

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 125, 201 (2015)	31-Dec-2014

$Q(\beta^-) = -7.5 \times 10^3$ 3; S(n)=10039 5Y; S(p)=5137 8; $Q(\alpha) = -2859$ 11 [2012Wa38](#)

$\Delta S(n) = 200$ ([2012Wa38](#)).

S(2n)= 2.366×10^4 16; S(2p)=8960 7; $Q(\epsilon p) = 2811$ 9 ([2012Wa38](#)).

[1983Ha36](#) observed a β^+ -delayed proton activity decaying with $T_{1/2} = 6.0$ s 15, which 6% 4 of the total delayed protons populate the first excited state in ^{82}Sr . [1982De36](#) reported a β^+ activity decaying with $T_{1/2} = 8$ s 1. Both authors used the $^{54}\text{Fe}(^{32}\text{S}, 2\text{pn})$ reaction, and tentatively assigned this activity to a ^{83}Zr isomeric state. No γ rays were detected. A more recent search for this isomer through detection of γ rays, x-rays, and conversion electrons gave negative results. The absence of these radiations suggested no isomer with an energy > 18 keV in ^{83}Zr ([1987Ra06](#)).

[Additional information 1.](#)

α : [Additional information 2.](#)

 ^{83}Zr LevelsCross Reference (XREF) Flags

- A ^{83}Nb ϵ decay
 B $^{58}\text{Ni}(^{28}\text{Si}, 2\text{pn}\gamma)$
 C $^{54}\text{Fe}(^{32}\text{S}, 2\text{pn}\gamma)$

E(level) [†]	J ^π [‡]	T _{1/2} [#]	XREF	Comments
0.0 [@]	(1/2 ⁻)	42 s 2	ABC	$\% \epsilon + \% \beta^+ = 100$; $\% \epsilon p = ?$ T _{1/2} : weighted average of 44 s 1 (1982Li17), 45 s 4 (1981SaZO), 44 s 2 (1982De36) and 37.8 s 11 (1983Ha06). J ^π : from systematics; the g.s. of all other N=43 isotones (^{85}Mo , ^{81}Sr , ^{79}Kr) have J ^π =1/2 ⁻ . However, J ^π =1/2 ⁺ , 3/2, or 5/2 ⁻ are also possible.
52.72 ^b 5	(5/2 ⁻)	0.53 μs 12	ABC	T _{1/2} : from $\gamma\gamma(t)$ in $^{54}\text{Fe}(^{32}\text{S}, 2\text{pn}\gamma)$. Other: 0.50 μs 25 from neutron- $\gamma(t)$ in $^{58}\text{Ni}(^{28}\text{S}, 2\text{pn}\gamma)$. J ^π : E2 52.7 γ to (1/2 ⁻).
77.04 ^a 7	(7/2 ⁺)	1.8 μs 1	ABC	T _{1/2} : from neutron- $\gamma(t)$ in $^{58}\text{Ni}(^{28}\text{S}, 2\text{pn}\gamma)$ (1988Su15). Others: 2.0 μs 2 from $\beta\gamma(t)$ in ^{83}Nb ϵ decay, 132 ns 55 from $\gamma\gamma(t)$ in $^{54}\text{Fe}(^{32}\text{S}, 2\text{pn}\gamma)$. J ^π : E1 24.3 γ to (5/2 ⁻).
129.1 [@] 1	(3/2 ⁻)		BC	J ^π : M1+E2 129.5 γ to (1/2 ⁻).
138.8 ^{&} 1	(9/2 ⁺)		BC	J ^π : M1(+E2) 62 γ to (7/2 ⁺), band assignment.
328.5 2			B	
338.5 ^c 1	(7/2 ⁻)	50 ps 4	BC	J ^π : M1+E2 286 γ to (5/2 ⁻), band assignment.
372.6 [@] 1	(5/2 ⁻)		BC	J ^π : 243 γ to (3/2 ⁻), 373 γ to (1/2 ⁻), band assignment.
580.0 3			B	
582.7 [@] 1	(7/2 ⁻)	21.5 ps 55	BC	J ^π : E2 453 γ to (3/2 ⁻), band assignment.
623.9 3			B	
680.3 ^b 2	(9/2 ⁻)	4.2 ps 8	BC	J ^π : E2 628 γ to (5/2 ⁻), band assignment.
769.0 ^a 3	(11/2 ⁺)	<2.3 ps	BC	T _{1/2} : effective lifetime of 2.0 ps 3 from RDDS in $^{54}\text{Fe}(^{32}\text{S}, 2\text{pn}\gamma)$ (1989Fi06). J ^π : 682 γ to (7/2 ⁺), M1+E2 630 γ to (9/2 ⁺), band assignment.
880.3 ^{&} 3	(13/2 ⁺)	2.3 ps 3	BC	J ^π : E2 742 γ to (9/2 ⁺), band assignment.
983.2 [@] 2	(9/2 ⁻)		BC	J ^π : E2 610.5 γ to (5/2 ⁻), band assignment.
1013.4 ^c 2	(11/2 ⁻)	1.9 ps 3	BC	J ^π : E2 675 γ to (7/2 ⁻), band assignment.
1262.2 [@] 3	(11/2 ⁻)	<2.1 ps	BC	T _{1/2} : effective lifetime of 1.7 ps 4 from RDDS in $^{54}\text{Fe}(^{32}\text{S}, 2\text{pn}\gamma)$ (1989Fi06). J ^π : E2 679 γ to (7/2 ⁻), band assignment.
1345.8 4			B	

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Adopted Levels, Gammas (continued) ^{83}Zr Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2} [#]	XREF	Comments
1384.2 6			B	
1475.8 ^b 3	(13/2 ⁻)	0.76 ps 2I	BC	J ^π : E2 795γ to (9/2 ⁻), band assignment.
1591.3 4			B	
1662.9 ^a 4	(15/2 ⁺)		BC	J ^π : M1+E2 782γ to (13/2 ⁺), 894γ to (11/2 ⁺), band assignment.
1733.7 6			B	
1771.4 [@] 4	(13/2 ⁻)		BC	J ^π : 509γ to (11/2 ⁻), 788γ to (9/2 ⁻), band assignment.
1817.4 ^{&} 4	(17/2 ⁺)	0.42 ps 14	BC	J ^π : E2 937γ to (13/2 ⁺), band assignment.
1830.0 ^c 4	(15/2 ⁻)	0.62 ps 2I	BC	J ^π : E2 817γ to (11/2 ⁻), band assignment.
2021.3 8			B	
2126.2 [@] 6	(15/2 ⁻)		BC	J ^π : E2 864γ to (11/2 ⁻), band assignment.
2159.7 7			B	
2258.3 8			B	
2359.6 8			B	
2398.3 ^b 5	(17/2 ⁻)	<1.04 ps	BC	T _{1/2} : effective lifetime of 0.83 ps 2I from RDDS in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$ (1989Fi06). J ^π : E2 922γ to (13/2 ⁻), band assignment.
2494.6 7			B	
2674.9 [@] 7	(17/2 ⁻)		B	J ^π : 903.5γ to (13/2 ⁻), band assignment.
2708.4 ^a 5	(19/2 ⁺)		BC	J ^π : 890.5γ to (17/2 ⁺), 1045γ to (15/2 ⁺), band assignment.
2743.1 ^c 6	(19/2 ⁻)	<1.04 ps	BC	T _{1/2} : effective lifetime of 0.83 ps 2I from RDDS in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$ (1989Fi06). J ^π : E2 913γ to (15/2 ⁻), band assignment.
2913.0 ^{&} 6	(21/2 ⁺)	0.37 ps 6	BC	J ^π : E2 1096γ to (17/2 ⁺), band assignment. T _{1/2} : weighted average of 0.38 ps 6 from RDDS and 0.35 ps 14 from DSAM in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$ (1989Fi06).
2926 1			B	
3095.5 [@] 9	(19/2 ⁻)		B	J ^π : 969γ to (15/2 ⁻), band assignment.
3138 ^d 1	(19/2 ⁻)		B	J ^π : 395γ to (19/2 ⁻), 1307γ to (15/2 ⁻).
3304.9 6			B	
3374.2 ^b 6	(21/2 ⁻)		BC	J ^π : E2 976γ to (17/2 ⁻), band assignment.
3587.0 6			B	
3625.3 ^e 6	(21/2 ⁻)		B	J ^π : 1227γ to (17/2 ⁻).
3689 [@] 1	(21/2 ⁻)		B	J ^π : 1014γ to (17/2 ⁻), band assignment.
3726.1 ^a 6	(23/2 ⁺)		B	J ^π : 813.5γ to (21/2 ⁺), 1019γ to (19/2 ⁺), band assignment.
3730.9 ^c 7	(23/2 ⁻)		BC	J ^π : E2 988γ to (19/2 ⁻), band assignment.
3955.3 ^{&} 7	(25/2 ⁺)	0.40 ps 6	BC	J ^π : E2 1042γ to (21/2 ⁺), band assignment. T _{1/2} : from DSAM in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$.
3981.7 ^d 6	(23/2 ⁻)		B	J ^π : 844γ to (19/2 ⁻), (M1+E2) 607.5γ to (21/2 ⁻), band assignment.
4092.0 8			B	
4188 [@] 1	(23/2 ⁻)		B	J ^π : 1092γ to (19/2 ⁻), band assignment.
4283.0 9	(25/2 ⁺)		B	J ^π : (E2) 1370γ to (21/2 ⁺).
4431.4 ^b 8	(25/2 ⁻)		BC	J ^π : (E2) 1057γ to (21/2 ⁻).
4469.7 ^e 7	(25/2 ⁻)		B	J ^π : 488γ to (23/2 ⁻), band assignment.
4767 ^a 1	(27/2 ⁺)		B	J ^π : 1041γ to (23/2 ⁺), band assignment.
4839.1 ^c 8	(27/2 ⁻)		BC	J ^π : E2 1108γ to (23/2 ⁻), band assignment.
4904.3 ^{&} 9	(29/2 ⁺)	<0.42 ps	BC	T _{1/2} : effective lifetime of 0.35 ps 7 from DSAM in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$. J ^π : E2 949γ to (25/2 ⁺).
4943.7 ^d 8	(27/2 ⁻)		B	J ^π : 961.5γ to (23/2 ⁻), (M1+E2) 512γ to (25/2 ⁻), band assignment.
5348 [@] 2	(27/2 ⁻)		B	
5460.4 ^e 8	(29/2 ⁻)		B	J ^π : 991γ to (25/2 ⁻), 621.5γ to (27/2 ⁻), band assignment.
5626? 2			B	
5645 ^b 1	(29/2 ⁻)		BC	J ^π : E2 1214γ to (25/2 ⁻), band assignment.

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Adopted Levels, Gammas (continued) ^{83}Zr Levels (continued)

E(level) [†]	J ^π [‡]	XREF	Comments
5934 ^a 1	(31/2 ⁺)	B	J ^π : 1167γ to (27/2 ⁺), band assignment.
6022 ^d 1	(31/2 ⁻)	B	J ^π : 376γ to (29/2 ⁻), 1079γ to (27/2 ⁻), band assignment.
6028 ^{&} 1	(33/2 ⁺)	BC	J ^π : E2 1124γ to (29/2 ⁺), band assignment.
6074 ^c 1	(31/2 ⁻)	BC	J ^π : E2 1235γ to (27/2 ⁻), band assignment.
6570 ^e 2	(33/2 ⁻)	B	J ^π : 548γ to (31/2 ⁻), 1111γ to (29/2 ⁻), band assignment.
6949 ^b 1	(33/2 ⁻)	B	J ^π : E2 1304γ to (29/2 ⁻), band assignment.
7195 ^a 2	(35/2 ⁺)	B	
7235 ^d 2	(35/2 ⁻)	B	J ^π : 1213γ to (31/2 ⁻), band assignment.
7325 ^{&} 1	(37/2 ⁺)	BC	J ^π : E2 1297γ to (33/2 ⁺), band assignment.
7380 ^c 1	(35/2 ⁻)	BC	J ^π : E2 1307γ to (31/2 ⁻), band assignment.
7628 2	(37/2 ⁺)	B	
7817 ^e 2	(37/2 ⁻)	B	J ^π : 1247γ to (33/2 ⁻), band assignment.
8275 ^b 2	(37/2 ⁻)	B	J ^π : 1326γ to (33/2 ⁻), band assignment.
8586 ^a 2	(39/2 ⁺)	B	J ^π : 1391γ to (35/2 ⁺), band assignment.
8611 ^d 2	(39/2 ⁻)	B	J ^π : 1376γ to (35/2 ⁻), band assignment.
8758 ^c 2	(39/2 ⁻)	B	J ^π : 1378γ to (35/2 ⁻), band assignment.
8812 ^{&} 2	(41/2 ⁺)	B	J ^π : E2 1487γ to (37/2 ⁺), band assignment.
9229 ^e 2	(41/2 ⁻)	B	J ^π : 1412γ to (37/2 ⁻), band assignment.
9689 ^b 2	(41/2 ⁻)	B	J ^π : 1414γ to (37/2 ⁻), band assignment.
10137 ^d 2	(43/2 ⁻)	B	J ^π : 1526γ to (39/2 ⁻), band assignment.
10224 ^a 2	(43/2 ⁺)	B	J ^π : 1638γ to (39/2 ⁺), band assignment.
10310 ^c 2	(43/2 ⁻)	B	J ^π : 1552γ to (39/2 ⁻), band assignment.
10516 ^{&} 2	(45/2 ⁺)	B	J ^π : 1704γ to (41/2 ⁺), band assignment.
10810 ^e 2	(45/2 ⁻)	B	J ^π : 1581γ to (41/2 ⁻), band assignment.
11786 ^d 2	(47/2 ⁻)	B	J ^π : 1649γ to (43/2 ⁻), band assignment.
12080 ^c 2	(47/2 ⁻)	B	J ^π : 1770γ to (43/2 ⁻), band assignment.
12087 ^a 2	(47/2 ⁺)	B	J ^π : 1863γ to (43/2 ⁺), band assignment.
12433 ^{&} 3	(49/2 ⁺)	B	J ^π : 1917γ to (45/2 ⁺), band assignment.
12582 ^e 3	(49/2 ⁻)	B	J ^π : 1772γ to (45/2 ⁻), band assignment.
14510 ^{&} 3	(53/2 ⁺)	B	J ^π : 2077γ to (49/2 ⁺), band assignment.
16736 ^{&} 3	(57/2 ⁺)	B	J ^π : 2226γ to (53/2 ⁺), band assignment.
19217 ^{&} 3	(61/2 ⁺)	B	J ^π : 2481γ to (57/2 ⁺), band assignment.
0+x		B	
581+x		B	
1385+x		B	
2397+x?		B	E(level): ordering of 1192-1012 is not established.
3589+x?		B	E(level): ordering of 1192-1012 is not established.
3939+x		B	
4365+x		B	
y ^f	J≈(27/2)	B	J ^π : from 2003Le08. 1996Ru16 proposed 31/2. E(level): y≈5400 (1996Ru16).
1380.0+y ^f 10	J+2	B	
1574.0+y ^f 23	J+2	B	
2916.0+y ^f 15	J+4	B	
3001.0+y ^f 20	J+4	B	
4556.0+y ^f 18	J+6	B	
6305.1+y ^f 20	J+8	B	
8214.1+y ^f 23	J+10	B	

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Adopted Levels, Gammas (continued) ^{83}Zr Levels (continued)

E(level) [†]	J^π [‡]	XREF	Comments
10288.1+y ^f 25	J+12	B	
12529+y ^f 3	J+14	B	
14939+y ^f 3	J+16	B	
17524+y ^f 3	J+18	B	
20285+y ^f 4	J+20	B	
23223+y ^f 4	J+22	B	
z ^g	J≈(29/2)	B	J^π : from 2003Le08, 1996Ru16 proposed 33/2. E(level): z≈6300 (1996Ru16).
1444.0+z ^g 10	J+2	B	
3060.0+z ^g 15	J+4	B	
4851.0+z ^g 18	J+6	B	
6815.1+z ^g 20	J+8	B	
8947.1+z ^g 23	J+10	B	
11247.1+z ^g 25	J+12	B	
13713+z ^g 3	J+14	B	
16337+z ^g 3	J+16	B	

[†] From a least-squares fit to E_γ , by evaluator.

[‡] For levels populated in (HI,xn) reactions, the J^π assignments have the assumption of increasing spin with increasing excitation energy.

From Recoil Distance Doppler-shift measurements in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$ (1989Fi06), except where noted.

@ Band(A): 1/2[301].

& Band(B): 5/2[422], $\alpha=+1/2$.

^a Band(C): 5/2[422], $\alpha=-1/2$.

^b Band(D): 5/2[303], $\alpha=+1/2$.

^c Band(E): 5/2[303], $\alpha=-1/2$.

^d Band(F): band 1, $\alpha=-1/2$.

^e Band(G): band 1, $\alpha=+1/2$.

^f Band(H): SD-1 band (2003Le08,1996Ru16). Percent feeding=6.30 (2003Le08), 5.3 3 (1996Ru16). Q(transition)=5.8 +8-5 (2003Le08), 5 2 (1996Ru16); deduced from lifetime data. Configuration= $\nu 5^2\pi 5^1$ (2003Le08).

^g Band(I): SD-2 band (2003Le08,1996Ru16). Percent feeding=2.69 (2003Le08), 1.2 2 (1996Ru16).

Adopted Levels, Gammas (continued)

$\gamma(^{83}\text{Zr})$									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	α	Comments
52.72	(5/2 ⁻)	52.70 5	100	0.0	(1/2 ⁻)	E2		11.19	$\alpha(\text{K})=8.13$ 12; $\alpha(\text{L})=2.55$ 4; $\alpha(\text{M})=0.451$ 7; $\alpha(\text{N})=0.0566$ 9; $\alpha(\text{O})=0.001195$ 17 B(E2)(W.u.)=10.0 23 E_γ : from ^{83}Nb ε decay.
77.04	(7/2 ⁺)	24.30 5	100	52.72	(5/2 ⁻)	E1		6.28	Mult.: from $\alpha(\text{K})_{\text{exp}}=9.6$ 31 in $^{58}\text{Ni}(^{28}\text{S}, 2\text{pn}\gamma)$. $\alpha(\text{K})=5.43$ 9; $\alpha(\text{L})=0.719$ 11; $\alpha(\text{M})=0.1226$ 19; $\alpha(\text{N})=0.01616$ 25; $\alpha(\text{O})=0.000783$ 12 B(E1)(W.u.)= 1.89×10^{-6} 11 E_γ : from ^{83}Nb ε decay.
129.1	(3/2 ⁻)	129.5 1	100	0.0	(1/2 ⁻)	M1+E2 [#]	+0.17 7	0.109 9	Mult.: from $\alpha(\text{exp})=5.4$ 8 in $^{58}\text{Ni}(^{28}\text{S}, 2\text{pn}\gamma)$. $\alpha(\text{K})=0.095$ 8; $\alpha(\text{L})=0.0114$ 13; $\alpha(\text{M})=0.00199$ 22; $\alpha(\text{N})=0.00028$ 3; $\alpha(\text{O})=1.84 \times 10^{-5}$ 12
138.8	(9/2 ⁺)	61.7 1	100	77.04	(7/2 ⁺)	M1(+E2) [#]	-0.02 7	0.79 5	$\alpha(\text{K})=0.70$ 4; $\alpha(\text{L})=0.082$ 10; $\alpha(\text{M})=0.0143$ 17; $\alpha(\text{N})=0.00202$ 21; $\alpha(\text{O})=0.000137$ 5 δ : other: 0.05 from $\gamma(\theta)$ in $^{54}\text{Fe}(^{32}\text{S}, 2\text{pn}\gamma)$.
328.5		199.4 3	<100	129.1	(3/2 ⁻)				
		328.4 2	100 10	0.0	(1/2 ⁻)				
338.5	(7/2 ⁻)	209.4 2	<6	129.1	(3/2 ⁻)	[E2]		0.0762	$\alpha(\text{K})=0.0657$ 10; $\alpha(\text{L})=0.00872$ 13; $\alpha(\text{M})=0.001518$ 22; $\alpha(\text{N})=0.000207$ 3; $\alpha(\text{O})=1.156 \times 10^{-5}$ 17 B(E2)(W.u.)<60
		261.3 1	15.8 11	77.04	(7/2 ⁺)	E1		0.00710	$\alpha(\text{K})=0.00627$ 9; $\alpha(\text{L})=0.000695$ 10; $\alpha(\text{M})=0.0001202$ 17; $\alpha(\text{N})=1.694 \times 10^{-5}$ 24 $\alpha(\text{O})=1.151 \times 10^{-6}$ 17 B(E1)(W.u.)= 5.2×10^{-5} 7 Mult.: D from $\gamma(\theta)$ and R_{DCO} in $^{58}\text{Ni}(^{28}\text{Si}, 2\text{pn}\gamma)$, $\Delta\pi=\text{yes}$ from level scheme.
		285.8 1	100 8	52.72	(5/2 ⁻)	M1+E2	+2.5 7	0.0238 14	$\alpha(\text{K})=0.0207$ 12; $\alpha(\text{L})=0.00257$ 16; $\alpha(\text{M})=0.00045$ 3; $\alpha(\text{N})=6.2 \times 10^{-5}$ 4; $\alpha(\text{O})=3.76 \times 10^{-6}$ 19 B(E2)(W.u.)= 1.9×10^2 3; B(M1)(W.u.)=0.0021 3 Mult.: D+Q from $\gamma(\theta)$ in $^{58}\text{Ni}(^{28}\text{Si}, 2\text{pn}\gamma)$, E1+M2 excluded by comparison to RUL. δ : other: -0.51 from $\gamma(\theta)$ in $^{54}\text{Fe}(^{32}\text{S}, 2\text{pn}\gamma)$.
372.6	(5/2 ⁻)	243.1 1	100 8	129.1	(3/2 ⁻)				
		372.8 2	74 5	0.0	(1/2 ⁻)				
580.0		580.0 3	100	0.0	(1/2 ⁻)				
582.7	(7/2 ⁻)	210.1 1	26 3	372.6	(5/2 ⁻)				
		453.3 2	100 7	129.1	(3/2 ⁻)	E2 [@]		0.00564	$\alpha(\text{K})=0.00495$ 7; $\alpha(\text{L})=0.000582$ 9; $\alpha(\text{M})=0.0001011$ 15; $\alpha(\text{N})=1.415 \times 10^{-5}$ 20 $\alpha(\text{O})=9.21 \times 10^{-7}$ 13 B(E2)(W.u.)=51 14
623.9		295.4 3		328.5					

Adopted Levels, Gammas (continued)

$\gamma(^{83}\text{Zr})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	α	Comments
623.9 680.3	(9/2 ⁻)	492.5 5 341.7 2	13.9 11	129.1 (3/2 ⁻) 338.5 (7/2 ⁻)		M1+E2 ^a	≤ 0.3	0.0082 3	$\alpha(\text{K})=0.00726$ 24; $\alpha(\text{L})=0.00082$ 3; $\alpha(\text{M})=0.000143$ 6; $\alpha(\text{N})=2.02\times 10^{-5}$ 8; $\alpha(\text{O})=1.41\times 10^{-6}$ 4 B(E2)(W.u.)<16; B(M1)(W.u.)>0.012 δ : other: -0.47 from $\gamma(\theta)$ in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$.
		627.6 3	100 7	52.72 (5/2 ⁻)		E2 [@]		0.00218	$\alpha(\text{K})=0.00191$ 3; $\alpha(\text{L})=0.000219$ 3; $\alpha(\text{M})=3.80\times 10^{-5}$ 6; $\alpha(\text{N})=5.35\times 10^{-6}$ 8; $\alpha(\text{O})=3.61\times 10^{-7}$ 5 B(E2)(W.u.)=56 12
769.0	(11/2 ⁺)	630.0 4	100 7	138.8 (9/2 ⁺)		M1+E2	0.11	0.00187	$\alpha(\text{K})=0.001652$ 24; $\alpha(\text{L})=0.000183$ 3; $\alpha(\text{M})=3.17\times 10^{-5}$ 5; $\alpha(\text{N})=4.51\times 10^{-6}$ 7; $\alpha(\text{O})=3.21\times 10^{-7}$ 5 B(E2)(W.u.)>1.1; B(M1)(W.u.)>0.03 Mult.: D+Q from $\gamma(\theta)$ in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$, M1+E2 from assumed band structure.
		692.3 5	29.3 21	77.04 (7/2 ⁺)		[E2]		1.67×10^{-3}	δ : from $\gamma(\theta)$ in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$. $\alpha(\text{K})=0.001469$ 21; $\alpha(\text{L})=0.0001669$ 24; $\alpha(\text{M})=2.90\times 10^{-5}$ 4; $\alpha(\text{N})=4.08\times 10^{-6}$ 6; $\alpha(\text{O})=2.78\times 10^{-7}$ 4 B(E2)(W.u.)>16
880.3	(13/2 ⁺)	111.3 2	<2	769.0 (11/2 ⁺)		M1+E2	0.04	0.1516 23	I_γ : other: <10 in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$. $\alpha(\text{K})=0.1330$ 20; $\alpha(\text{L})=0.01551$ 23; $\alpha(\text{M})=0.00270$ 4; $\alpha(\text{N})=0.000382$ 6; $\alpha(\text{O})=2.62\times 10^{-5}$ 4 B(E2)(W.u.)<18; B(M1)(W.u.)<0.12 Mult.: D+Q from $\gamma(\theta)$ in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$, $\Delta\pi$ =no from level scheme.
		741.6 4	100 5	138.8 (9/2 ⁺)		E2 [@]		1.39×10^{-3}	δ : from $\gamma(\theta)$ in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$. I_γ : other: 2 1 in $^{54}\text{Fe}(^{32}\text{S},2\text{pn}\gamma)$. $\alpha(\text{K})=0.001227$ 18; $\alpha(\text{L})=0.0001387$ 20; $\alpha(\text{M})=2.41\times 10^{-5}$ 4; $\alpha(\text{N})=3.40\times 10^{-6}$ 5; $\alpha(\text{O})=2.33\times 10^{-7}$ 4 B(E2)(W.u.)=50 8
983.2	(9/2 ⁻)	400.6 3 610.5 3	32.1 25 100 7	582.7 (7/2 ⁻) 372.6 (5/2 ⁻)		E2 ^{&}		0.00235	$\alpha(\text{K})=0.00207$ 3; $\alpha(\text{L})=0.000237$ 4; $\alpha(\text{M})=4.11\times 10^{-5}$ 6; $\alpha(\text{N})=5.79\times 10^{-6}$ 9; $\alpha(\text{O})=3.90\times 10^{-7}$ 6
1013.4	(11/2 ⁻)	333.2 2 430.9 2	<6 8.0 6	680.3 (9/2 ⁻) 582.7 (7/2 ⁻)		[E2]		0.00661	$\alpha(\text{K})=0.00579$ 9; $\alpha(\text{L})=0.000685$ 10; $\alpha(\text{M})=0.0001190$ 17; $\alpha(\text{N})=1.663\times 10^{-5}$ 24 $\alpha(\text{O})=1.075\times 10^{-6}$ 16 B(E2)(W.u.)=67 13
		674.7 3	100 9	338.5 (7/2 ⁻)		E2 [@]		0.00179	$\alpha(\text{K})=0.001573$ 23; $\alpha(\text{L})=0.000179$ 3; $\alpha(\text{M})=3.11\times 10^{-5}$ 5; $\alpha(\text{N})=4.38\times 10^{-6}$ 7; $\alpha(\text{O})=2.98\times 10^{-7}$ 5 B(E2)(W.u.)=89 18
1262.2	(11/2 ⁻)	279.0 3 679.4 4	<16 100 8	983.2 (9/2 ⁻) 582.7 (7/2 ⁻)		E2 [@]		1.76×10^{-3}	$\alpha(\text{K})=0.001544$ 22; $\alpha(\text{L})=0.0001757$ 25; $\alpha(\text{M})=3.05\times 10^{-5}$ 5;

Adopted Levels, Gammas (continued)

$\gamma(^{83}\text{Zr})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	α	Comments
									$\alpha(\text{N})=4.30\times 10^{-6}$ 6; $\alpha(\text{O})=2.92\times 10^{-7}$ 5 B(E2)(W.u.)>75 $\alpha(\text{K})=0.00340$ 5; $\alpha(\text{L})=0.00038$ 1
1345.8		465.5 3	100	880.3 (13/2 ⁺)	(D+Q)		≤0.3	0.00390 6	
1384.2		804.2 5	100	580.0					
1475.8	(13/2 ⁻)	462.6 4	<8	1013.4 (11/2 ⁻)					
		795.3 4	100 11	680.3 (9/2 ⁻)	E2@			1.17×10 ⁻³	$\alpha(\text{K})=0.001027$ 15; $\alpha(\text{L})=0.0001156$ 17; $\alpha(\text{M})=2.00\times 10^{-5}$ 3; $\alpha(\text{N})=2.83\times 10^{-6}$ 4; $\alpha(\text{O})=1.95\times 10^{-7}$ 3 B(E2)(W.u.)=1.0×10 ² 4
1591.3		1011.3 3	100	580.0					
1662.9	(15/2 ⁺)	782.4 4	99 8	880.3 (13/2 ⁺)	M1+E2#		≤0.3	1.15×10 ⁻³	$\alpha(\text{K})=0.001016$ 15; $\alpha(\text{L})=0.0001120$ 17; $\alpha(\text{M})=1.94\times 10^{-5}$ 3; $\alpha(\text{N})=2.76\times 10^{-6}$ 4; $\alpha(\text{O})=1.97\times 10^{-7}$ 3
		893.9 5	100 12	769.0 (11/2 ⁺)					
1733.7		349.5 2	100	1384.2					
1771.4	(13/2 ⁻)	509.1 4	<44	1262.2 (11/2 ⁻)					
		788.4 5	100 9	983.2 (9/2 ⁻)					
1817.4	(17/2 ⁺)	154.5 3	<3	1662.9 (15/2 ⁺)					
		937.2 5	100 7	880.3 (13/2 ⁺)	E2@			7.81×10 ⁻⁴	$\alpha(\text{K})=0.000689$ 10; $\alpha(\text{L})=7.68\times 10^{-5}$ 11; $\alpha(\text{M})=1.331\times 10^{-5}$ 19; $\alpha(\text{N})=1.89\times 10^{-6}$ 3 $\alpha(\text{O})=1.311\times 10^{-7}$ 19 B(E2)(W.u.)=9.E+1 3
1830.0	(15/2 ⁻)	816.6 4	100	1013.4 (11/2 ⁻)	E2@			1.09×10 ⁻³	$\alpha(\text{K})=0.000961$ 14; $\alpha(\text{L})=0.0001080$ 16; $\alpha(\text{M})=1.87\times 10^{-5}$ 3; $\alpha(\text{N})=2.65\times 10^{-6}$ 4; $\alpha(\text{O})=1.83\times 10^{-7}$ 3 B(E2)(W.u.)=1.2×10 ² 4
2021.3		637.1 5	100	1384.2					
2126.2	(15/2 ⁻)	864.0 5	100	1262.2 (11/2 ⁻)	E2&			9.49×10 ⁻⁴	$\alpha(\text{K})=0.000837$ 12; $\alpha(\text{L})=9.37\times 10^{-5}$ 14; $\alpha(\text{M})=1.625\times 10^{-5}$ 23; $\alpha(\text{N})=2.30\times 10^{-6}$ 4 $\alpha(\text{O})=1.591\times 10^{-7}$ 23
2159.7		426.0 3	100	1733.7					
2258.3		1244.9 8	100	1013.4 (11/2 ⁻)					
2359.6		768.3 6	100	1591.3					
2398.3	(17/2 ⁻)	922.3 5	100	1475.8 (13/2 ⁻)	E2@			8.11×10 ⁻⁴	$\alpha(\text{K})=0.000715$ 10; $\alpha(\text{L})=7.98\times 10^{-5}$ 12; $\alpha(\text{M})=1.384\times 10^{-5}$ 20; $\alpha(\text{N})=1.96\times 10^{-6}$ 3 $\alpha(\text{O})=1.361\times 10^{-7}$ 20 B(E2)(W.u.)>38
2494.6		664.6 5	100	1830.0 (15/2 ⁻)					
2674.9	(17/2 ⁻)	903.5 6	100	1771.4 (13/2 ⁻)					
2708.4	(19/2 ⁺)	890.5 6	79 13	1817.4 (17/2 ⁺)					I _γ : other: < 67 in ⁵⁴ Fe(³² S,2pnγ).
		1045.2 6	100 15	1662.9 (15/2 ⁺)					
2743.1	(19/2 ⁻)	913.2 5	100	1830.0 (15/2 ⁻)	E2@			8.30×10 ⁻⁴	$\alpha(\text{K})=0.000732$ 11; $\alpha(\text{L})=8.18\times 10^{-5}$ 12; $\alpha(\text{M})=1.418\times 10^{-5}$ 20; $\alpha(\text{N})=2.01\times 10^{-6}$ 3

Adopted Levels, Gammas (continued)

 $\gamma(^{83}\text{Zr})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	α	Comments
2913.0	(21/2 ⁺)	204.5 2 1096.4 6	<3.4 100 10	2708.4 (19/2 ⁺) 1817.4 (17/2 ⁺)		E2@		5.45×10 ⁻⁴	$\alpha(\text{O})=1.393\times10^{-7}$ 20 B(E2)(W.u.)>40 $\alpha(\text{K})=0.000481$ 7; $\alpha(\text{L})=5.32\times10^{-5}$ 8; $\alpha(\text{M})=9.23\times10^{-6}$ 13; $\alpha(\text{N})=1.308\times10^{-6}$ 19; $\alpha(\text{O})=9.17\times10^{-8}$ 13 B(E2)(W.u.)=44 10
2926		1192.4 10	100	1733.7					
3095.5	(19/2 ⁻)	969.3 6	100	2126.2 (15/2 ⁻)					
3138	(19/2 ⁻)	395		2743.1 (19/2 ⁻)					
		1307		1830.0 (15/2 ⁻)					
3304.9		391.8 2		2913.0 (21/2 ⁺)					
		597		2708.4 (19/2 ⁺)					
3374.2	(21/2 ⁻)	975.7 6	100	2398.3 (17/2 ⁻)		E2		7.10×10 ⁻⁴	$\alpha(\text{K})=0.000627$ 9; $\alpha(\text{L})=6.98\times10^{-5}$ 10; $\alpha(\text{M})=1.209\times10^{-5}$ 17; $\alpha(\text{N})=1.713\times10^{-6}$ 25 $\alpha(\text{O})=1.194\times10^{-7}$ 17 Mult.: Q from $\gamma(\theta)$ in ⁵⁴ Fe(³² S,2pn γ), E2 from assumed band structure.
3587.0		844.1 7	100	2743.1 (19/2 ⁻)					
3625.3	(21/2 ⁻)	1227.2 7	100	2398.3 (17/2 ⁻)		(Q)			
3689	(21/2 ⁻)	1014.0 7	100	2674.9 (17/2 ⁻)					
3726.1	(23/2 ⁺)	421.0 3	77 7	3304.9		D+Q	≤0.3		
		813.5 5	83 7	2913.0 (21/2 ⁺)					
		1018.8 7	100 13	2708.4 (19/2 ⁺)					
3730.9	(23/2 ⁻)	987.9 5	100	2743.1 (19/2 ⁻)		E2		6.90×10 ⁻⁴	$\alpha(\text{K})=0.000609$ 9; $\alpha(\text{L})=6.77\times10^{-5}$ 10; $\alpha(\text{M})=1.174\times10^{-5}$ 17; $\alpha(\text{N})=1.663\times10^{-6}$ 24 $\alpha(\text{O})=1.160\times10^{-7}$ 17 Mult.: Q from $\gamma(\theta)$ in ⁵⁴ Fe(³² S,2pn γ), E2 from assumed band structure.
3955.3	(25/2 ⁺)	230.4 2	6.0 5	3726.1 (23/2 ⁺)		M1+E2 ^a	≤0.3	0.0230 14	$\alpha(\text{K})=0.0202$ 12; $\alpha(\text{L})=0.00233$ 17; $\alpha(\text{M})=0.00040$ 3; $\alpha(\text{N})=5.7\times10^{-5}$ 4; $\alpha(\text{O})=3.92\times10^{-6}$ 20 B(E2)(W.u.)<5.7; B(M1)(W.u.)>0.2
		1042.1 5	100 10	2913.0 (21/2 ⁺)		E2@		6.11×10 ⁻⁴	$\alpha(\text{K})=0.000539$ 8; $\alpha(\text{L})=5.98\times10^{-5}$ 9; $\alpha(\text{M})=1.036\times10^{-5}$ 15; $\alpha(\text{N})=1.469\times10^{-6}$ 21 $\alpha(\text{O})=1.027\times10^{-7}$ 15 B(E2)(W.u.)=50 11
3981.7	(23/2 ⁻)	356.4 3 394.7 3 607.5 5		3625.3 (21/2 ⁻) 3587.0 3374.2 (21/2 ⁻)		(M1+E2) [#]		0.00221 18	$\alpha(\text{K})=0.00194$ 16; $\alpha(\text{L})=0.000219$ 22; $\alpha(\text{M})=3.8\times10^{-5}$ 4; $\alpha(\text{N})=5.4\times10^{-6}$ 5; $\alpha(\text{O})=3.72\times10^{-7}$ 24
		844		3138 (19/2 ⁻)					
		1239 ^c		2743.1 (19/2 ⁻)					
4092.0		136.9 2		3955.3 (25/2 ⁺)					

Adopted Levels, Gammas (continued)

$\gamma(^{83}\text{Zr})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	α	Comments
4092.0		365.2 3		3726.1	(23/2 ⁺)	D+Q	≤ 0.3		
4188	(23/2 ⁻)	1092.3 7	100	3095.5	(19/2 ⁻)				
4283.0	(25/2 ⁺)	331 ^c		3955.3	(25/2 ⁺)				
		1370.0 7		2913.0	(21/2 ⁺)	(E2)&		3.82×10^{-4}	$\alpha(\text{K})=0.000299$ 5; $\alpha(\text{L})=3.28 \times 10^{-5}$ 5; $\alpha(\text{M})=5.68 \times 10^{-6}$ 8; $\alpha(\text{N})=8.07 \times 10^{-7}$ 12; $\alpha(\text{O})=5.71 \times 10^{-8}$ 8
4431.4	(25/2 ⁻)	1056.9 6	100	3374.2	(21/2 ⁻)	(E2)&		5.92×10^{-4}	$\alpha(\text{K})=0.000522$ 8; $\alpha(\text{L})=5.79 \times 10^{-5}$ 9; $\alpha(\text{M})=1.003 \times 10^{-5}$ 15; $\alpha(\text{N})=1.422 \times 10^{-6}$ 20; $\alpha(\text{O})=9.95 \times 10^{-8}$ 14
4469.7	(25/2 ⁻)	488.2 5	<80	3981.7	(23/2 ⁻)				
		738.6 5	100 8	3730.9	(23/2 ⁻)				
4767	(27/2 ⁺)	1041	100	3726.1	(23/2 ⁺)				
4839.1	(27/2 ⁻)	1108.4 6	100	3730.9	(23/2 ⁻)	E2		5.33×10^{-4}	$\alpha(\text{K})=0.000470$ 7; $\alpha(\text{L})=5.19 \times 10^{-5}$ 8; $\alpha(\text{M})=9.00 \times 10^{-6}$ 13; $\alpha(\text{N})=1.277 \times 10^{-6}$ 18; $\alpha(\text{O})=8.95 \times 10^{-8}$ 13
									Mult.: Q from $\gamma(\theta)$ in ⁵⁴ Fe(³² S,2pn γ), E2 from assumed band structure.
4904.3	(29/2 ⁺)	949.0 5	100	3955.3	(25/2 ⁺)	E2@		7.58×10^{-4}	$\alpha(\text{K})=0.000669$ 10; $\alpha(\text{L})=7.45 \times 10^{-5}$ 11; $\alpha(\text{M})=1.292 \times 10^{-5}$ 19; $\alpha(\text{N})=1.83 \times 10^{-6}$ 3
									$\alpha(\text{O})=1.273 \times 10^{-7}$ 18
									B(E2)(W.u.)>81
4943.7	(27/2 ⁻)	512.2 5	100 9	4431.4	(25/2 ⁻)	(M1+E2)#		0.0035 5	$\alpha(\text{K})=0.0030$ 4; $\alpha(\text{L})=0.00035$ 6; $\alpha(\text{M})=6.0 \times 10^{-5}$ 9; $\alpha(\text{N})=8.5 \times 10^{-6}$ 12; $\alpha(\text{O})=5.8 \times 10^{-7}$ 7
		961.5 9	71 9	3981.7	(23/2 ⁻)				
5348	(27/2 ⁻)	1160.2 8	100	4188	(23/2 ⁻)				
5460.4	(29/2 ⁻)	516.2 6	<100	4943.7	(27/2 ⁻)				
		621.5 5	100 10	4839.1	(27/2 ⁻)				
		991.4 11	<100	4469.7	(25/2 ⁻)				
5626?		1343 ^c	100	4283.0	(25/2 ⁺)				
5645	(29/2 ⁻)	1213.9 7	100	4431.4	(25/2 ⁻)	E2&		4.46×10^{-4}	$\alpha(\text{K})=0.000385$ 6; $\alpha(\text{L})=4.25 \times 10^{-5}$ 6; $\alpha(\text{M})=7.36 \times 10^{-6}$ 11; $\alpha(\text{N})=1.044 \times 10^{-6}$ 15; $\alpha(\text{O})=7.35 \times 10^{-8}$ 11
5934	(31/2 ⁺)	1167	100	4767	(27/2 ⁺)				
6022	(31/2 ⁻)	376		5645	(29/2 ⁻)				
		1079		4943.7	(27/2 ⁻)				
6028	(33/2 ⁺)	1123.8 6	100	4904.3	(29/2 ⁺)	E2&		5.17×10^{-4}	$\alpha(\text{K})=0.000455$ 7; $\alpha(\text{L})=5.04 \times 10^{-5}$ 7; $\alpha(\text{M})=8.73 \times 10^{-6}$ 13; $\alpha(\text{N})=1.238 \times 10^{-6}$ 18; $\alpha(\text{O})=8.69 \times 10^{-8}$ 13
6074	(31/2 ⁻)	1234.6 7	100	4839.1	(27/2 ⁻)	E2&		4.34×10^{-4}	$\alpha(\text{K})=0.000372$ 6; $\alpha(\text{L})=4.09 \times 10^{-5}$ 6; $\alpha(\text{M})=7.09 \times 10^{-6}$ 10; $\alpha(\text{N})=1.007 \times 10^{-6}$ 15; $\alpha(\text{O})=7.09 \times 10^{-8}$ 10
6570	(33/2 ⁻)	548 ^c		6022	(31/2 ⁻)				
		1111		5460.4	(29/2 ⁻)				
6949	(33/2 ⁻)	1304	100	5645	(29/2 ⁻)	E2&		4.03×10^{-4}	$\alpha(\text{K})=0.000331$ 5; $\alpha(\text{L})=3.64 \times 10^{-5}$ 5; $\alpha(\text{M})=6.31 \times 10^{-6}$ 9; $\alpha(\text{N})=8.95 \times 10^{-7}$ 13; $\alpha(\text{O})=6.32 \times 10^{-8}$ 9
7195	(35/2 ⁺)	1261	100	5934	(31/2 ⁺)				
7235	(35/2 ⁻)	1213	100	6022	(31/2 ⁻)				

Adopted Levels, Gammas (continued)

$\gamma(^{83}\text{Zr})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π	Mult. [‡]	α	Comments
7325	(37/2 ⁺)	1297.2 7	100	6028	(33/2 ⁺)	E2 ^{&}	4.05×10^{-4}	$\alpha(\text{K})=0.000335$ 5; $\alpha(\text{L})=3.68 \times 10^{-5}$ 6; $\alpha(\text{M})=6.38 \times 10^{-6}$ 9; $\alpha(\text{N})=9.05 \times 10^{-7}$ 13; $\alpha(\text{O})=6.39 \times 10^{-8}$ 9
7380	(35/2 ⁻)	1306.7 7	100	6074	(31/2 ⁻)	E2 ^{&}	4.02×10^{-4}	$\alpha(\text{K})=0.000330$ 5; $\alpha(\text{L})=3.62 \times 10^{-5}$ 5; $\alpha(\text{M})=6.28 \times 10^{-6}$ 9; $\alpha(\text{N})=8.91 \times 10^{-7}$ 13; $\alpha(\text{O})=6.30 \times 10^{-8}$ 9
7628	(37/2 ⁺)	1600	100	6028	(33/2 ⁺)			
7817	(37/2 ⁻)	1247	100	6570	(33/2 ⁻)			
8275	(37/2 ⁻)	1326	100	6949	(33/2 ⁻)			
8586	(39/2 ⁺)	1391	100	7195	(35/2 ⁺)			
8611	(39/2 ⁻)	1376	100	7235	(35/2 ⁻)			
8758	(39/2 ⁻)	1377.5 8	100	7380	(35/2 ⁻)			
8812	(41/2 ⁺)	1486.8 8	100	7325	(37/2 ⁺)	E2 ^{&}	3.66×10^{-4}	$\alpha(\text{K})=0.000253$ 4; $\alpha(\text{L})=2.77 \times 10^{-5}$ 4; $\alpha(\text{M})=4.80 \times 10^{-6}$ 7; $\alpha(\text{N})=6.82 \times 10^{-7}$ 10; $\alpha(\text{O})=4.84 \times 10^{-8}$ 7
9229	(41/2 ⁻)	1412	100	7817	(37/2 ⁻)			
9689	(41/2 ⁻)	1414	100	8275	(37/2 ⁻)			
10137	(43/2 ⁻)	1526	100	8611	(39/2 ⁻)			
10224	(43/2 ⁺)	1638	100	8586	(39/2 ⁺)			
10310	(43/2 ⁻)	1552	100	8758	(39/2 ⁻)			
10516	(45/2 ⁺)	1704	100	8812	(41/2 ⁺)			
10810	(45/2 ⁻)	1581	100	9229	(41/2 ⁻)			
11786	(47/2 ⁻)	1649	100	10137	(43/2 ⁻)			
12080?	(47/2 ⁻)	1770 ^c	100	10310	(43/2 ⁻)			
12087	(47/2 ⁺)	1863	100	10224	(43/2 ⁺)			
12433	(49/2 ⁺)	1917	100	10516	(45/2 ⁺)			
12582?	(49/2 ⁻)	1772 ^c	100	10810	(45/2 ⁻)			
14510	(53/2 ⁺)	2077	100	12433	(49/2 ⁺)			
16736	(57/2 ⁺)	2226	100	14510	(53/2 ⁺)			
19217?	(61/2 ⁺)	2481 ^c	100	16736	(57/2 ⁺)			
581+x		581		0+x				
1385+x		804		581+x				
2397+x?		1012		1385+x				
3589+x?		1192		2397+x?				
3939+x		350		3589+x?				
4365+x		426		3939+x				
1380.0+y	J+2	1380 <i>l</i>	0.35 ^b 5	y	J $\approx$ (27/2)			
2916.0+y	J+4	1536 <i>l</i>	0.80 ^b 10	1380.0+y	J+2			
3001.0+y	J+4	1427 <i>l</i>		1574.0+y	J+2			
4556.0+y	J+6	1555 <i>l</i>		3001.0+y	J+4			
		1640 <i>l</i>	1.05 ^b 10	2916.0+y	J+4			
6305.1+y	J+8	1749 <i>l</i>	1.00 ^b 10	4556.0+y	J+6	(Q)		
8214.1+y	J+10	1909 <i>l</i>	1.00 ^b 10	6305.1+y	J+8	(Q)		
10288.1+y	J+12	2074 <i>l</i>	1.00 ^b 10	8214.1+y	J+10	(Q)		

Adopted Levels, Gammas (continued)

$\gamma(^{83}\text{Zr})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π	Mult. [‡]
12529+y	J+14	2241 <i>I</i>	0.85 <i>b</i> 10	10288.1+y	J+12	(Q)
14939+y	J+16	2410 <i>I</i>	0.45 <i>b</i> 10	12529+y	J+14	
17524+y	J+18	2585 <i>I</i>	0.30 <i>b</i> 5	14939+y	J+16	
20285+y?	J+20	2761 <i>c</i> <i>I</i>	0.18 <i>b</i> 5	17524+y	J+18	
23223+y?	J+22	2938 <i>c</i>	0.09 <i>b</i> 3	20285+y?	J+20	
1444.0+z	J+2	1444 <i>I</i>	0.20 <i>b</i> 5	z	J $\approx$ (29/2)	
3060.0+z	J+4	1616 <i>I</i>	0.25 <i>b</i> 5	1444.0+z	J+2	
4851.0+z	J+6	1791 <i>I</i>	0.30 <i>b</i> 5	3060.0+z	J+4	
6815.1+z	J+8	1964 <i>I</i>	0.18 <i>b</i> 5	4851.0+z	J+6	
8947.1+z	J+10	2132 <i>I</i>	0.20 <i>b</i> 5	6815.1+z	J+8	
11247.1+z	J+12	2300 <i>I</i>	0.18 <i>b</i> 5	8947.1+z	J+10	
13713+z	J+14	2466 <i>I</i>	0.13 <i>b</i> 5	11247.1+z	J+12	
16337+z	J+16	2624 <i>I</i>	0.08 <i>b</i> 3	13713+z	J+14	

[†] From $^{58}\text{Ni}(^{28}\text{S},2\text{pn}\gamma)$, except where noted.

[‡] From R(DCO) and $\gamma(\theta)$ in $^{58}\text{Ni}(^{28}\text{S},2\text{pn}\gamma)$, except where noted.

D+Q from R(DCO) and $\gamma(\theta)$ in $^{58}\text{Ni}(^{28}\text{S},2\text{pn}\gamma)$, M1+E2 from assumed band structure.

@ Q from R(DCO) and $\gamma(\theta)$ in $^{58}\text{Ni}(^{28}\text{S},2\text{pn}\gamma)$, M2 excluded by comparison to RUL.

& Q from R(DCO) and $\gamma(\theta)$ in $^{58}\text{Ni}(^{28}\text{S},2\text{pn}\gamma)$, E2 from assumed band structure.

^a D+Q from R(DCO) and $\gamma(\theta)$ in $^{58}\text{Ni}(^{28}\text{S},2\text{pn}\gamma)$, $\Delta\pi$ =no from level scheme.

^b Values for SD bands are relative intensities within each band normalized to 1.0 for the most intense transitions in SD-1 band. Values from $^{58}\text{Ni}(^{28}\text{S},2\text{pn}\gamma)$.

^c Placement of transition in the level scheme is uncertain.

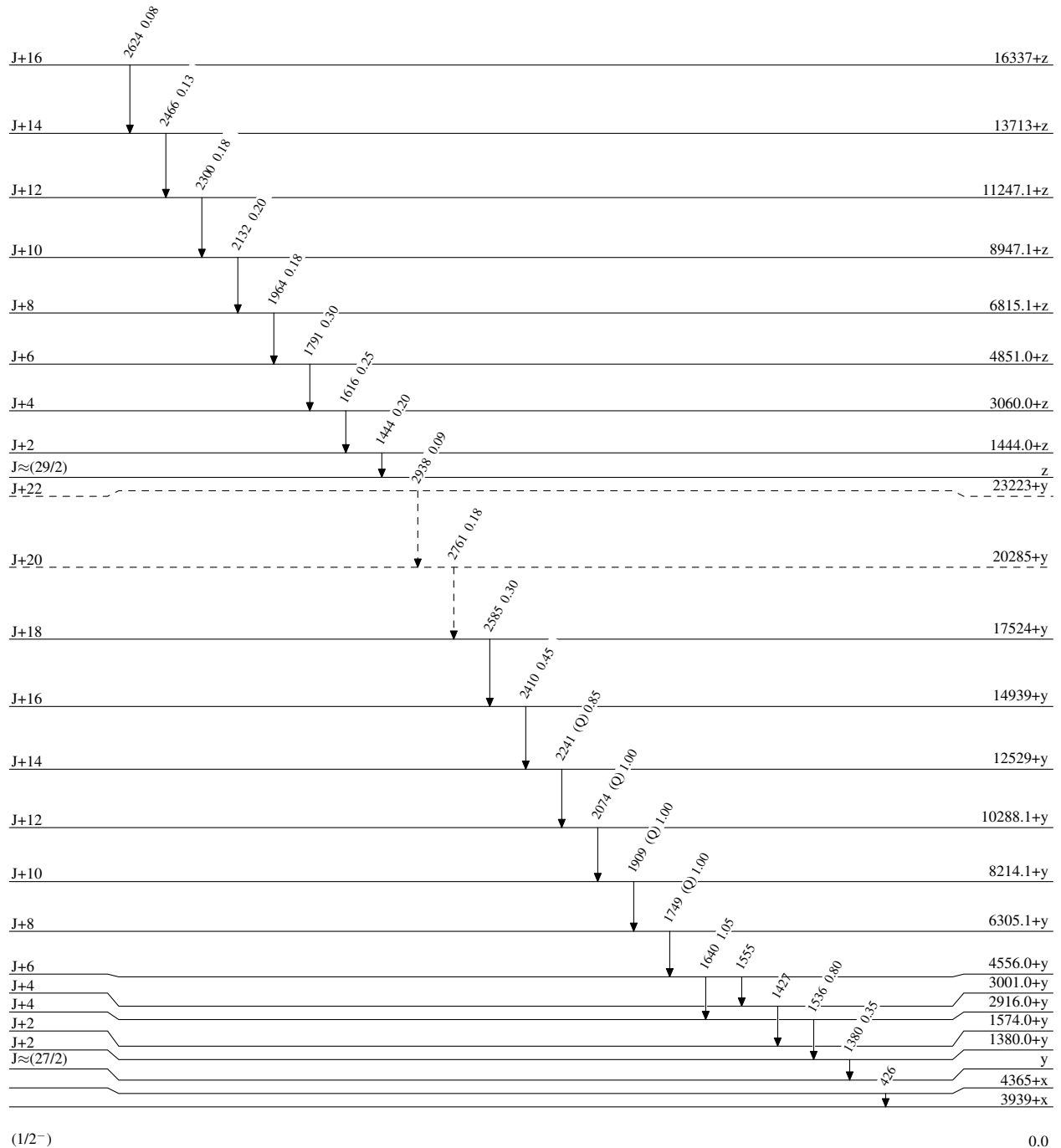
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Type not specified

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



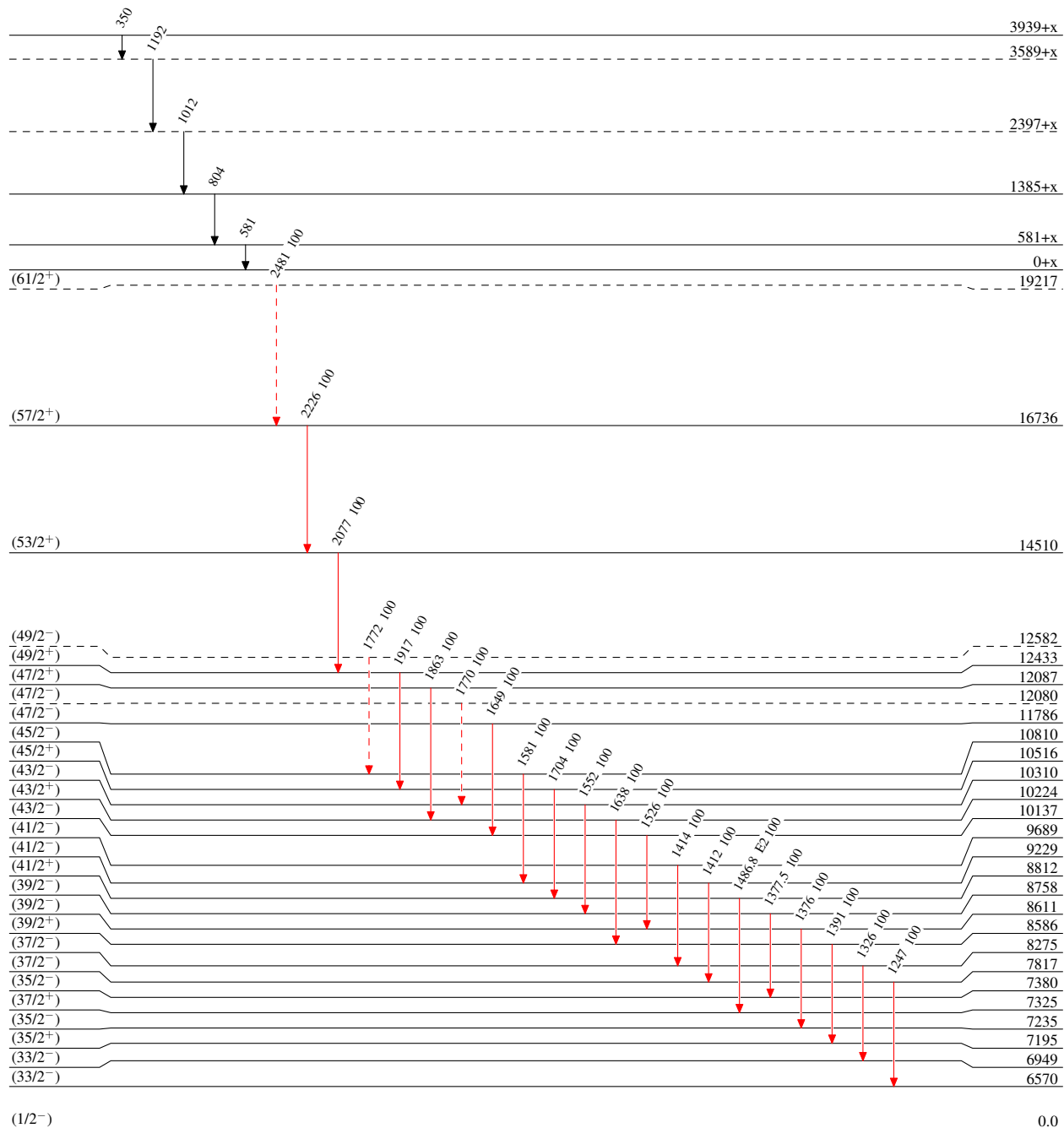
Adopted Levels, Gammas

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)



0.0

42 s 2

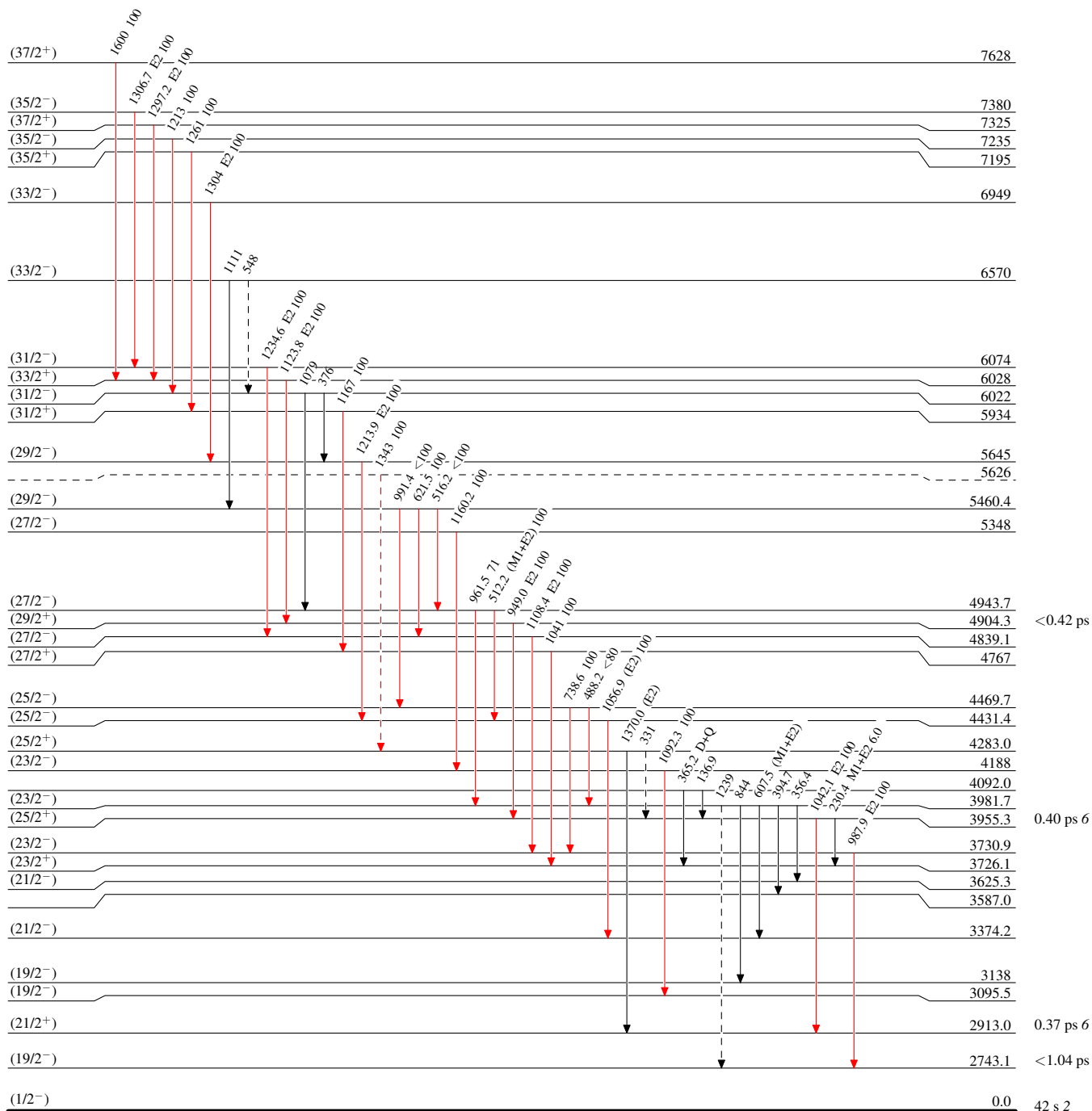
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Type not specified

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

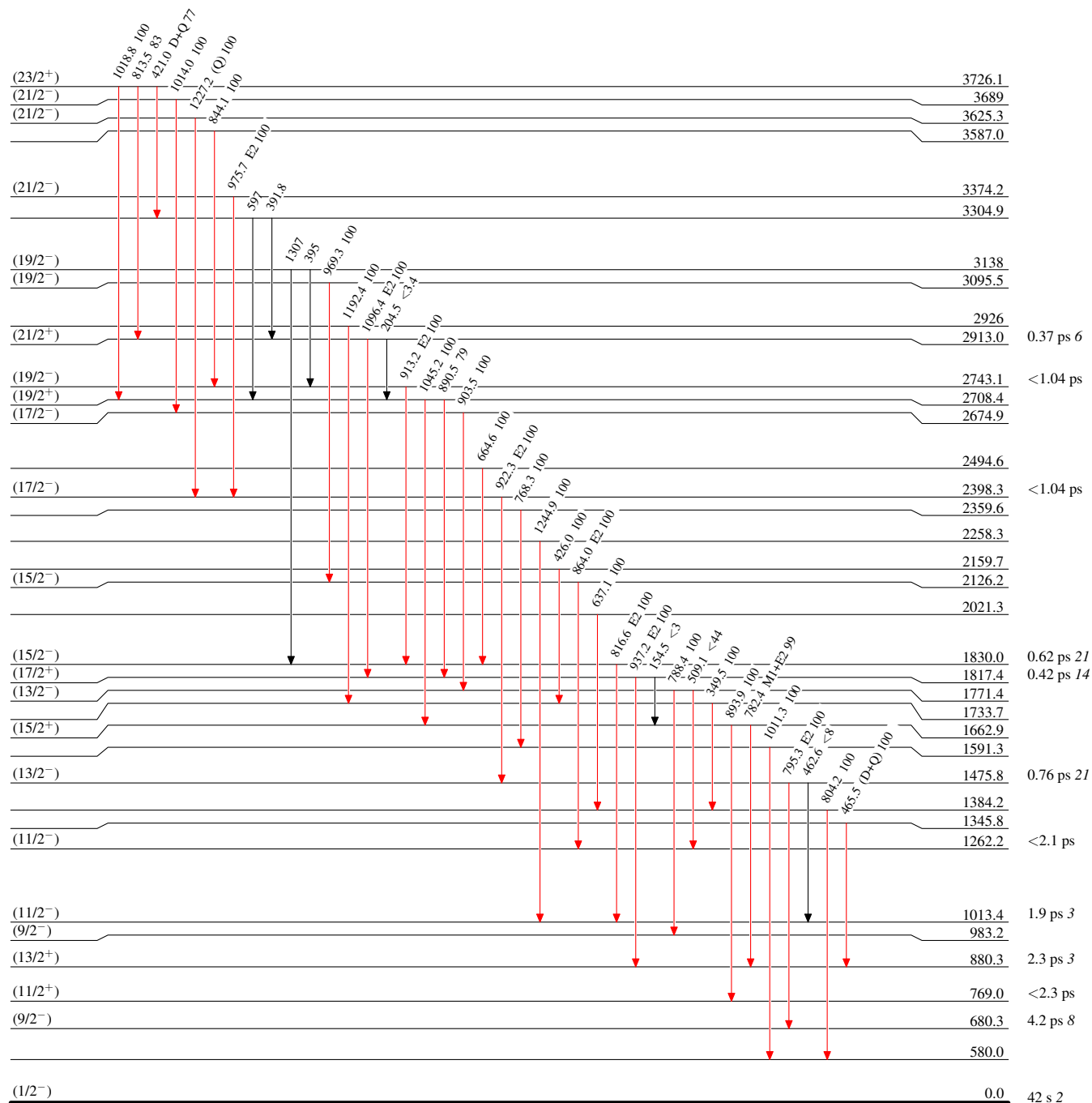


Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Type not specified

Legend

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

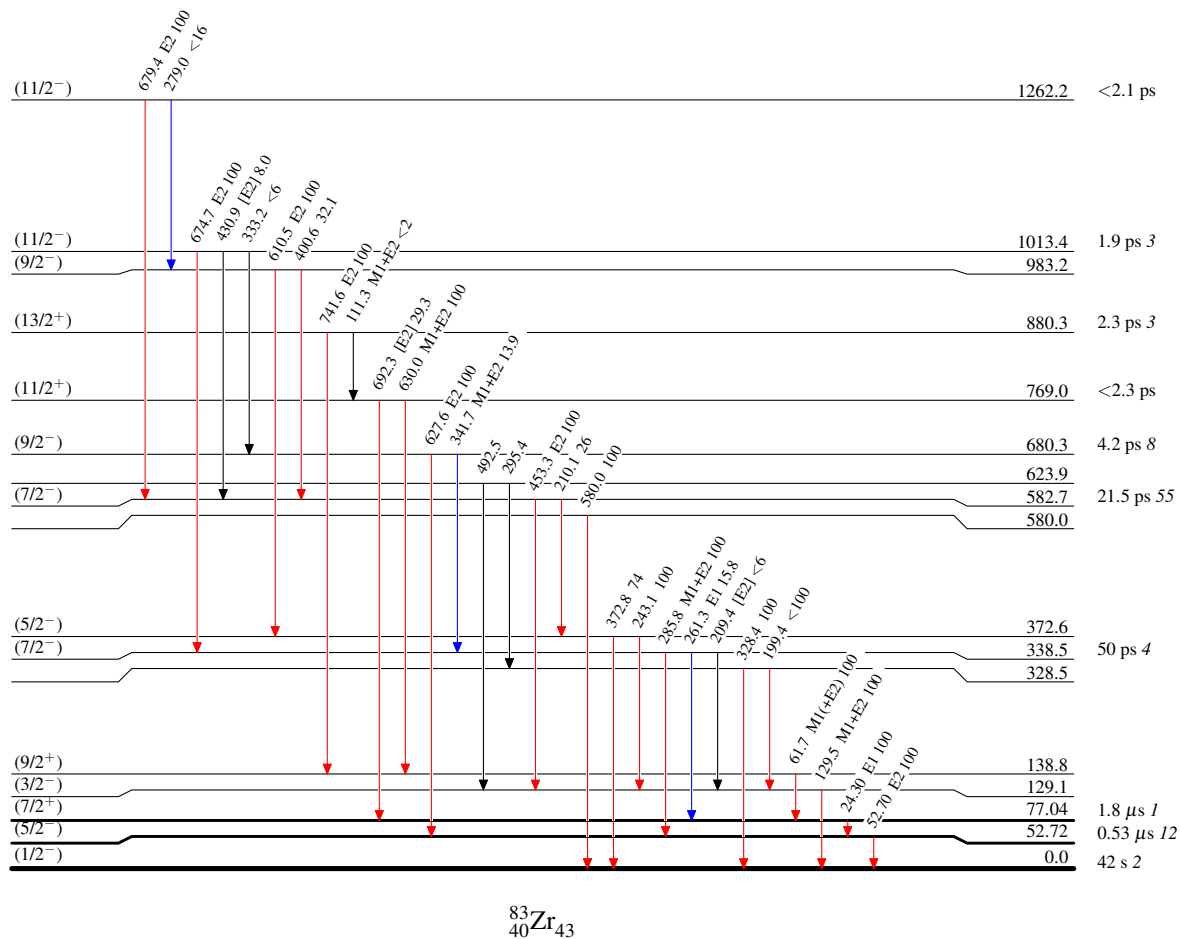


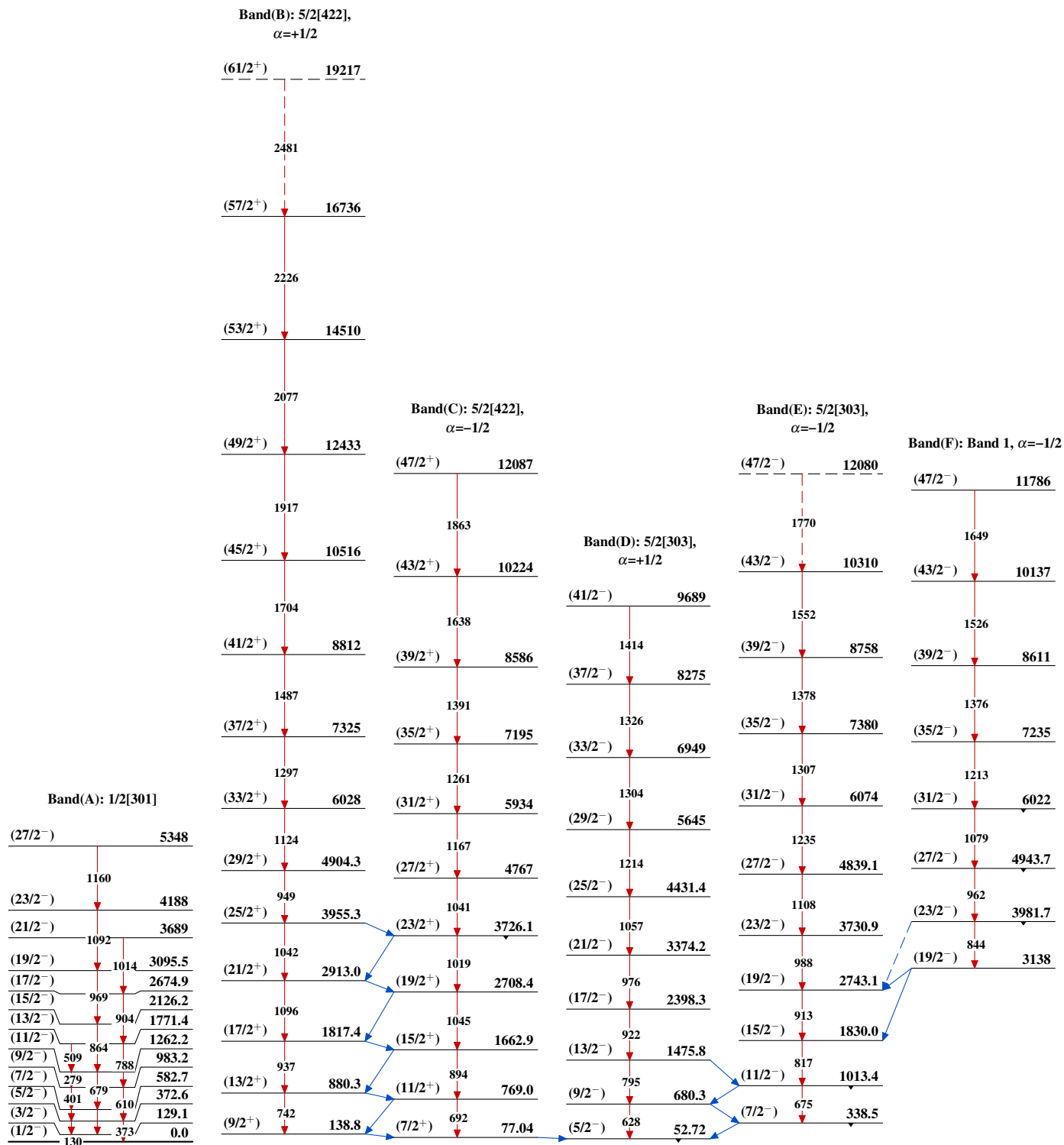
Adopted Levels, Gammas**Level Scheme (continued)**

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

Adopted Levels, Gammas (continued)