	J^π : M1+E2 1060.7γ to 2 ⁺ , 1892.3γ to 0 ⁺ .
2207.02 4	(3 ⁻)	≤1 [±] ps	ABCD	J^π : L(t,p)=3,(4); D(+Q) 1375.4γ to 2 ⁺ . $\gamma\gamma(\theta)$ in $^{90}\text{Kr} \beta^-$ decay yields J=2 or 3, with J=2 providing the better fit. Combined with data from (t,p) experiment, J=3 is tentatively adopted here.
2497.32 6	(2 ⁺)	≤3 [±] ps	ABC	J^π : $\gamma\gamma(\theta)$ in $^{90}\text{Kr} \beta^-$ decay yields J=2 or 3; 2497.3γ to 0 ⁺ makes J=3 less likely.
2527.92 7	3 ⁻ , 4 ⁺	≤6 [±] ps	BC	J^π : L(t,p)=3,4.
2570.60 8		10 [±] ps 7	AB	
2586 10	2 ⁺		C	J^π : L(t,p)=2.
2674.0 5	(0 ⁺)		A C	J^π : L(t,p)=(0).
2927.70 7	4		AB D	J^π : D 720.7γ to (3 ⁻), 1271.8γ to 4 ⁺ .
2971.12 12	0 ⁺		ABC	J^π : L(t,p)=0.
3032.87 7		≤1 [±] ps	AB	
3039.26 7	1		ABC	J^π : from $\gamma\gamma(\theta)$ in $^{90}\text{Kr} \beta^-$ decay.
3144.45 10	(5 ⁻)		ABCD	J^π : L(t,p)=(5).
3268.69 24	3 ⁻ , 4 ⁺		CD	J^π : L(t,p)=3,4.
3383.39 7			AB	

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Adopted Levels, Gammas (continued) ^{90}Sr Levels (continued)

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
3394 10			C	E(level): probable doublet.
3449.83 5	3	≤4 [‡] ps	B	J ^π : from $\gamma\gamma(\theta)$ in ^{90}Kr β^- decay.
3468.43 22	(5 ⁻)		D	J ^π : D 1812.5 γ to 4 ⁺ , 55.6 γ from (7 ⁻).
3479 10	3 ⁻ ,4 ⁺		C	J ^π : L(t,p)=3,4.
3494.84 11	6 ⁽⁺⁾		D	J ^π : Q 1838.9 γ to 4 ⁺ .
3508 10	(5 ⁻)		C	J ^π : L(t,p)=(5).
3555.79 13			AB	
3584.43 8			B	
3594 10	3 ⁻ ,4 ⁺		C	J ^π : L(t,p)=3,4.
				E(level): possibly the same as the 3584.4 level observed in ^{90}Kr β^- decay.
3627.01 23			AB	
3698.55 12	(7 ⁻)		D	J ^π : Q 554.1 γ to (5 ⁻).
3720 10	≥6		C	J ^π : L(t,p)>5.
3742.16 13	6		D	J ^π : Q 814.5 γ to 4.
3764.36 18	(6 ⁺)		D	J ^π : Q 1291.2 γ from (8 ⁺), D 619.9 γ to (5 ⁻).
3784 10	(5 ⁻)		C	J ^π : L(t,p)=(5).
3804 10	2 ⁺		C	J ^π : L(t,p)=2.
3845 10			C	
3915 10			C	
3954.32 18			AB	
4019.4 4			A	
4036.88 13			B	
4037.12 9			A	
4043 10	3 ⁻ ,4 ⁺		C	J ^π : L(t,p)=3,4.
4066.32@ 16	(7 ⁻)		D	J ^π : D 342.2 γ to (6), Q 955.3 γ from (9 ⁻).
4073 10	3 ⁻ ,4 ⁺		C	J ^π : L(t,p)=3,4.
4135.63 10	(1,2 ⁺)		ABC	J ^π : 4135.5 γ to 0 ⁺ .
4137.6 9			A	
4148.85 7			AB	
4240 10	2 ⁺		C	J ^π : L(t,p)=2.
4288 10	3 ⁻ ,4 ⁺		C	J ^π : L(t,p)=3,4.
4335.37 7			BC	
4366.06 11			AB	
4404.62 18			B	
4430.91 24			B	
4493 10			C	
4522 10			C	
4580.8 3			A C	
4646.35 14			A C	
4660 10			C	
4685.6 3			B	
4742 10	3 ⁻ ,4 ⁺		C	J ^π : L(t,p)=3,4.
4748.93 19	8		D	J ^π : Q 1006.7 γ to 6, D 1050.3 γ to (7 ⁻).
4774 10	3 ⁻ ,4 ⁺		C	J ^π : L(t,p)=3,4.
4790.3? 5	(1,2 ⁺)		A	J ^π : 4790.2 γ to 0 ⁺ .
4804.0 5			B	
4805.12 22			B	
4808.52 23			B	
4824 10	2 ⁺		C	J ^π : L(t,p)=2.
4854.2? 5			B	
4881.7 3	8		D	J ^π : D 1183.1 γ to (7 ⁻).
4919.07? 20			A	
4947.5 4	(2 ⁺)		BC	J ^π : L(t,p)=(2).
4973.99 17			A C	
5021.62@ 16	(9 ⁻)		D	J ^π : Q 1323.1 γ to (7 ⁻), D 140.0 γ to 8.

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Adopted Levels, Gammas (continued) ^{90}Sr Levels (continued)

E(level) [†]	J ^π	XREF	Comments
5024.54 23		B	
5026.8? 4		BC	
5041.01 13		AB	
5041.44 12		B	
5055.56 14	(8 ⁺)	CD	J ^π : Q 1560.7γ to 6 ⁽⁺⁾ , D 1357.0γ to (7 ⁻).
5089.46 16		B	
5095 10	3 ⁻ ,4 ⁺	C	J ^π : L(t,p)=3,4.
5142 10		C	
5187.51 6	(1 ⁻ ,2 ⁺)	A C	J ^π : 5187.4γ to 0 ⁺ , 2980.7γ to (3 ⁻).
5239.2 5		B	
5254.32 12		A	
5285.89 19		BC	
5298.48 21	(9 ⁻)	D	J ^π : (E2) 1599.9γ to (7 ⁻), D 549.6γ to 8.
5333.15? 23		A	
5343 10		C	
5426.65 13		ABC	
5431.2 3		B	
5557.9 3		B	
5591.8 3	10	D	J ^π : D 570.2γ to (9 ⁻).
5600.3? 4		A C	
5623.3 3		A	
5785.1? 7		B	
5822.0 5		B	
5827.9 3		B	
5923.56 16	(10 ⁺)	D	J ^π : Q 868.0γ to (8 ⁺).
5961.1 @ 3	(11 ⁻)	D	J ^π : Q 939.5γ to (9 ⁻).
6712.3 3	12	D	J ^π : Q 1120.5γ to 10, D 751.2γ to (11 ⁻).
6794.56 19	(12 ⁺)	D	J ^π : Q 871.0γ to (10 ⁺).
7371.2 5	13	D	J ^π : D 658.9γ to 12.
7705.77 21		D	
7959.7 3		D	
8772.4 3		D	
9060.7 5		D	
9199.7 4		D	
9957.5 5		D	

[†] From least-squares fit to Eγ, by evaluators for levels connected by γ-ray transitions. Levels with uncertainty of 10 keV are from (t,p).

[‡] From βγ(t) with scintillators in ^{90}Kr β⁻ decay.

Band(A): γ sequence based on g.s.

@ Seq.(B): γ sequence based on (7⁻).

Adopted Levels, Gammas (continued)

$\gamma(^{90}\text{Sr})$									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult.	δ	α	Comments
831.68	2 ⁺	831.69 5	100	0.0	0 ⁺	E2		9.02×10^{-4}	$\alpha(\text{K})=0.000798$ 12; $\alpha(\text{L})=8.77 \times 10^{-5}$ 13; $\alpha(\text{M})=1.471 \times 10^{-5}$ 21; $\alpha(\text{N})=1.84 \times 10^{-6}$ 3 $\alpha(\text{O})=1.178 \times 10^{-7}$ 17 B(E2)(W.u.)=8.5 +33-19 Mult.: Q from $\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B}, \text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr}, 2\alpha\gamma)$; M2 excluded by comparison to RUL.
1655.92	4 ⁺	824.23 10	100	831.68	2 ⁺	E2		9.22×10^{-4}	$\alpha(\text{K})=0.000816$ 12; $\alpha(\text{L})=8.97 \times 10^{-5}$ 13; $\alpha(\text{M})=1.506 \times 10^{-5}$ 21; $\alpha(\text{N})=1.88 \times 10^{-6}$ 3 $\alpha(\text{O})=1.204 \times 10^{-7}$ 17 B(E2)(W.u.)=5.2 +11-7 Mult.: Q from $\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B}, \text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr}, 2\alpha\gamma)$ and $\gamma\gamma(\theta)$ in $^{90}\text{Kr} \beta^-$ decay; M2 excluded by comparison to RUL.
1892.36	2 ⁺	1060.70 4	100 3	831.68	2 ⁺	M1+E2	+0.50 3	4.97×10^{-4}	$\alpha(\text{K})=0.000440$ 7; $\alpha(\text{L})=4.75 \times 10^{-5}$ 7; $\alpha(\text{M})=7.97 \times 10^{-6}$ 12; $\alpha(\text{N})=1.002 \times 10^{-6}$ 14; $\alpha(\text{O})=6.59 \times 10^{-8}$ 10 B(E2)(W.u.)=1.7 +15-6; B(M1)(W.u.)=0.0070 +57-24 Mult., δ : D+Q from $\gamma\gamma(\theta)$ in $^{90}\text{Rb} \beta^-$ decay; E1+M2 excluded by comparison to RUL.
		1892.28 8	6.0 3	0.0	0 ⁺	[E2]		4.11×10^{-4}	$\alpha(\text{K})=0.0001370$ 20; $\alpha(\text{L})=1.464 \times 10^{-5}$ 21; $\alpha(\text{M})=2.45 \times 10^{-6}$ 4; $\alpha(\text{N})=3.09 \times 10^{-7}$ 5; $\alpha(\text{O})=2.03 \times 10^{-8}$ 3 B(E2)(W.u.)=0.028 +24-10
2207.02	(3 ⁻)	314.5 3	4.97 23	1892.36	2 ⁺	[E1]		0.00374	$\alpha(\text{K})=0.00331$ 5; $\alpha(\text{L})=0.000359$ 6; $\alpha(\text{M})=6.02 \times 10^{-5}$ 9; $\alpha(\text{N})=7.51 \times 10^{-6}$ 11; $\alpha(\text{O})=4.78 \times 10^{-7}$ 7 B(E1)(W.u.)> 4.5×10^{-4}
		551.20 25	5.1 4	1655.92	4 ⁺	[E1]		8.91×10^{-4}	$\alpha(\text{K})=0.000790$ 11; $\alpha(\text{L})=8.52 \times 10^{-5}$ 12; $\alpha(\text{M})=1.427 \times 10^{-5}$ 20; $\alpha(\text{N})=1.79 \times 10^{-6}$ 3 $\alpha(\text{O})=1.157 \times 10^{-7}$ 17 B(E1)(W.u.)> 8.3×10^{-5}
		1375.36 3	100 4	831.68	2 ⁺	(E1(+M2))	-0.02 6	2.98×10^{-4}	$\alpha(\text{K})=0.000124$ 3; $\alpha(\text{L})=1.32 \times 10^{-5}$ 4; $\alpha(\text{M})=2.22 \times 10^{-6}$ 6; $\alpha(\text{N})=2.79 \times 10^{-7}$ 7; $\alpha(\text{O})=1.83 \times 10^{-8}$ 5 B(E1)(W.u.)>0.00012 Mult., δ : D(+Q) from $\gamma\gamma(\theta)$ in $^{90}\text{Rb} \beta^-$ decay; $\Delta\pi$ =yes from adopted level scheme.
2497.32	(2 ⁺)	1665.61 7	100 3	831.68	2 ⁺				
		2497.27 15	15.9 16	0.0	0 ⁺				
2527.92	3 ⁻ , 4 ⁺	872.00 15	32.0 23	1655.92	4 ⁺				
		1696.16 7	100 4	831.68	2 ⁺				
2570.60		1738.93 8	100	831.68	2 ⁺				
2674.0	(0 ⁺)	1842.3 @ 5	100	831.68	2 ⁺				
2927.70	4	720.70 9	35 3	2207.02	(3 ⁻)	D [#]			

Adopted Levels, Gammas (continued)

$\gamma(^{90}\text{Sr})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult.	α	Comments	
2927.70	4	1271.77 7	100 7	1655.92	4 ⁺	D [#]			
2971.12	0 ⁺	2139.33 18	100	831.68	2 ⁺	E2	4.99×10 ⁻⁴	$\alpha(\text{K})=0.0001094$ 16; $\alpha(\text{L})=1.167\times 10^{-5}$ 17; $\alpha(\text{M})=1.96\times 10^{-6}$ 3; $\alpha(\text{N})=2.46\times 10^{-7}$ 4 $\alpha(\text{O})=1.625\times 10^{-8}$ 23 Mult.: Q from $\gamma\gamma(\theta)$ in ^{90}Kr β^- decay; $\Delta\pi=\text{no}$ from level scheme.	
3032.87		1140.50 6	100	1892.36	2 ⁺				
3039.26	1	1146.96 25	5.7 7	1892.36	2 ⁺				
		2207.47 11	61 3	831.68	2 ⁺	D		Mult.: from $\gamma\gamma(\theta)$ in ^{90}Kr β^- decay.	
		3039.17 12	100 4	0.0	0 ⁺				
3144.45	(5 ⁻)	216.8 [‡] 5	0.70 [‡] 18	2927.70	4				
		937.3 [‡] 5	≈1.8 [‡]	2207.02	(3 ⁻)	(E2)	6.74×10 ⁻⁴	Mult.: Q from $\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$, $\Delta\pi=\text{no}$ from level scheme.	
		1488.5 [‡] 1	100.0 [‡] 14	1655.92	4 ⁺	(E1)	3.59×10 ⁻⁴	Mult.: D from $\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$, $\Delta\pi=\text{yes}$ from level scheme.	
3268.69	3 ⁻ ,4 ⁺	1612.8 [‡] 3	100 [‡]	1655.92	4 ⁺				
3383.39		886.3 3	0.95 18	2497.32	(2 ⁺)				
		1176.9 9	0.60 24	2207.02	(3 ⁻)				
		3383.24 12	100 3	0.0	0 ⁺				
3449.83	3	522.10 13	13.0 10	2927.70	4				
		921.20 24	9.9 22	2527.92	3 ⁻ ,4 ⁺				
		952.44 7	55.6 19	2497.32	(2 ⁺)				
		1242.84 4	100 6	2207.02	(3 ⁻)	D		Mult.: from $\gamma\gamma(\theta)$ in ^{90}Kr β^- decay.	
		1793.89 11	27.6 16	1655.92	4 ⁺	D		Mult.: from $\gamma\gamma(\theta)$ in ^{90}Kr β^- decay.	
		2617.8 3	20 3	831.68	2 ⁺				
3468.43	(5 ⁻)	324.0 [‡] 5	[‡]	3144.45	(5 ⁻)				
		1812.5 [‡] 3	100 [‡]	1655.92	4 ⁺	D [#]			
3494.84	6 ⁽⁺⁾	1838.9 [‡] 1	100 [‡]	1655.92	4 ⁺	(E2)	3.94×10 ⁻⁴	$\alpha(\text{K})=0.0001445$ 21; $\alpha(\text{L})=1.545\times 10^{-5}$ 22; $\alpha(\text{M})=2.59\times 10^{-6}$ 4; $\alpha(\text{N})=3.26\times 10^{-7}$ 5; $\alpha(\text{O})=2.15\times 10^{-8}$ 3 Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$, assumed E2.	
3555.79		985.4 5	18 6	2570.60					
		2724.26 21	100 13	831.68	2 ⁺				
3584.43		1013.95 19	2.21 25	2570.60					
		1086.7 8	0.61 12	2497.32	(2 ⁺)				
		1377.2 5	20 7	2207.02	(3 ⁻)				
		1692.07 25	2.4 4	1892.36	2 ⁺				
		2752.68 8	100 4	831.68	2 ⁺				
3627.01		3627.4 7	100	0.0	0 ⁺				
3698.55	(7 ⁻)	203.7 [‡] 5	≈3.0 [‡]	3494.84	6 ⁽⁺⁾				
		554.1 [‡] 1	100.0 [‡] 18	3144.45	(5 ⁻)	(E2)	0.00271	$\alpha(\text{K})=0.00239$ 4; $\alpha(\text{L})=0.000269$ 4; $\alpha(\text{M})=4.51\times 10^{-5}$ 7; $\alpha(\text{N})=5.61\times 10^{-6}$ 8; $\alpha(\text{O})=3.49\times 10^{-7}$ 5 Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E2.	

Adopted Levels, Gammas (continued)

<u>$\gamma(^{90}\text{Sr})$ (continued)</u>								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult.	α	Comments
3698.55	(7 ⁻)	2042.6 [‡] 3	19.3 [‡] 3	1655.92	4 ⁺	(E3)	4.07×10 ⁻⁴	$\alpha(\text{K})=0.000197$ 3; $\alpha(\text{L})=2.13\times 10^{-5}$ 3; $\alpha(\text{M})=3.57\times 10^{-6}$ 5; $\alpha(\text{N})=4.49\times 10^{-7}$ 7; $\alpha(\text{O})=2.94\times 10^{-8}$ 5 Mult.: O from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E3.
3742.16	6	597.7 [‡] 1	100.0 [‡] 24	3144.45	(5 ⁻)	D [#]		
		814.5 [‡] 3	16.6 [‡] 12	2927.70	4	Q [#]		
3764.36	(6 ⁺)	495.7 [‡] 3	36 [‡] 6	3268.69	3 ⁻ ,4 ⁺	Q [#]		$\alpha(\text{K})=0.00332$ 5; $\alpha(\text{L})=0.000377$ 6; $\alpha(\text{M})=6.34\times 10^{-5}$ 9; $\alpha(\text{N})=7.85\times 10^{-6}$ 11; $\alpha(\text{O})=4.83\times 10^{-7}$ 7
		619.9 [‡] 3	82 [‡] 12	3144.45	(5 ⁻)	D [#]		
		2108.4 [‡] 3	100 [‡] 3	1655.92	4 ⁺			
3954.32		1027.1 4	36 5	2927.70	4			
		1456.7 3	68 7	2497.32	(2 ⁺)			
		1747.3 3	68 8	2207.02	(3 ⁻)			
		2298.1 9	1.0×10 ² 5	1655.92	4 ⁺			
4019.4		1522.1 4	100 23	2497.32	(2 ⁺)			
		4019.3 13	9.×10 ¹ 5	0.0	0 ⁺			
4036.88		1109.2 8	12 7	2927.70	4			
		1829.82 20	31 5	2207.02	(3 ⁻)			
		2381.5 5	15 6	1655.92	4 ⁺			
		3205.09 16	100 8	831.68	2 ⁺			
4037.12		892.5 7	6 3	3144.45	(5 ⁻)			
		997.85 6	100 4	3039.26	1			
4066.32	(7 ⁻)	324.2 [‡] 3	100.0 [‡] 10	3742.16	6	D [#]		
		367.8 [‡] 3	83.8 [‡] 20	3698.55	(7 ⁻)	D [#]		
		571.5 [‡] 3	14 [‡] 4	3494.84	6 ⁽⁺⁾			
		597.9 [‡] 3	55.6 [‡] 20	3468.43	(5 ⁻)			
4135.63	(1,2 ⁺)	752.1 3	1.05 13	3383.39				
		3303.91 13	13.2 6	831.68	2 ⁺			
		4135.51 17	100 4	0.0	0 ⁺			
4137.6		2245.2 9	100	1892.36	2 ⁺			
4148.85		765.1 7	0.60 20	3383.39				
		1003.9 9	0.39 20	3144.45	(5 ⁻)			
		1941.81 17	4.4 4	2207.02	(3 ⁻)			
		2256.55 17	4.6 3	1892.36	2 ⁺			
		3317.00 12	100 3	831.68	2 ⁺			
4335.37		779.9 4	5.3 11	3555.79				
		1764.5 9	1.8 9	2570.60				
		1838.15 14	15.8 11	2497.32	(2 ⁺)			
		2128.30 7	100 3	2207.02	(3 ⁻)			
		2442.9 5	5.1 13	1892.36	2 ⁺			
		3503.52 15	45.5 20	831.68	2 ⁺			
4366.06		739.2 4	0.63 11	3627.01				

Adopted Levels, Gammas (continued) $\gamma(^{90}\text{Sr})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult.	α
4366.06		1326.46 21	1.65 20	3039.26	1		
		1438.3 8	0.40 15	2927.70	4		
		2473.94 20	7.7 8	1892.36	2 ⁺		
		4365.90 18	100 4	0.0	0 ⁺		
4404.62		1021.9 7	4.9 19	3383.39			
		3572.82 18	100 7	831.68	2 ⁺		
4430.91		1391.6 3	100 18	3039.26	1		
		1460.1 6	43 11	2971.12	0 ⁺		
		1903.1 6	30 13	2527.92	3 ⁻ , 4 ⁺		
		2537.8 9	39 16	1892.36	2 ⁺		
4580.8		543.6 10	52 23	4037.12			
		1547.8 5	52 13	3032.87			
		2688.9 5	100 20	1892.36	2 ⁺		
		2924.3 7	58 20	1655.92	4 ⁺		
4646.35		3814.36 20	26.1 18	831.68	2 ⁺		
		4646.45 20	100 4	0.0	0 ⁺		
4685.6		1302.2 3	100 25	3383.39			
		4685.0 14	20 15	0.0	0 ⁺		
4748.93	8	1006.7 [‡] 3	100.0 [‡] 17	3742.16	6	Q [#]	
		1050.3 [‡] 3	86 [‡] 5	3698.55 (7 ⁻)		D [#]	5.05×10 ⁻⁴
4790.3?	(1,2 ⁺)	3958.4 [@] 8	1.0×10 ² 3	831.68	2 ⁺		
		4790.2 [@] 7	80 20	0.0	0 ⁺		
4804.0		2911.7 11	34 19	1892.36	2 ⁺		
		3972.2 5	100 19	831.68	2 ⁺		
4805.12		1877.40 21	100	2927.70	4		
4808.52		442.3 4	39 10	4366.06			
		1425.2 3	94 10	3383.39			
		2311.2 6	1.0×10 ² 4	2497.32 (2 ⁺)			
4854.2?		1298.5 [@] 5	100 19	3555.79			
		3197.9 [@] 10	7.×10 ¹ 3	1655.92	4 ⁺		
4881.7	8	1183.1 [‡] 3	100 [‡]	3698.55 (7 ⁻)		D [#]	
4919.07?		4087.26 [@] 23	100 7	831.68	2 ⁺		
		4919.0 [@] 4	30 4	0.0	0 ⁺		
4947.5	(2 ⁺)	2741.0 [@] 12	41 22	2207.02 (3 ⁻)			
		4115.6 [@] 4	100 17	831.68	2 ⁺		
4973.99		1590.3 3	67 8	3383.39			
		2476.7 11	5.×10 ¹ 4	2497.32 (2 ⁺)			
		3081.3 4	75 14	1892.36	2 ⁺		
		4974.14 25	100 8	0.0	0 ⁺		
5021.62	(9 ⁻)	140.0 [‡] 5	4.8 [‡] 7	4881.7	8	D [#]	

Adopted Levels, Gammas (continued)

$\gamma(^{90}\text{Sr})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α	Comments	
5021.62	(9 ⁻)	272.5 [‡] 3	23.8 [‡] 7	4748.93	8	D [#]			
		955.3 [‡] 1	100.0 [‡] 14	4066.32	(7 ⁻)	(E2)		Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E2.	
		1323.1 [‡] 3	31.3 [‡] 7	3698.55	(7 ⁻)	(E2)		Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E2.	
5024.54		4192.75 23	100	831.68	2 ⁺				
5026.8?		1576.9 [@] 7	29 10	3449.83	3				
		3370.8 [@] 4	100 15	1655.92	4 ⁺				
5041.01		1485.6 7	16 5	3555.79					
		3148.58 12	100 4	1892.36	2 ⁺				
5041.44		2543.9 3	17.9 21	2497.32	(2 ⁺)				
		2834.43 13	100 7	2207.02	(3 ⁻)				
		4209.5 3	49 5	831.68	2 ⁺				
5055.56	(8 ⁺)	1291.2 [‡] 3	32.6 [‡] 7	3764.36	(6 ⁺)	(E2)	3.54×10 ⁻⁴	$\alpha(\text{K})=0.000291$ 4; $\alpha(\text{L})=3.15\times 10^{-5}$ 5; $\alpha(\text{M})=5.28\times 10^{-6}$ 8; $\alpha(\text{N})=6.63\times 10^{-7}$ 10; $\alpha(\text{O})=4.32\times 10^{-8}$ 6	
								Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E2.	
		1357.0 [‡] 1	100.0 [‡] 21	3698.55	(7 ⁻)	(E1)	2.89×10 ⁻⁴	$\alpha(\text{K})=0.0001270$ 18; $\alpha(\text{L})=1.351\times 10^{-5}$ 19; $\alpha(\text{M})=2.26\times 10^{-6}$ 4; $\alpha(\text{N})=2.85\times 10^{-7}$ 4; $\alpha(\text{O})=1.87\times 10^{-8}$ 3	
								Mult.: D from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; $\Delta\pi=$ yes from level scheme.	
		1560.7 [‡] 3	69.5 [‡] 14	3494.84	6 ⁽⁺⁾	(E2)	3.32×10 ⁻⁴	$\alpha(\text{K})=0.000198$ 3; $\alpha(\text{L})=2.13\times 10^{-5}$ 3; $\alpha(\text{M})=3.57\times 10^{-6}$ 5; $\alpha(\text{N})=4.49\times 10^{-7}$ 7; $\alpha(\text{O})=2.94\times 10^{-8}$ 5	
								Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E2.	
5089.46		2592.32 20	87 9	2497.32	(2 ⁺)				
		4257.34 24	100 8	831.68	2 ⁺				
5187.51	(1 ⁻ ,2 ⁺)	1038.63 7	26.7 11	4148.85					
		1631.78 20	7.2 14	3555.79					
		1804.10 7	52.1 18	3383.39					
		2148.2 3	18.8 24	3039.26	1				
		2216.29 14	42.8 24	2971.12	0 ⁺				
		2980.7 6	8.2 18	2207.02	(3 ⁻)				
		3295.09 14	74 4	1892.36	2 ⁺				
		4355.78 22	38.0 21	831.68	2 ⁺				
		5187.44 23	100 5	0.0	0 ⁺				
5239.2		3032.1 5	100	2207.02	(3 ⁻)				
5254.32		1870.7 4	7.8 17	3383.39					
		3361.88 13	100 5	1892.36	2 ⁺				
		5254.27 25	23.8 17	0.0	0 ⁺				
5285.89		1658.9 3	37 5	3627.01					
		4454.07 21	100 7	831.68	2 ⁺				
5298.48	(9 ⁻)	416.8 [‡] 5	18 [‡] 3	4881.7	8	D [#]	0.00403	$\alpha(\text{K})=0.00357$ 5; $\alpha(\text{L})=0.000392$ 6; $\alpha(\text{M})=6.58\times 10^{-5}$ 10; $\alpha(\text{N})=8.27\times 10^{-6}$ 12; $\alpha(\text{O})=5.39\times 10^{-7}$ 8	
		549.6 [‡] 3	71 [‡] 6	4748.93	8	D [#]	0.00211	$\alpha(\text{K})=0.00186$ 3; $\alpha(\text{L})=0.000203$ 3; $\alpha(\text{M})=3.41\times 10^{-5}$ 5; $\alpha(\text{N})=4.29\times 10^{-6}$ 6; $\alpha(\text{O})=2.81\times 10^{-7}$ 4	

Adopted Levels, Gammas (continued)

$\gamma(^{90}\text{Sr})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.	α	Comments
5298.48	(9 ⁻)	1599.9 ‡ 3	100 ‡ 3	3698.55	(7 ⁻)	(E2)	3.37×10 ⁻⁴	$\alpha(\text{K})=0.000189$ 3; $\alpha(\text{L})=2.02\times 10^{-5}$ 3; $\alpha(\text{M})=3.40\times 10^{-6}$ 5; $\alpha(\text{N})=4.27\times 10^{-7}$ 6; $\alpha(\text{O})=2.80\times 10^{-8}$ 4 Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma)$, $^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E2.
5333.15?		4500.8 @ 10	8 4	831.68	2 ⁺			
		5333.01 @ 24	100 5	0.0	0 ⁺			
5426.65		3534.24 13	100	1892.36	2 ⁺			
5431.2		3538.6 @ 6	100 22	1892.36	2 ⁺			
		4599.4 @ 3	96 8	831.68	2 ⁺			
5557.9		1603.52 20	100 11	3954.32				
		4726.1 7	24 7	831.68	2 ⁺			
5591.8	10	570.2 ‡ 3	100 ‡	5021.62	(9 ⁻)	D [#]		
5600.3?		1973.3 @ 10	1.0×10 ² 4	3627.01				
		5600.1 @ 5	83 14	0.0	0 ⁺			
5623.3		196.8 4	59 10	5426.65				
		1668.9 6	9.×10 ¹ 3	3954.32				
		1996.0 10	24 10	3627.01				
		2239.7 8	1.0×10 ² 6	3383.39				
5785.1?		2335.2 @ 10	1.0×10 ² 4	3449.83	3			
		3214.5 @ 11	6.×10 ¹ 3	2570.60				
5822.0		395.8 8	27 14	5426.65				
		1686.2 6	43 14	4135.63	(1,2 ⁺)			
		2789.1 22	1.0×10 ² 7	3032.87				
		3929.4 14	5.×10 ¹ 3	1892.36	2 ⁺			
5827.9		2200.9 3	84 10	3627.01				
		2900.3 13	20 12	2927.70	4			
		3620.8 11	1.0×10 ² 4	2207.02	(3 ⁻)			
		4996.2 11	11 5	831.68	2 ⁺			
5923.56	(10 ⁺)	625.1 ‡ 3	21.4 ‡ 16	5298.48	(9 ⁻)	D [#]		
		868.0 ‡ 1	100.0 ‡ 19	5055.56	(8 ⁺)	(E2)		Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma)$, $^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E2.
		901.9 ‡ 3	8.2 ‡ 8	5021.62	(9 ⁻)			
5961.1	(11 ⁻)	939.5 ‡ 3	100 ‡	5021.62	(9 ⁻)	(E2)	6.70×10 ⁻⁴	$\alpha(\text{K})=0.000593$ 9; $\alpha(\text{L})=6.48\times 10^{-5}$ 9; $\alpha(\text{M})=1.088\times 10^{-5}$ 16; $\alpha(\text{N})=1.362\times 10^{-6}$ 19; $\alpha(\text{O})=8.77\times 10^{-8}$ 13 Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma)$, $^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E2.
6712.3	12	751.2 ‡ 3	100 ‡ 3	5961.1	(11 ⁻)	D [#]		
		1120.5 ‡ 3	48 ‡ 3	5591.8	10	Q [#]		
6794.56	(12 ⁺)	871.0 ‡ 1	100 ‡	5923.56	(10 ⁺)	(E2)	8.05×10 ⁻⁴	$\alpha(\text{K})=0.000712$ 10; $\alpha(\text{L})=7.80\times 10^{-5}$ 11; $\alpha(\text{M})=1.310\times 10^{-5}$ 19;

Adopted Levels, Gammas (continued)

$\gamma(^{90}\text{Sr})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult.	Comments
							$\alpha(\text{N})=1.639\times 10^{-6}$ 23 $\alpha(\text{O})=1.052\times 10^{-7}$ 15 Mult.: Q from $\gamma\gamma(\theta)$ in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$; assumed E2.
7371.2	13	658.9 ‡ 3	100 ‡	6712.3	12	D $^\#$	
7705.77		911.2 ‡ 1	100 ‡	6794.56	(12 $^+$)		
7959.7		253.9 ‡ 3	100 ‡	7705.77		Q $^\#$	
8772.4		812.7 ‡ 5	20 ‡ 7	7959.7			
		1066.6 ‡ 3	100 ‡ 13	7705.77		Q $^\#$	
9060.7		288.3 ‡ 3	100 ‡	8772.4		D $^\#$	
9199.7		1493.9 ‡ 3	100 ‡	7705.77			
9957.5		757.8 ‡ 3	100 ‡	9199.7		D $^\#$	

† From ^{90}Rb β^- decay, except where noted.

‡ From $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$.

$^\#$ From $\gamma\gamma(\theta)$ (DCO) in $^{82}\text{Se}(^{11}\text{B},\text{p}2\text{n}\gamma), ^{12}\text{C}(^{86}\text{Kr},2\alpha\gamma)$.

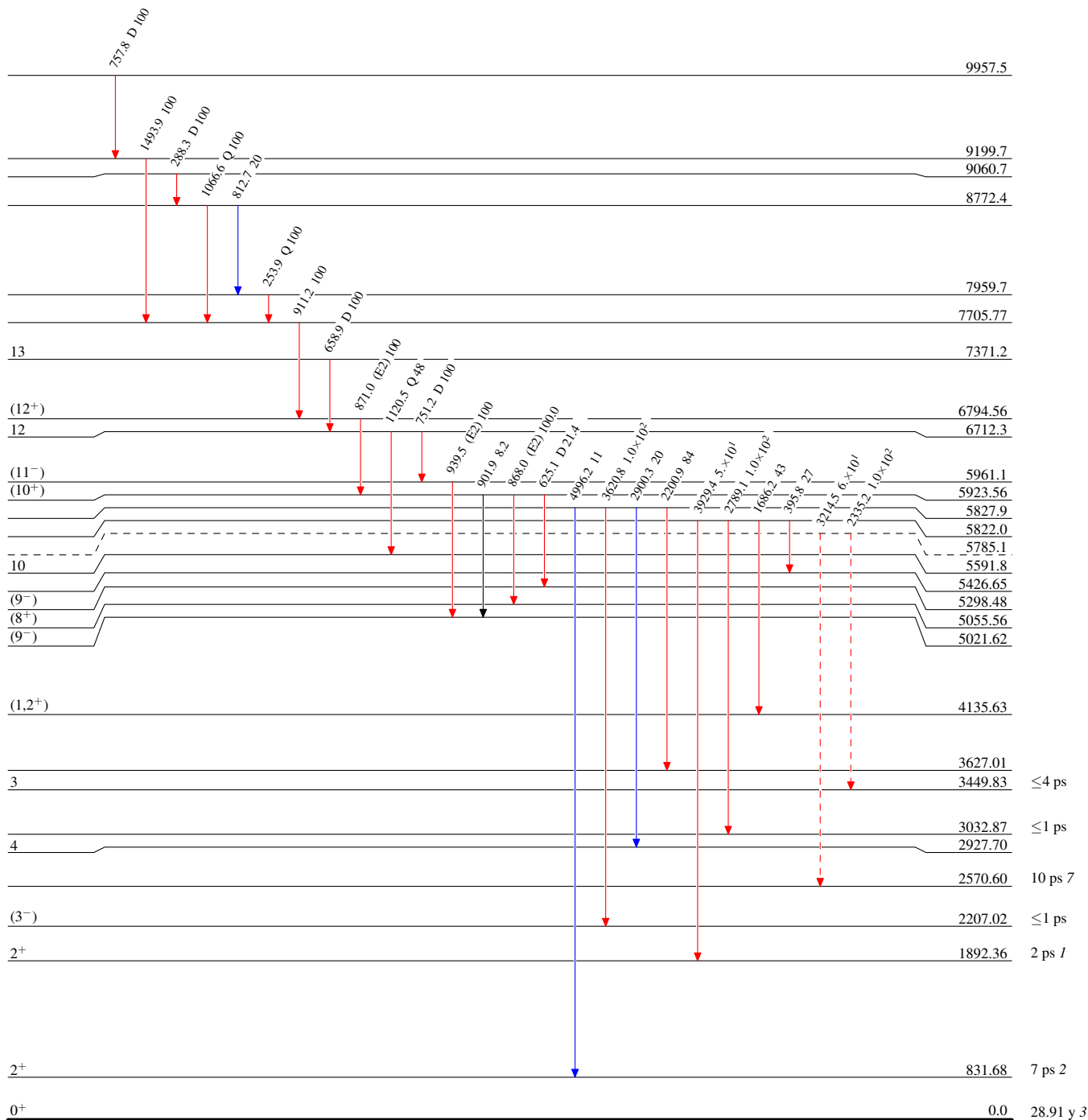
@ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas**Level Scheme**

Intensities: Type not specified

Legend

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



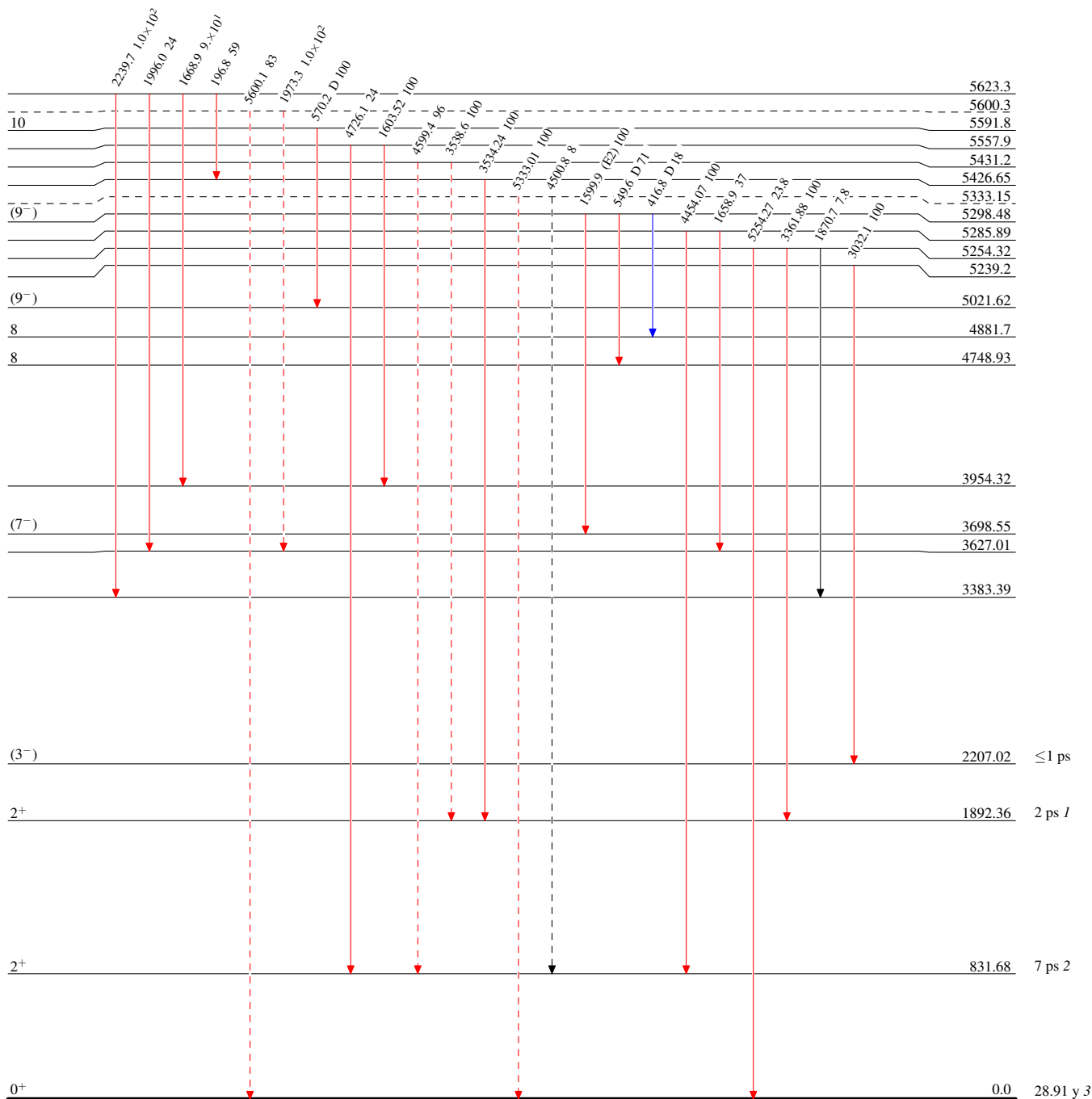
Adopted Levels, Gammas

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)



$^{90}_{38}\text{Sr}_{52}$

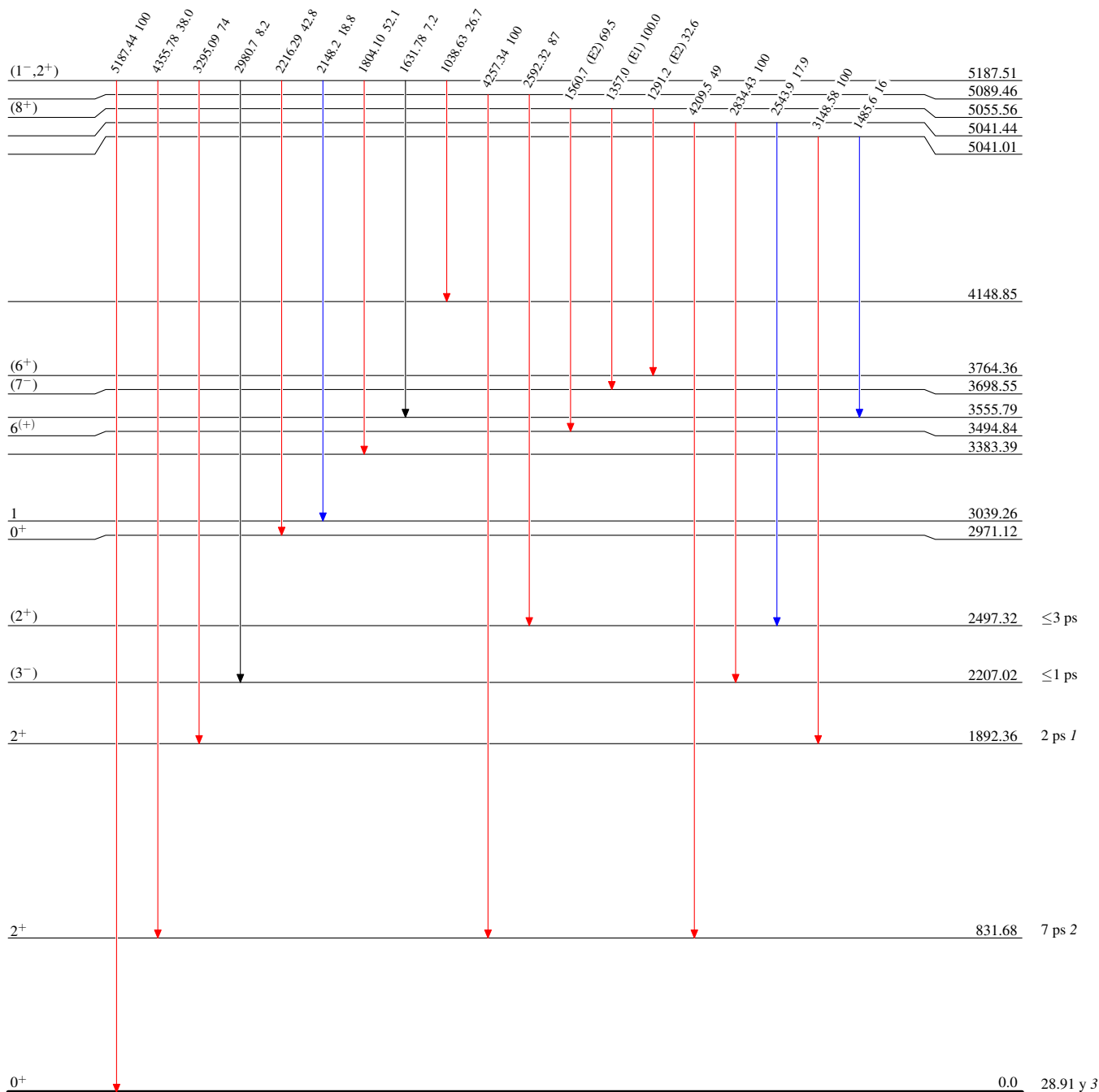
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{\max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{\max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{\max}$



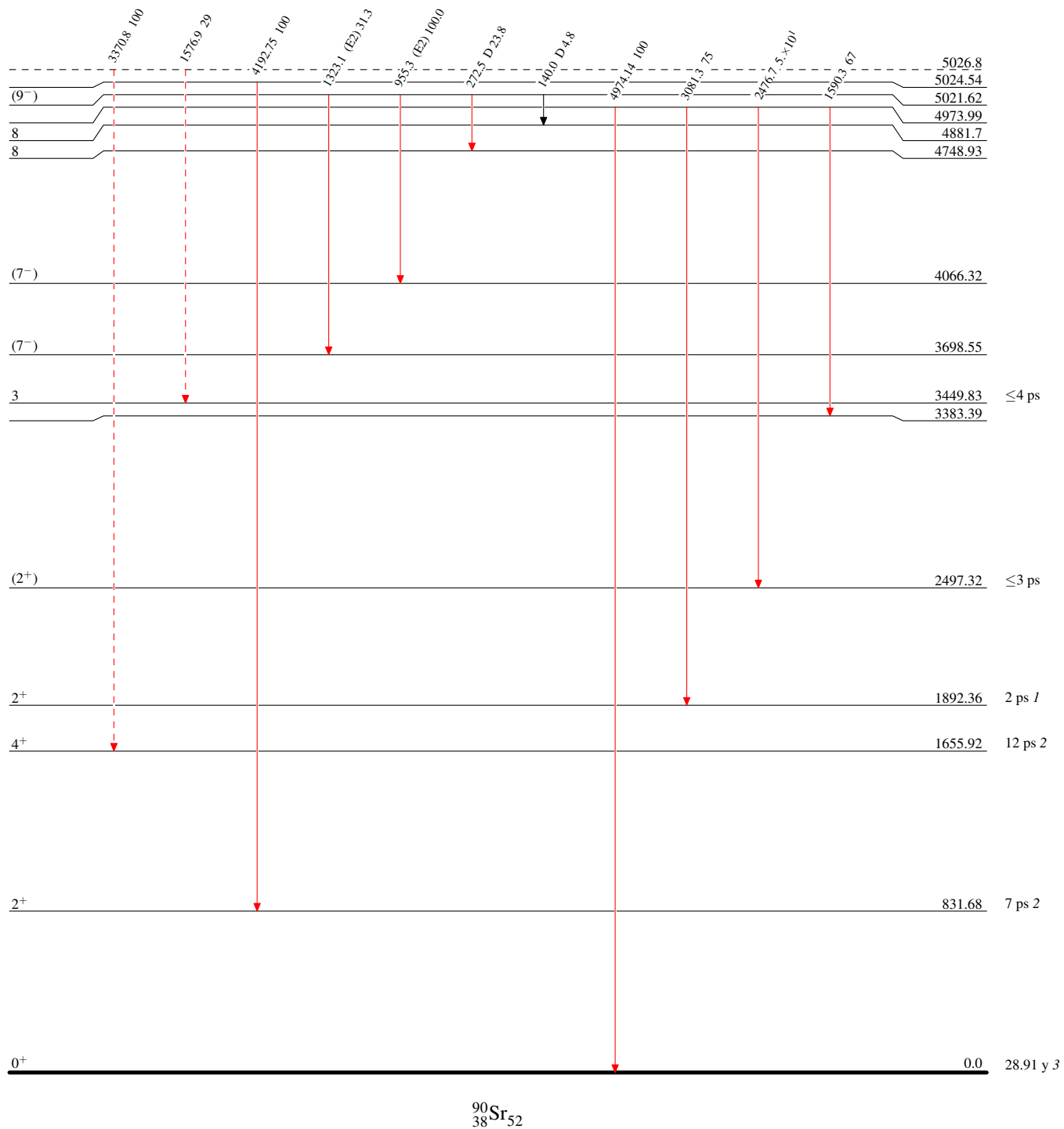
$^{90}_{38}\text{Sr}_{52}$

Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Type not specified

Legend

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



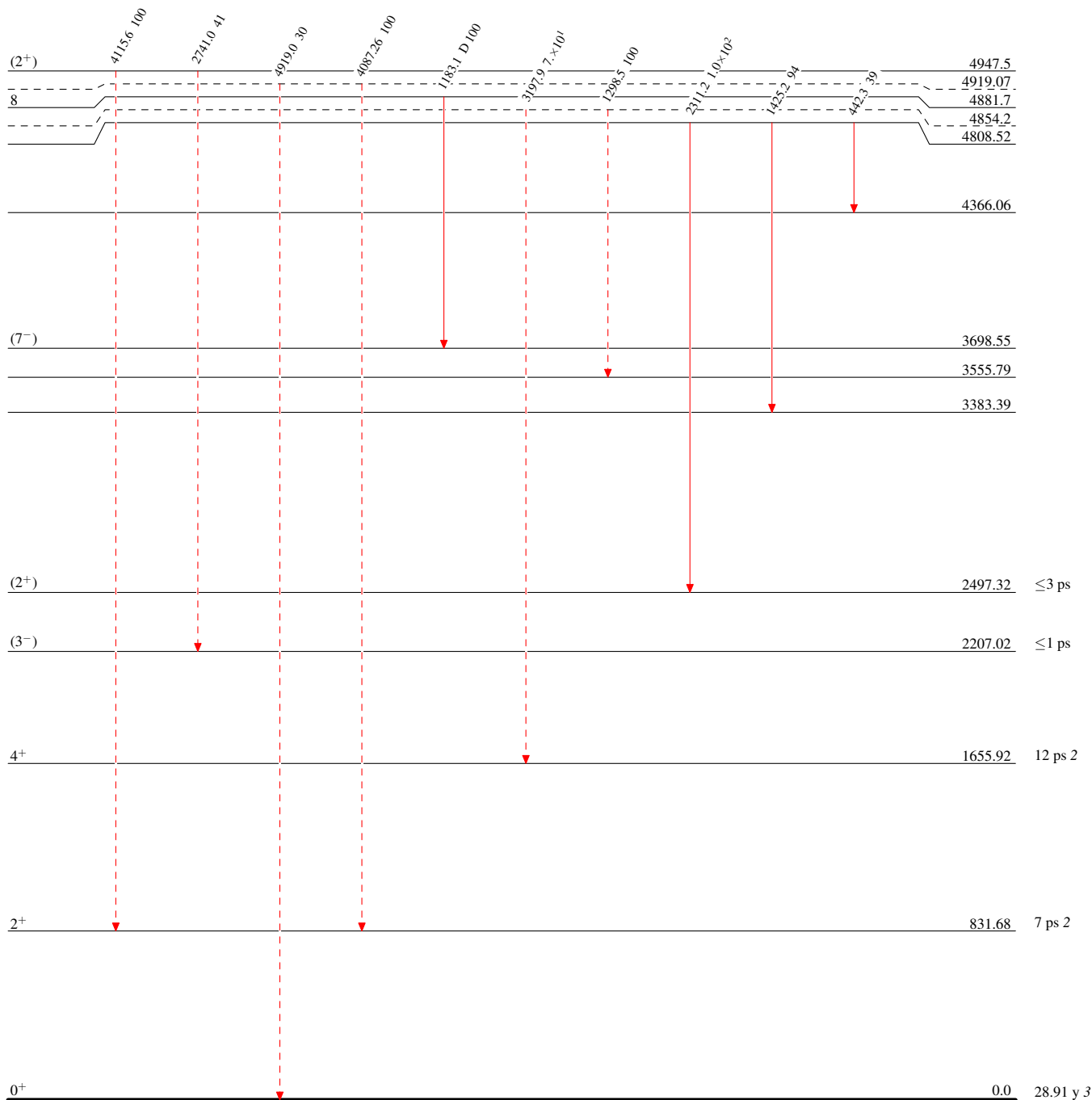
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

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



$^{90}_{38}\text{Sr}_{52}$

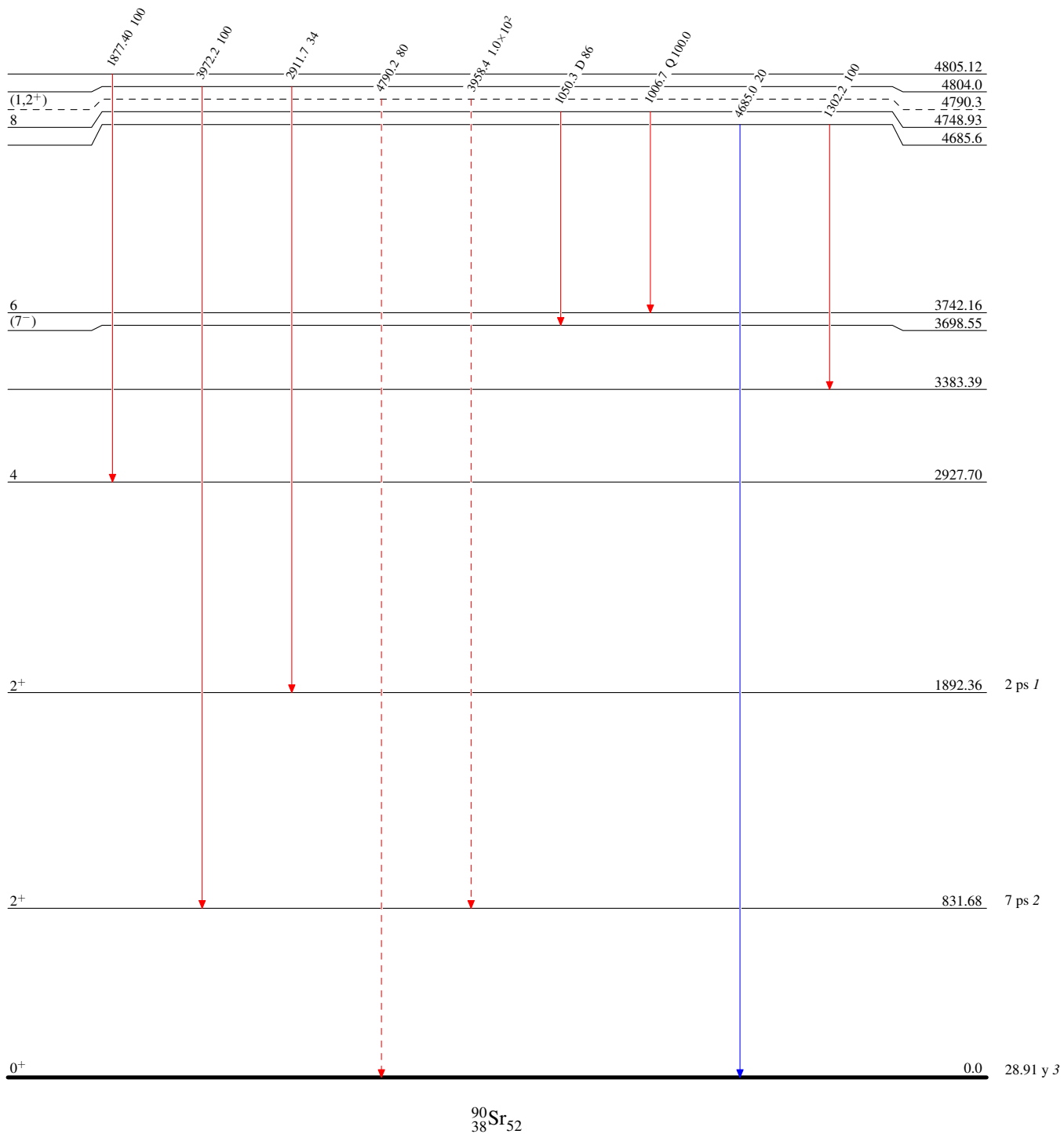
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

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



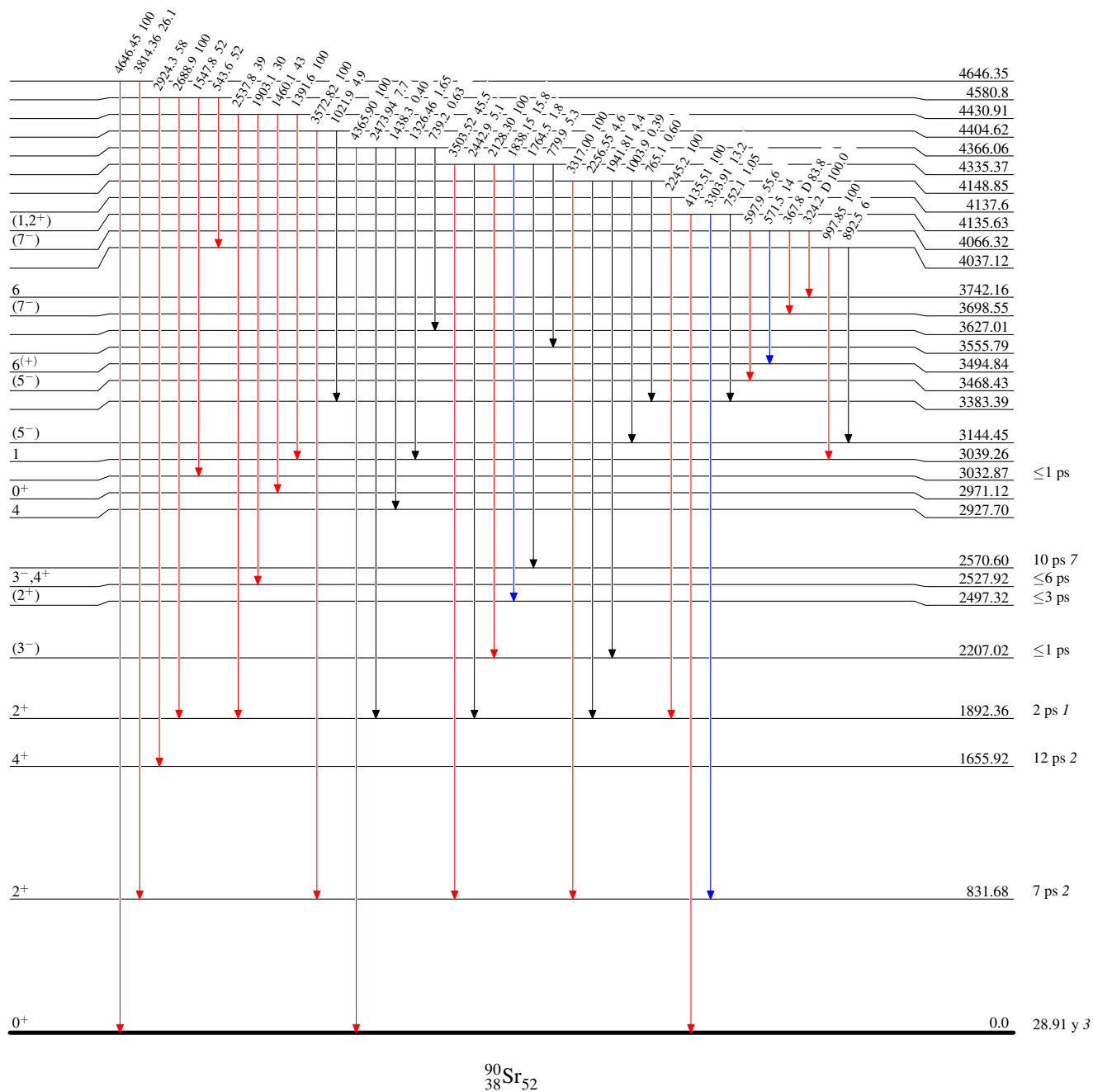
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{\max}$
- $I_\gamma < 10\% \times I_\gamma^{\max}$
- $I_\gamma > 10\% \times I_\gamma^{\max}$



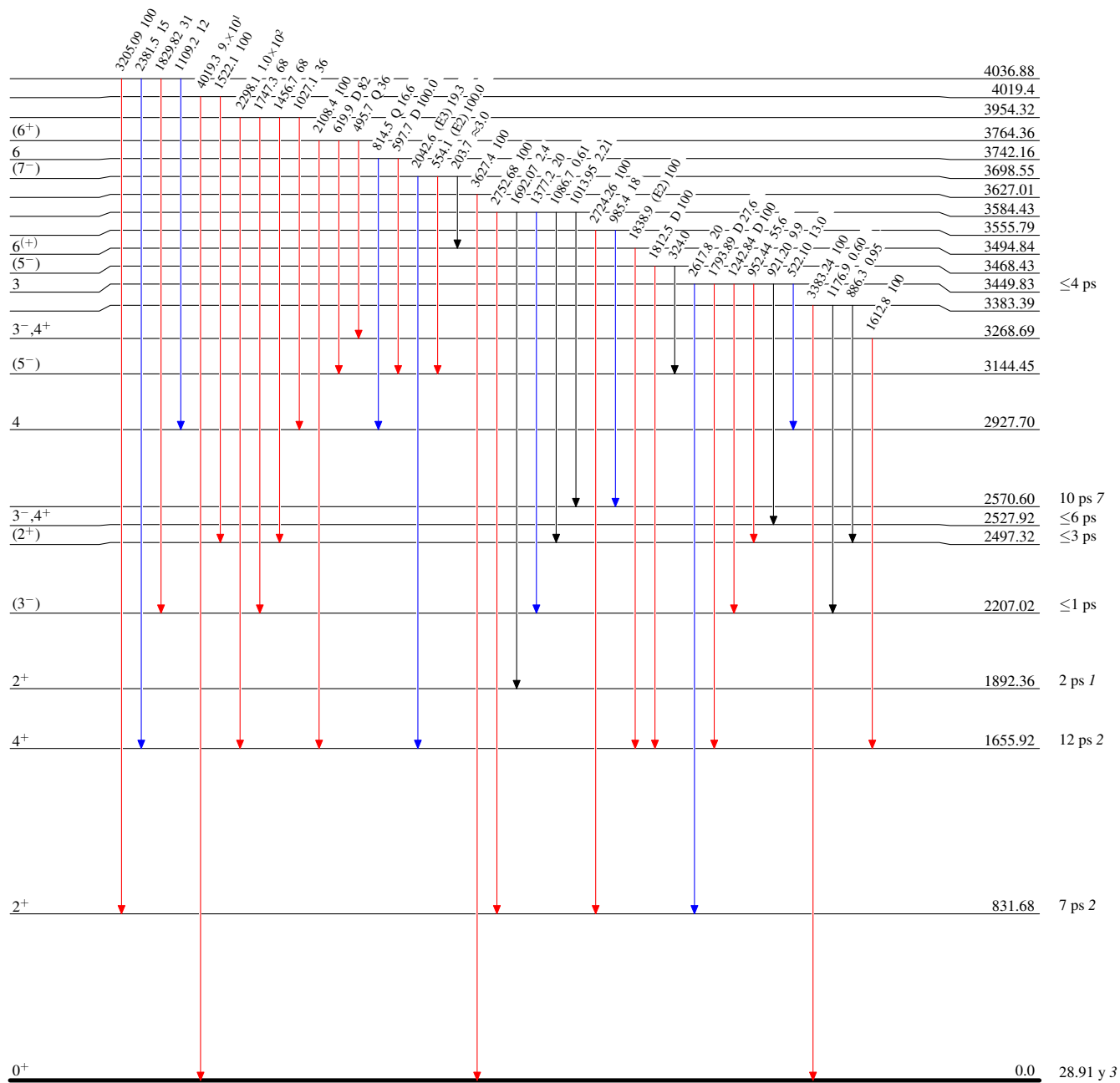
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Type not specified

$\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$



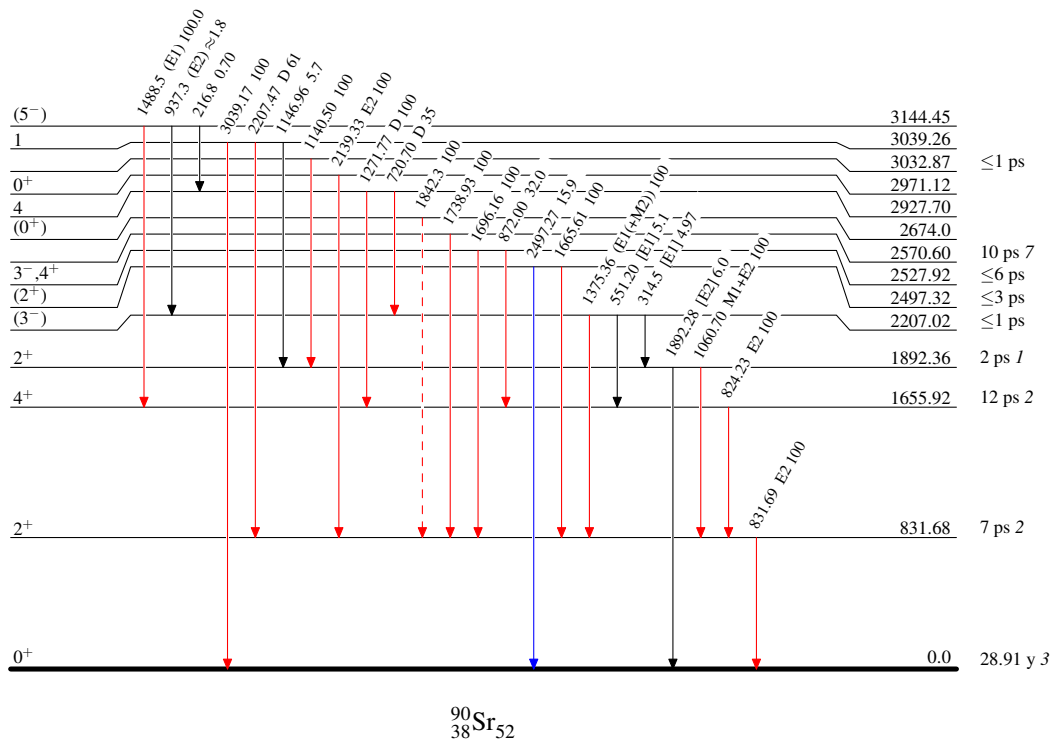
Adopted Levels, Gammas

Legend

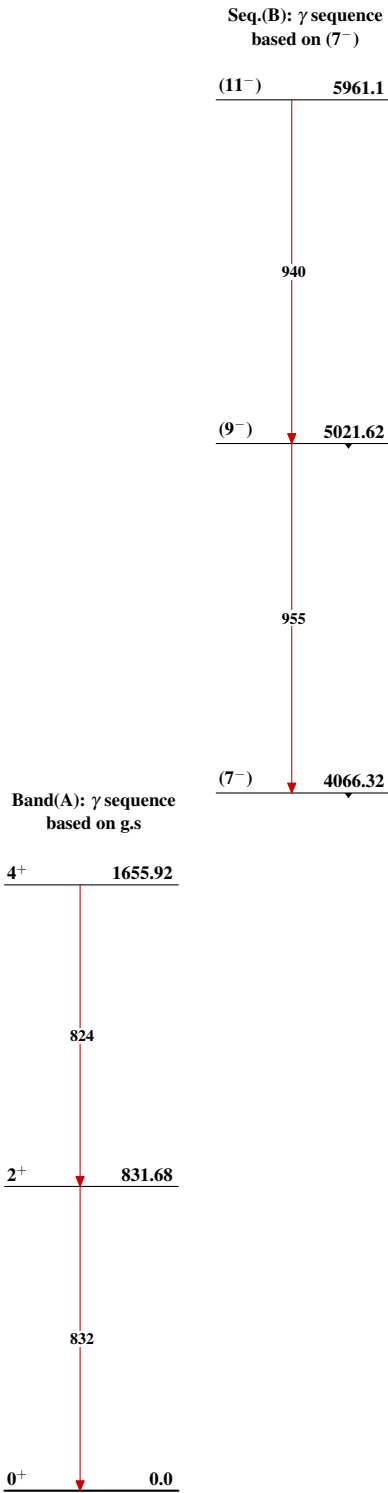
Level Scheme (continued)

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



$^{90}_{38}\text{Sr}_{52}$