^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	07-Jan-2022

All γ-ray and level data are from 2021Zh57.

2021Zh57: E(^{64}Zn)=255 MeV; measured Eγ, Iγ, (recoils)$\gamma\gamma$-coin, $\gamma\gamma\gamma$-coin, $\gamma(\theta)$, $\gamma\gamma(\theta)$(DCO), $\gamma\gamma$(angular anisotropy), $\gamma\gamma$(linear polarization), half-life of the 7^+ isomer by $\gamma\gamma$(t) using JUROGAM 3 array for γ detection and recoil mass separator MARA at the K130 cyclotron of University of Jyvaskyla. Deduced high-spin levels, J^π, multipolarities, multipole mixing ratios, rotational bands, alignments, moments of inertia plots, two-quasiparticle Nilsson configurations, moment of inertia plots. Calculated single-particle Routhians, and moments of inertia plots using particle number conserving cranked shell model (PNC-CSM). Comparison between experimental results and theoretical model calculations.

Others:

1997Sm04: ^{58}Ni(^{64}Zn,3pnγ),E(^{64}Zn)=265 MeV and ^{64}Ni(^{58}Ni,p3nγ) with incident beams from LBNL cyclotron facility. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma\gamma(\theta)$ using Gammasphere array with 56 Compton-suppressed HPGe detectors. Proposed signature partners of $\pi h_{11/2}\otimes\nu h_{11/2}$ configuration up to 35^+, and two short side bands, one with a γ cascade of four transitions, and the other with only two γ transitions. Results in this work are in general agreement with those from 2021Zh57, but major differences exist in J^π assignments, as well as γ cascades above $J^\pi\approx30^+$. The data in this work were provided only as Eγ values and γ-cascades in a level-scheme figure.

1993Be46: ^{64}Ni(^{58}Ni,3npγ),E=212 MeV. Measured Eγ, Iγ, $\gamma\gamma$-coin, (recoils)γ-coin using GASP array and recoil-mass spectrometer at XTU Tandem of LNL-Legnaro. Proposed a negative-parity band in ^{118}Cs, based on $\pi h_{11/2}\otimes\nu g_{9/2}$ multiplet, starting from (7^-) to (24^-) up to 35^+, and a short side band with only two γ transitions. The data in this work were provided only as Eγ values and γ-cascades in a level-scheme Fig. 3. Experiments by 1994Ka39 on the high-spin structure of ^{118}I discovered that the band assigned to ^{118}Cs in 1993Be46, actually belonged to ^{118}I, this observation and assertion later confirmed in experiments by 1997Sm04 on the high-spin structure of ^{118}Cs.

^{118}Cs Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0[m]	$2^{(-)}$	14 s *2*	J^π: spin from the Adopted Levels, parity proposed by 2021Zh57. $T_{1/2}$: from the Adopted Levels.
0.0+x[c]	(7^-)	17 s *3*	E(level): 2021Zh57 associated this level with the long-lived isomer. See Adopted Levels for half-life and other comments. $T_{1/2}$: from the Adopted Levels.
0.0+y[e]	(6^+)		
42.7[n] *3*	(3^-)		
64.6+x? *4*	(5,6)		E(level): since ordering of the 64.7γ → 61.4γ cascade is not established (2021Zh57), level energy is either 61.4+x or 64.7+x. In this dataset, ordering is as shown in Figs. 1 and 3 of 2021Zh57, while it is listed as reversed in authors′ Table I.
65.9[i] *5*	(3^-)		
79.3+x? *4*	(5,6)		E(level): since ordering of the 46.3γ → 79.0γ cascade is not established (2021Zh57), level energy is either 79.0+x or 46.3+x.
79.6[m] *4*	(4^-)		
117.1[o] *4*	(4^-)		
125.9+x *4*	(7^+)	0.55 μs *6*	%IT=100 $T_{1/2}$: from (79.0γ+126.0γ)(200.1γ)(t) (2021Zh57).
128.5[j] *6*	(4^-)		
144.9[k] *6*	(4^-)		
167.8[n] *4*	(5^-)		
182.94+x[d] *25*	(8^-)		
192.92+y[f] *25*	(7^+)		
195.2+x[#] *5*	(8^+)		E(level): expected to be an isomer of few ns, as missing intensity from this state could not be accounted (2021Zh57).
217.6[i] *7*	(5^-)		

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^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

^{118}Cs Levels (continued)

E(level)†	Jπ‡	Comments
248.8[p] 4	(5⁻)	
263.7[l] 7	(5⁻)	
312.9[m] 4	(6⁻)	
313.9[o] 4	(6⁻)	
333.7[j] 7	(6⁻)	
395.3+x[#] 6	(10⁺)	
415.9[k] 7	(6⁻)	
429.68+y[e] 25	(8⁺)	
448.56+x[c] 25	(9⁻)	
475.7[i] 7	(7⁻)	
505.7[n] 4	(7⁻)	
551.9[p] 5	(7⁻)	
596.5[l] 7	(7⁻)	
647.0[j] 8	(8⁻)	
687.7[o] 5	(8⁻)	
700.7+x[@] 6	(11⁺)	
701.7[m] 8	(8⁻)	
704.5+y[f] 4	(9⁺)	
737.0+x[d] 4	(10⁻)	
750.7[q] 5	(8⁻)	
810.1[k] 8	(8⁻)	
833.2+x[#] 6	(12⁺)	Jπ: (11⁺) in Fig. 3 of 2021Zh57 is a misprint.
846.6[i] 8	(9⁻)	
959.6[n] 5	(9⁻)	
1011.5+y[e] 5	(10⁺)	
1047.6+x[c] 5	(11⁻)	
1048.5[l] 8	(9⁻)	
1048.6[p] 5	(9⁻)	
1063.0+x[a] 9	(11⁺)	
1074.5[j] 9	(10⁻)	
1094.5 11		
1167.5+x[@] 7	(13⁺)	
1205.1[o] 5	(10⁻)	
1206.2[m] 13	(10⁻)	
1254.4+x[r] 9		
1312.5[k] 9	(10⁻)	
1336.1[q] 9	(10⁻)	
1336.7[i] 11	(11⁻)	
1346.6+y[f] 5	(11⁺)	
1348.6 9		
1360.9+y[g] 8	(9)	
1378.6+x[d] 5	(12⁻)	
1465.0+x[#] 8	(14⁺)	
1520.3[n] 6	(11⁻)	
1557.3+y[h] 7	(10⁺)	
1568.6+x[r] 10		
1595.3[l] 11	(11⁻)	
1614.4+x[a] 8	(13⁺)	
1640.1[j] 14	(12⁻)	

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^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

^{118}Cs Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
1671.7+y[g] 7	(11$^+$)	2245.3+x[#] 9	(16$^+$)	3245.6+x[c] 8	(17$^-$)	5241.0+x[#] 18	(22$^+$)
1679.9[p] 11	(11$^-$)	2290.9[j] 17	(14$^-$)	3264.7+y[e] 8	(16$^+$)	5480.2+x[d] 18	(22$^-$)
1681.0+x[r] 12		2309.2+x[a] 10	(15$^+$)	3284.3[o] 13	(16$^-$)	5514.1+x[@] 16	(23$^+$)
1705.1+y[e] 6	(12$^+$)	2356.4+y[g] 7	(13$^+$)	3449.8+x[@] 10	(19$^+$)	5567.7[n] 18	(21$^-$)
1706.0+x[r] 10		2391.0[p] 13	(13$^-$)	3562.6+x[b] 10	(18$^+$)	6001.5+x[c] 19	(23$^-$)
1726.6+x[c] 6	(13$^-$)	2459.3+x[c] 7	(15$^-$)	3650.9+x[d] 11	(18$^-$)	6086.4[o] 20	(22$^-$)
1798.1+x[@] 8	(15$^+$)	2468.1+y[e] 6	(14$^+$)	3669.8+y[f] 9	(17$^+$)	6418.1+x[#] 21	(24$^+$)
1808.7+x[r] 12		2520.4[o] 11	(14$^-$)	3737.5[n] 14	(17$^-$)	6608.8[n] 21	(23$^-$)
1826.8[o] 9	(12$^-$)	2529.1[m] 19	(14$^-$)	3909.9[p] 18	(17$^-$)	6645.1+x[@] 19	(25$^+$)
1849.4+x[r] 12		2561.1[k] 13	(14$^-$)	3913.6+y[g] 14	(17$^+$)	6795.1+x[&] 19	(25$^+$)
1860.1[m] 17	(12$^-$)	2565.6+x[@] 9	(17$^+$)	4046.7+x[a] 17	(19$^+$)	7184.3[o] 22	(24$^-$)
1875.1+x[r] 9		2661.4+y[h] 13	(14$^+$)	4088.1+y[e] 10	(18$^+$)	7675.3+x[#] 23	(26$^+$)
1905.5[k] 11	(12$^-$)	2664.9[i] 20	(15$^-$)	4089.9+x[c] 13	(19$^-$)	7742.1[n] 23	(25$^-$)
1951.9[i] 14	(13$^-$)	2737.7+x[b] 9	(16$^+$)	4137.4[o] 15	(18$^-$)	7840.4+x[@] 22	(27$^+$)
1963.7+x[r] 10		2751.4[q] 15	(14$^-$)	4142.6+x[#] 15	(20$^+$)	8015.8+x[&] 22	(27$^+$)
2020.5+y[h] 7	(12$^+$)	2853.3+x[d] 8	(16$^-$)	4437.6+x[@] 13	(21$^+$)	8382.1[o] 24	(26$^-$)
2024.6[q] 11	(12$^-$)	2863.2+y[f] 7	(15$^+$)	4500.4+x[b] 12	(20$^+$)	8983.4[n] 25	(27$^-$)
2044.6+x[b] 9	(14$^+$)	2903.2[l] 14	(15$^-$)	4518.5+y[f] 10	(19$^+$)	9014.2+x[#] 25	(28$^+$)
2070.0+x[r] 12		2924.2[n] 12	(15$^-$)	4520.8+x[d] 15	(20$^-$)	9123.4+x[@] 24	(29$^+$)
2080.1+y[f] 6	(13$^+$)	3099.6+y[g] 10	(15$^+$)	4613.9[n] 15	(19$^-$)	9311.8+x[&] 24	(29$^+$)
2089.2+x[d] 6	(14$^-$)	3130.6[p] 10	(15$^-$)	4737.9[p] 21	(19$^-$)	9676.7[o] 25	(28$^-$)
2180.8[n] 9	(13$^-$)	3133.1+x[a] 14	(17$^+$)	4989.6+x[c] 17	(21$^-$)		
2226.9[l] 12	(13$^-$)	3141.4+x[#] 11	(18$^+$)	5073.3[o] 17	(20$^-$)		

† From least-squares fit to Eγ data. Low value of 0.56 for reduced χ^2, and only 11 γ rays deviating by 1-2 σ from the fitted values, suggests that uncertainties may be overestimated.

‡ As proposed by 2021Zh57, based on multipolarity assignments and rotational band structures. Exceptions are noted.

Band(A): Band #1, $\pi h_{11/2}\otimes\nu h_{11/2}$,$\alpha$=0. Proposed configuration=π3/2[541]$\otimes\nu$5/2[532] from alignment of ≈7$\hbar$ (2021Zh57), as also in 1997Sm04. The alignment increases to $\hbar\omega$≈0.5 MeV with gains of ≈2$\hbar$ and ≈$\hbar$ in the α=1 and α=0 signature partners, respectively, and attributed to pair of $h_{11/2}$ protons. This band was reported by 1997Sm04 from 10$^+$ to 35$^+$, with both signature partners, and two cascades of 11 transitions in each. The γ-ray cascades in 2021Zh57 and 1997Sm04 are in good agreement, except that J^π values of the bandheads are two units lower in 2021Zh57, and 1997Sm04 have one additional γ transition of 1408 keV at the top for α=0 signature, and two additional transitions of 1167 keV and a tentative 1346 keV in α=1 signature above (25$^+$).

@ Band(a): Band #1, $\pi h_{11/2}\otimes\nu h_{11/2}$,$\alpha$=1. Proposed configuration=π3/2[541]$\otimes\nu$5/2[532] (2021Zh57). See also comment for α=0 signature partner.

& Band(B): Side band (or forking) of band #1. This band was reported by 1997Sm04, with 1296γ → 1219γ → 1221γ cascade, whereas the cascade is 1296γ → 1221γ → 1281γ in 2021Zh57.

a Band(c): Band #2, α=1. Proposed configuration=π3/2[541]$\otimes\nu$5/2[532] (2021Zh57). See also comment for α=0 signature partner.

b Band(C): Band #2, α=0. Proposed configuration=π3/2[541]$\otimes\nu$5/2[532] with similar alignments as for Band #1 (2021Zh57). The α=1 signature partner o this band was reported by 1997Sm04 from 15$^+$ to 23$^+$, with a cascade of four γ transitions.

c Band(d): Band #3, α=1. Proposed configuration=$\pi g_{9/2}$9/2[404]$\otimes\nu h_{11/2}$5/2[532] (2021Zh57). See also comment for α=0 signature partner.

d Band(D): Band #3, α=0. Proposed configuration=$\pi g_{9/2}$9/2[404]$\otimes\nu h_{11/2}$5/2[532] from alignment of ≈2.5$\hbar$ at low frequency, with alignment gain of ≈8$\hbar$ at $\hbar\omega$≈0.35 MeV (2021Zh57) due to pair of $h_{11/2}$ protons.

e Band(E): Band #4, α=0. Proposed configurations=$\pi g_{9/2}$9/2[404]$\otimes\nu g_{7/2}$3/2[411] from alignment of $\hbar\omega$≈0.35 MeV, and from PNC-CSM calculations (2021Zh57).

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^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

^{118}Cs Levels (continued)

[f] Band(e): Band #4, α=1. Proposed configurations=$\pi g_{9/2}9/2[404]\otimes\nu g_{7/2}3/2[411]$ or $\pi g_{9/2}3/2[422]\otimes\nu d_{5/2}5/2[413]$ (2021Zh57). See also comment for α=0 signature partner.

[g] Band(f): Band #5, α=1.

[h] Band(F): Band #5, α=0.

[i] Band(g): Band #6, α=1. Proposed configurations=$\pi 3/2[541]\otimes\nu 3/2[411]$ (2021Zh57).

[j] Band(G): Band #6, α=0. Proposed configurations=$\pi 3/2[541]\otimes\nu 3/2[411]$ (2021Zh57).

[k] Band(H): Band #7, α=0. Proposed configurations=$\pi 3/2[422]\otimes\nu 5/2[532]$ (2021Zh57); bands #7 and #10 can be G-M partners with $K^\pi=4^-$ and $K^\pi=1^-$.

[l] Band(h): Band #7, α=1. Proposed configurations=$\pi 3/2[422]\otimes\nu 5/2[532]$ (2021Zh57). See also comment for α=0 signature partner.

[m] Band(I): Band #8, α=0. Proposed configurations=$\pi 1/2[420]\otimes\nu 5/2[532]$ (2021Zh57); bands #8 and #9 can be G-M partners with $K^\pi=3^-$ and $K^\pi=2^-$.

[n] Band(j): Band #9, α=1. Proposed configurations=$\pi 1/2[420]\otimes\nu 5/2[532]$ (2021Zh57). See also comment for α=0 signature partner.

[o] Band(J): Band #9, α=0. Proposed configurations=$\pi 1/2[420]\otimes\nu 5/2[532]$ (2021Zh57);; bands #8 and #9 can be G-M partners with $K^\pi=3^-$ and $K^\pi=2^-$.

[p] Band(k): Band #10, α=1. Proposed configurations=$\pi 3/2[422]\otimes\nu 5/2[532]$ (2021Zh57). See also comment for α=0 signature partner.

[q] Band(K): Band #10, α=0. Proposed configurations=$\pi 3/2[422]\otimes\nu 5/2[532]$ (2021Zh57); bands #7 and #10 can be G-M partners with $K^\pi=4^-$ and $K^\pi=1^-$.

[r] Members of γ band, with transitions to band #1 (2021Zh57).

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

$\gamma(^{118}Cs)$

Two-point $\gamma\gamma(\theta)$(anisotropy): R_{ac}=Iγ(133.6°+157.6°)(versus all angles)/Iγ(75.5°+104.5°) (versus all angles), with typical values of ≈0.8 for ΔJ=1 dipole, and ≈1.4 for ΔJ=2, quadrupole (likely E2). DCO=Iγ(157.6°,≈90°)/Iγ(≈90°,157.6°), with typical values of ≈1.0 for ΔJ=2, quadrupole (likely E2) and ≈0.46 for ΔJ=1, dipole transitions when gated on a ΔJ=2, quadrupole transitions, and ≈1.0 for ΔJ=1, dipole, and ≈2.1 for ΔJ=2, quadrupole, when gated on ΔJ=1, dipole transitions. Above description is from 2021Zh56 for ^{119}Cs high-spin structure, a companion article of 2021Zh57. Here, DCO(Q) is for gates on ΔJ=2, quadrupole, and DCO(D) for gates onΔJ=1, dipole transitions.

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[&]	Comments
36.7 *3*	3.0 *20*	79.6	(4$^-$)	42.7	(3$^-$)	[M1+E2]	50 *30*	α(total) for 37.2 *1* keV, as 36.7 keV is within 1 keV of L-shell binding energy. Mult.: (M1+E2) in 2021Zh57.
37.3 *3*	1.7 *10*	117.1	(4$^-$)	79.6	(4$^-$)	[M1+E2]	46 *30*	Mult.: (M1+E2) in 2021Zh57.
42.7 *3*	4.0 *20*	42.7	(3$^-$)	0.0	2$^{(-)}$	[M1+E2]	27 *17*	Mult.: (M1+E2) in 2021Zh57.
46.3[@] *5*		125.9+x	(7$^+$)	79.3+x?	(5,6)			
61.4[@] *5*		125.9+x	(7$^+$)	64.6+x?	(5,6)			
62.6 *3*	2.0 *10*	128.5	(4$^-$)	65.9	(3$^-$)	(M1+E2)	6.8 *34*	R_{ac}=0.9 *5*. Mult.: M1+E2 in 2021Zh57.
64.7[@] *5*		64.6+x?	(5,6)	0.0+x	(7$^-$)			
64.9 *3*	3.0 *20*	313.9	(6$^-$)	248.8	(5$^-$)	(M1+E2)	6.0 *29*	R_{ac}=0.5 *2*. Mult.: M1+E2 in 2021Zh57.
65.9 *5*		65.9	(3$^-$)	0.0	2$^{(-)}$	[M1]	2.99 *8*	Mult.: (M1) in 2021Zh57.
69.3 *3*	3.3 *9*	195.2+x	(8$^+$)	125.9+x	(7$^+$)	[M1+E2]	4.8 *22*	Mult.: (M1+E2), but to be dominant M1 from Weisskopf estimates (2021Zh57).
74.8 *3*	8.0 *40*	117.1	(4$^-$)	42.7	(3$^-$)	(M1+E2)	3.7 *16*	R_{ac}=0.5 *2*. Mult.: M1+E2 in 2021Zh57.
79.0[@] *5*		79.3+x?	(5,6)	0.0+x	(7$^-$)			
79.0 *3*	3.0 *20*	144.9	(4$^-$)	65.9	(3$^-$)	(M1+E2)	3.1 *13*	R_{ac}=0.79 *8*. Mult.: M1+E2 in 2021Zh57.
88.2 *3*	6.6 *30*	167.8	(5$^-$)	79.6	(4$^-$)	(M1+E2)	2.10 *82*	DCO(D)=1.0 *2* R_{ac}=0.6 *2*. Mult.: M1+E2 in 2021Zh57.
89.1 *3*	6.0 *10*	217.6	(5$^-$)	128.5	(4$^-$)	(M1+E2)	2.03 *79*	A_2=−0.93 *4*; A_4=+0.32 *6* δ(E2/M1)=−1.6 *3* or −0.4 *3*. R_{ac}=0.63 *9*. Mult.: M1+E2 in 2021Zh57.
113.5 *10*	0.5 *3*	1671.7+y	(11$^+$)	1557.3+y	(10$^+$)			Mult.: (M1+E2) in 2021Zh57.
115.9 *3*	8.0 *20*	333.7	(6$^-$)	217.6	(5$^-$)	(M1+E2)	0.85 *26*	DCO(D)=0.9 *4*; A_2=−0.52 *19*; A_4=+0.31 *7* δ(E2/M1)=−3.6 *13* or −0.1 *5*. R_{ac}=0.91 *5*. Mult.: M1+E2 in 2021Zh57.
118.8 *3*	6.0 *23*	263.7	(5$^-$)	144.9	(4$^-$)	(M1+E2)	0.78 *24*	R_{ac}=0.7 *1*. Mult.: M1+E2 in 2021Zh57.
125.0 *3*	1.0 *5*	167.8	(5$^-$)	42.7	(3$^-$)	[E2]	0.849 *14*	Mult.: (E2) in 2021Zh57.

From ENSDF

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

$\gamma(^{118}Cs)$ (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α&	Comments
126.0 *5*		125.9+x	(7^+)	0.0+x	(7^-)				Mult.: (E1) in 2021Zh57.
131.5 *3*	10.0 *50*	248.8	(5^-)	117.1	(4^-)	(M1+E2)		0.56 *15*	R_{ac}=0.8 *2*. Mult.: M1+E2 in 2021Zh57.
132.3 *3*	3.5 *8*	833.2+x	(12^+)	700.7+x	(11^+)	(M1+E2)		0.55 *15*	DCO(Q)=0.5 *2* Mult.: M1+E2 in 2021Zh57.
135.8 *10*	0.9 *4*	687.7	(8^-)	551.9	(7^-)				Mult.: (M1+E2) in 2021Zh57.
141.8 *3*	8.0 *20*	475.7	(7^-)	333.7	(6^-)	(M1+E2)		0.44 *11*	A_2=−0.49 *10*; A_4=+0.29 *17* δ(E2/M1)=−4.0 *16* or −0.1 *4*. R_{ac}=0.63 *9*. Mult.: M1+E2 in 2021Zh57.
145.0 *3*	9.0 *30*	312.9	(6^-)	167.8	(5^-)	(M1+E2)		0.41 *10*	R_{ac}=0.8 *2*. Mult.: M1+E2 in 2021Zh57.
145.7 *3*	4.0 *10*	313.9	(6^-)	167.8	(5^-)	(M1+E2)		0.40 *10*	R_{ac}=0.7 *2*. Mult.: M1+E2 in 2021Zh57.
152.0 *3*	5.0 *23*	415.9	(6^-)	263.7	(5^-)	(M1+E2)		0.35 *8*	DCO(D)=1.3 *5* R_{ac}=0.80 *9*. Mult.: M1+E2 in 2021Zh57.
171.4 *3*	5.0 *20*	647.0	(8^-)	475.7	(7^-)	(M1+E2)		0.24 *5*	DCO(D)=0.8 *4* R_{ac}=0.91 *5*. Mult.: M1+E2 in 2021Zh57.
180.4 *3*	4.5 *14*	596.5	(7^-)	415.9	(6^-)	(M1+E2)		0.20 *4*	R_{ac}=0.74 *8*. Mult.: M1+E2 in 2021Zh57.
182.3 *3*	2.4 *8*	687.7	(8^-)	505.7	(7^-)				Mult.: (M1+E2) in 2021Zh57.
182.9 *3*	45.0 *70*	182.94+x	(8^-)	0.0+x	(7^-)	M1(+E2)	+0.10 *35*	0.167 *10*	DCO(D)=1.2 *2*; pol=−0.03 *2*; A_2=−0.15 *9*; A_4=+0.31 *17* R_{ac}=0.91 *5*. Mult.: M1+E2 in 2021Zh57.
191.7 *3*	2.0 *10*	505.7	(7^-)	313.9	(6^-)				Mult.: (M1+E2) in 2021Zh57.
192.6 *3*	55 *15*	192.92+y	(7^+)	0.0+y	(6^+)	(M1(+E2))	0.00 *20*	0.145 *3*	DCO(D)=0.93 *7*; A_2=−0.22 *7*; A_4=+0.14 *12* R_{ac}=0.86 *4*. Mult.: M1+E2 in 2021Zh57.
192.8 *3*	2.0 *10*	505.7	(7^-)	312.9	(6^-)				Mult.: (M1+E2) in 2021Zh57.
195.8 *10*	0.5 *4*	701.7	(8^-)	505.7	(7^-)				Mult.: (M1+E2) in 2021Zh57.
197.0 *3*	7.5 *20*	313.9	(6^-)	117.1	(4^-)	(E2)		0.175	R_{ac}=1.4 *5*. Mult.: E2 in 2021Zh57.
198.1 *10*	0.5 *4*	750.7	(8^-)	551.9	(7^-)				Mult.: (M1+E2) in 2021Zh57.
199.5 *3*	4.5 *15*	846.6	(9^-)	647.0	(8^-)	(M1+E2)		0.150 *19*	R_{ac}=0.73 *9*. Mult.: M1+E2 in 2021Zh57.
200.1 *3*	100.0	395.3+x	(10^+)	195.2+x	(8^+)	E2		0.1661	DCO(Q)=0.87 *9*; pol=+0.14 *3*
213.5 *3*	3.0 *10*	810.1	(8^-)	596.5	(7^-)	(M1+E2)		0.122 *12*	R_{ac}=0.9 *1*. Mult.: M1+E2 in 2021Zh57.
227.8 *3*	3.0 *10*	1074.5	(10^-)	846.6	(9^-)	(M1+E2)		0.100 *8*	DCO(D)=0.8 *4* R_{ac}=0.7 *2*. Mult.: M1+E2 in 2021Zh57.
229.5 *10*	0.6 *2*	1063.0+x	(11^+)	833.2+x	(12^+)				Mult.: (M1+E2) in 2021Zh57.

From ENSDF

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

$\gamma(^{118}Cs)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[&]	Comments
233.3 *3*	3.0 *10*	312.9	(6$^-$)	79.6	(4$^-$)				Mult.: (E2) in 2021Zh57.
236.4 *3*	53 *10*	429.68+y	(8$^+$)	192.92+y	(7$^+$)	M1(+E2)	0.00 *15*	0.0834 *13*	DCO(D)=1.11 *7*; pol=−0.02 *1*; A_2=−0.22 *5*; A_4=+0.08 *10* R_{ac}=0.82 *3*. Mult.: M1+E2 in 2021Zh57.
237.8 *3*	7.0 *30*	551.9	(7$^-$)	313.9	(6$^-$)	(M1+E2)		0.088 *6*	DCO(D)=1.0 *3* R_{ac}=0.7 *1*. Mult.: M1+E2 in 2021Zh57.
238.3 *3*	2.5 *9*	1048.5	(9$^-$)	810.1	(8$^-$)	(M1+E2)		0.087 *6*	R_{ac}=0.9 *2*. Mult.: M1+E2 in 2021Zh57.
245.4 *3*	1.1 *2*	1205.1	(10$^-$)	959.6	(9$^-$)				I_γ: uncertainty of 2.0 in 2021Zh57 seems a misprint. Mult.: (M1+E2) in 2021Zh57.
248.3 *10*	0.5 *4*	1094.5		846.6	(9$^-$)				
254.5 *10*	0.3 *2*	1348.6		1094.5					
258.3 *3*	1.0 *5*	475.7	(7$^-$)	217.6	(5$^-$)				Mult.: (E2) in 2021Zh57.
261.7 *10*	0.8 *3*	1336.7	(11$^-$)	1074.5	(10$^-$)				Mult.: (M1+E2) in 2021Zh57.
263.9 *3*	1.7 *7*	1312.5	(10$^-$)	1048.5	(9$^-$)	(M1+E2)		0.0641 *21*	R_{ac}=0.8 *3*. Mult.: M1+E2 in 2021Zh57.
265.5 *3*	28.0 *50*	448.56+x	(9$^-$)	182.94+x	(8$^-$)	M1(+E2)	0.00 *20*	0.0613	DCO(D)=1.0 *2*; pol=−0.2 *1*; A_2=−0.18 *2*; A_4=+0.10 *2* R_{ac}=0.9 *1*. Mult.: M1+E2 in 2021Zh57.
272.1 *3*	3.2 *15*	959.6	(9$^-$)	687.7	(8$^-$)				Mult.: (M1+E2) in 2021Zh57.
274.0 *3*	1.4 *6*	1348.6		1074.5	(10$^-$)				
274.6 *3*	30.0 *50*	704.5+y	(9$^+$)	429.68+y	(8$^+$)	M1(+E2)	+0.10 *10*	0.0561	DCO(D)=1.11 *9*; pol=−0.07 *2*; A_2=−0.11 *18*; A_4=+0.06 *34* R_{ac}=0.85 *4*. Mult.: M1+E2 in 2021Zh57.
282.7 *10*	0.9 *3*	1595.3	(11$^-$)	1312.5	(10$^-$)				Mult.: (M1+E2) in 2021Zh57.
288.3 *3*	15.0 *26*	737.0+x	(10$^-$)	448.56+x	(9$^-$)	M1(+E2)	0.10 *20*	0.0493	DCO(D)=1.0 *2*; pol=−0.3 *2*; A_2=0.00 *30*; A_4=+0.11 *57* R_{ac}=0.74 *8*. Mult.: M1+E2 in 2021Zh57.
298.1 *10*	0.4 *3*	1048.6	(9$^-$)	750.7	(8$^-$)				Mult.: (M1+E2) in 2021Zh57.
298.3 *10*	0.6 *4*	1465.0+x	(14$^+$)	1167.5+x	(13$^+$)				Mult.: (M1+E2) in 2021Zh57.
303.2 *10*	0.7 *3*	1640.1	(12$^-$)	1336.7	(11$^-$)				Mult.: (M1+E2) in 2021Zh57.
303.3 *3*	1.6 *8*	551.9	(7$^-$)	248.8	(5$^-$)				Mult.: (E2) in 2021Zh57.
305.2 *3*	21.0 *25*	700.7+x	(11$^+$)	395.3+x	(10$^+$)	M1+E2		0.0418 *9*	DCO(Q)=0.43 *7*; pol=−0.08 *4*; A_2=−0.70 *10*; A_4=+0.22 *18*
307.0 *3*	25.0 *50*	1011.5+y	(10$^+$)	704.5+y	(9$^+$)	M1(+E2)	+0.10 *25*	0.0418 *7*	DCO(D)=0.97 *9*; pol=−0.02 *1*; A_2=−0.12 *6*; A_4=+0.23 *11* R_{ac}=0.89 *5*. Mult.: M1+E2 in 2021Zh57.
308.2 *3*	1.3 *4*	3449.8+x	(19$^+$)	3141.4+x	(18$^+$)				Mult.: (M1+E2) in 2021Zh57.
310.2 *10*	0.4 *2*	1905.5	(12$^-$)	1595.3	(11$^-$)				Mult.: (M1+E2) in 2021Zh57.
310.5 *3*	9.0 *18*	1047.6+x	(11$^-$)	737.0+x	(10$^-$)	(M1+E2)		0.0398 *10*	DCO(D)=0.9 *1* R_{ac}=1.0 *2*. Mult.: M1+E2 in 2021Zh57.
311.6 *10*	0.5 *3*	1951.9	(13$^-$)	1640.1	(12$^-$)				Mult.: (M1+E2) in 2021Zh57.
312.8 *10*	0.4 *3*	647.0	(8$^-$)	333.7	(6$^-$)				Mult.: (E2) in 2021Zh57.

From ENSDF

$^{118}_{55}Cs_{63}$-7

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

$\gamma(^{118}Cs)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	δ [#]	α [&]	Comments
315.2 *3*	1.9 *9*	1520.3	(11$^-$)	1205.1	(10$^-$)				Mult.: (M1+E2) in 2021Zh57.
320.3 *3*	2.8 *5*	2565.6+x	(17$^+$)	2245.3+x	(16$^+$)	(M1+E2)		0.0364 *12*	R_{ac}=0.9 *3*.
320.8 *10*	0.2 *1*	2226.9	(13$^-$)	1905.5	(12$^-$)				Mult.: (M1+E2) in 2021Zh57.
330.8 *3*	6.8 *14*	1378.6+x	(12$^-$)	1047.6+x	(11$^-$)	(M1+E2)		0.0332 *14*	DCO(D)=1.1 *2* R_{ac}=1.0 *2*. Mult.: M1+E2 in 2021Zh57.
333.0 *3*	1.0 *6*	596.5	(7$^-$)	263.7	(5$^-$)				Mult.: (E2) in 2021Zh57.
333.3 *3*	15.0 *35*	1798.1+x	(15$^+$)	1465.0+x	(14$^+$)	M1+E2		0.0325 *14*	pol=−0.05 *1* R_{ac}=0.67 *8*, may be combined for 333.3γ+334.2γ.
334.1 *10*	0.1 *1*	2561.1	(14$^-$)	2226.9	(13$^-$)				Mult.: (M1+E2) in 2021Zh57.
334.2 *3*	24.0 *65*	1167.5+x	(13$^+$)	833.2+x	(12$^+$)	(M1+E2)		0.0323 *14*	R_{ac}=0.67 *8*, may be combined for 333.3γ+334.2γ. Mult.: M1+E2 in 2021Zh57.
335.3 *3*	18.0 *35*	1346.6+y	(11$^+$)	1011.5+y	(10$^+$)	(M1(+E2))	−0.10 *15*	0.0333	DCO(D)=1.0 *2*; A_2=−0.38 *6*; A_4=0.00 *10* R_{ac}=0.87 *5*. Mult.: M1+E2 in 2021Zh57.
336.0 *10*	0.5 *3*	2356.4+y	(13$^+$)	2020.5+y	(12$^+$)				Mult.: (M1+E2) in 2021Zh57.
338.1 *3*	3.2 *12*	505.7	(7$^-$)	167.8	(5$^-$)	(E2)		0.0298	R_{ac}=1.3 *4*. Mult.: E2 in 2021Zh57.
339.0 *10*	0.4 *3*	2290.9	(14$^-$)	1951.9	(13$^-$)				Mult.: (M1+E2) in 2021Zh57.
342.5 *10*	0.1 *1*	2903.2	(15$^-$)	2561.1	(14$^-$)				Mult.: (M1+E2) in 2021Zh57.
347.9 *3*	4.5 *9*	1726.6+x	(13$^-$)	1378.6+x	(12$^-$)	(M1+E2)		0.0288 *16*	R_{ac}=0.7 *2*. Mult.: M1+E2 in 2021Zh57.
348.8 *10*	0.9 *4*	2020.5+y	(12$^+$)	1671.7+y	(11$^+$)				Mult.: (M1+E2) in 2021Zh57.
358.5 *3*	7.0 *14*	1705.1+y	(12$^+$)	1346.6+y	(11$^+$)	(M1+E2)		0.0265 *17*	DCO(D)=1.1 *1* R_{ac}=0.9 *3*. Mult.: M1+E2 in 2021Zh57.
360.3 *10*	0.6 *4*	1048.6	(9$^-$)	687.7	(8$^-$)				Mult.: (M1+E2) in 2021Zh57.
362.6 *3*	2.7 *6*	2089.2+x	(14$^-$)	1726.6+x	(13$^-$)	(M1+E2)		0.0256 *17*	R_{ac}=0.9 *3*. Mult.: M1+E2 in 2021Zh57.
370.0 *3*	1.1 *3*	2459.3+x	(15$^-$)	2089.2+x	(14$^-$)	(M1+E2)		0.0242 *17*	R_{ac}=1.0 *4*. Mult.: M1+E2 in 2021Zh57.
370.8 *10*	0.6 *4*	846.6	(9$^-$)	475.7	(7$^-$)				Mult.: (E2) in 2021Zh57.
373.8 *3*	16.0 *70*	687.7	(8$^-$)	312.9	(6$^-$)	(E2)		0.0219	DCO(Q)=0.9 *3* R_{ac}=1.2 *2*. Mult.: E2 in 2021Zh57.
374.0 *10*	0.3 *2*	2664.9	(15$^-$)	2290.9	(14$^-$)				Mult.: (M1+E2) in 2021Zh57.
374.9 *3*	3.2 *9*	2080.1+y	(13$^+$)	1705.1+y	(12$^+$)	(M1+E2)		0.0234 *17*	R_{ac}=0.8 *2*. Mult.: M1+E2 in 2021Zh57.
384.0 *10*	0.7 *4*	551.9	(7$^-$)	167.8	(5$^-$)				Mult.: (E2) in 2021Zh57.
387.9 *3*	2.2 *6*	2468.1+y	(14$^+$)	2080.1+y	(13$^+$)	(M1+E2)		0.0213 *17*	R_{ac}=1.0 *3*. Mult.: M1+E2 in 2021Zh57.
388.9 *10*	0.6 *3*	701.7	(8$^-$)	312.9	(6$^-$)				Mult.: (E2) in 2021Zh57.
392.4 *3*	1.0 *3*	3245.6+x	(17$^-$)	2853.3+x	(16$^-$)				Mult.: M1+E2 in 2021Zh57.
394.2 *10*	0.7 *2*	2853.3+x	(16$^-$)	2459.3+x	(15$^-$)				Mult.: (M1+E2) in 2021Zh57.

From ENSDF

$^{118}_{55}Cs_{63}$-8

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

$\gamma(^{118}Cs)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[&]	Comments
394.9 *10*	0.3 *2*	810.1	(8$^-$)	415.9	(6$^-$)			Mult.: (E2) in 2021Zh57.
395.1 *3*	2.1 *5*	2863.2+y	(15$^+$)	2468.1+y	(14$^+$)	(M1+E2)	0.0202 *17*	R_{ac}=0.9 *4*. Mult.: M1+E2 in 2021Zh57.
401.8 *10*	0.8 *2*	3264.7+y	(16$^+$)	2863.2+y	(15$^+$)	(M1+E2)	0.0193 *17*	R_{ac}=0.9 *5*. Mult.: M1+E2 in 2021Zh57.
405.1 *10*	0.3 *2*	3650.9+x	(18$^-$)	3245.6+x	(17$^-$)			Mult.: (M1+E2) in 2021Zh57.
405.3 *10*	0.6 *2*	3669.8+y	(17$^+$)	3264.7+y	(16$^+$)			Mult.: (M1+E2) in 2021Zh57.
407.5 *3*	1.8 *9*	959.6	(9$^-$)	551.9	(7$^-$)			Mult.: (E2) in 2021Zh57.
418.4 *10*	0.4 *2*	4088.1+y	(18$^+$)	3669.8+y	(17$^+$)			Mult.: (M1+E2) in 2021Zh57.
427.8 *10*	0.3 *2*	1074.5	(10$^-$)	647.0	(8$^-$)			Mult.: (E2) in 2021Zh57.
430.0 *3*	6.0 *20*	429.68+y	(8$^+$)	0.0+y	(6$^+$)	(E2)	0.01445	DCO(D)=1.7 *8* Mult.: E2 in 2021Zh57.
430.0 *10*	0.5 *3*	4518.5+y	(19$^+$)	4088.1+y	(18$^+$)			Mult.: (M1+E2) in 2021Zh57.
436.9 *3*	4.0 *20*	750.7	(8$^-$)	313.9	(6$^-$)	(E2)	0.01379	R_{ac}=1.3 *2*. Mult.: E2 in 2021Zh57.
438.2 *3*	78.0 *25*	833.2+x	(12$^+$)	395.3+x	(10$^+$)	E2	0.01368	DCO(Q)=1.11 *6*; pol=+0.10 *1*
448.6 *3*	1.6 *5*	448.56+x	(9$^-$)	0.0+x	(7$^-$)			Mult.: (E2) in 2021Zh57.
452.3 *10*	0.5 *3*	1048.5	(9$^-$)	596.5	(7$^-$)			Mult.: (E2) in 2021Zh57.
453.6 *3*	10.0 *40*	959.6	(9$^-$)	505.7	(7$^-$)	(E2)	0.01238	DCO(D)=1.9 *4* R_{ac}=1.3 *3*. Mult.: E2 in 2021Zh57.
467.0 *3*	10.0 *15*	1167.5+x	(13$^+$)	700.7+x	(11$^+$)	(E2)	0.01140	DCO(Q)=1.1 Mult.: E2 in 2021Zh57.
490.7 *10*	0.3 *2*	1336.7	(11$^-$)	846.6	(9$^-$)			Mult.: (E2) in 2021Zh57.
496.6 *3*	1.9 *10*	1048.6	(9$^-$)	551.9	(7$^-$)	(E2)	0.00959	R_{ac}=1.3 *3*. Mult.: E2 in 2021Zh57.
502.5 *10*	0.9 *5*	1348.6		846.6	(9$^-$)			
502.8 *10*	0.6 *3*	1312.5	(10$^-$)	810.1	(8$^-$)			Mult.: (E2) in 2021Zh57.
504.5 *10*	0.5 *3*	1206.2	(10$^-$)	701.7	(8$^-$)			Mult.: (E2) in 2021Zh57.
511.7 *7*	6.0 *10*	704.5+y	(9$^+$)	192.92+y	(7$^+$)	E2	0.00883	DCO(D)=2.0 *5*; pol=+0.12 *6*
518.0 *7*	11.0 *40*	1205.1	(10$^-$)	687.7	(8$^-$)	(E2)	0.00854	R_{ac}=1.3 *2*. Mult.: E2 in 2021Zh57.
547.3 *10*	0.2 *1*	1595.3	(11$^-$)	1048.5	(9$^-$)			Mult.: (E2) in 2021Zh57.
550.8 *10*	0.3 *2*	1614.4+x	(13$^+$)	1063.0+x	(11$^+$)			Mult.: (E2) in 2021Zh57.
553.3 *7*	1.8 *8*	1254.4+x		700.7+x	(11$^+$)			
554.5 *7*	2.7 *7*	737.0+x	(10$^-$)	182.94+x	(8$^-$)	(E2)	0.00710	R_{ac}=1.3 *5*. Mult.: E2 in 2021Zh57.
561.0 *7*	8.0 *30*	1520.3	(11$^-$)	959.6	(9$^-$)	(E2)	0.00688	R_{ac}=1.6 *3*. Mult.: E2 in 2021Zh57.
582.7 *7*	11.0 *20*	1011.5+y	(10$^+$)	429.68+y	(8$^+$)	(E2)	0.00622	DCO(D)=1.6 *5* R_{ac}=1.35 *8*. Mult.: E2 in 2021Zh57.
585.4 *7*	3.0 *15*	1336.1	(10$^-$)	750.7	(8$^-$)	(E2)	0.00615	R_{ac}=1.3 *2*. Mult.: E2 in 2021Zh57.

From ENSDF

$^{118}_{55}Cs_{63}$-9

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

$\gamma(^{118}Cs)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	α [&]	Comments
592.8 *10*	0.2 *1*	1905.5	(12$^-$)	1312.5	(10$^-$)			Mult.: (E2) in 2021Zh57.
599.2 *7*	4.6 *9*	1047.6+x	(11$^-$)	448.56+x	(9$^-$)	(E2)	0.00579	R_{ac}=1.5 *4*. Mult.: E2 in 2021Zh57.
615.3 *10*	0.2 *1*	1951.9	(13$^-$)	1336.7	(11$^-$)			Mult.: (E2) in 2021Zh57.
620.2 *7*	1.0 *5*	1875.1+x		1254.4+x				
621.7 *7*	7.0 *20*	1826.8	(12$^-$)	1205.1	(10$^-$)	(E2)	0.00526	R_{ac}=1.2 *3*. Mult.: E2 in 2021Zh57.
629.5 *7*	17.0 *45*	1798.1+x	(15$^+$)	1167.5+x	(13$^+$)	(E2)	0.00510	DCO(Q)=1.0 *2* Mult.: E2 in 2021Zh57.
631.4 *7*	1.8 *10*	1679.9	(11$^-$)	1048.5	(9$^-$)			Mult.: (E2) in 2021Zh57.
631.8 *10*	0.2 *1*	2226.9	(13$^-$)	1595.3	(11$^-$)			Mult.: (E2) in 2021Zh57.
632.1 *7*	38.0 *45*	1465.0+x	(14$^+$)	833.2+x	(12$^+$)	E2	0.00504	DCO(Q)=1.0 *2*; pol=+0.08 *3*
640.9 *10*	0.9 *5*	2661.4+y	(14$^+$)	2020.5+y	(12$^+$)			Mult.: (E2) in 2021Zh57.
641.8 *7*	10.0 *20*	1346.6+y	(11$^+$)	704.5+y	(9$^+$)	E2	0.00485	DCO(D)=2.0 *4*; pol=+0.05 *3*
642.4 *7*	4.5 *9*	1378.6+x	(12$^-$)	737.0+x	(10$^-$)	(E2)	0.00484	R_{ac}=1.2 *3*. Mult.: E2 in 2021Zh57.
651.6 *7*	1.2 *5*	2356.4+y	(13$^+$)	1705.1+y	(12$^+$)			Mult.: (M1+E2) in 2021Zh57.
653.9 *10*	0.4 *3*	1860.1	(12$^-$)	1206.2	(10$^-$)			Mult.: (E2) in 2021Zh57.
655.9 *10*	0.1 *1*	2561.1	(14$^-$)	1905.5	(12$^-$)			Mult.: (E2) in 2021Zh57.
660.4 *7*	3.4 *13*	1671.7+y	(11$^+$)	1011.5+y	(10$^+$)	(M1+E2)	0.0053 *9*	α(K)=0.0046 *8*; α(L)=0.00060 *7*; α(M)=0.000123 *14* α(N)=2.6×10^{-5} *3*; α(O)=3.6×10^{-6} *5*; α(P)=1.7×10^{-7} *4* R_{ac}=0.9 *3*. Mult.: M1+E2 in 2021Zh57.
660.5 *7*	7.0 *20*	2180.8	(13$^-$)	1520.3	(11$^-$)	(E2)	0.00451	R_{ac}=1.4 *3*. Mult.: E2 in 2021Zh57.
667.6 *10*	0.7 *3*	1063.0+x	(11$^+$)	395.3+x	(10$^+$)			Mult.: (M1+E2) in 2021Zh57.
669.0 *10*	0.2 *2*	2529.1	(14$^-$)	1860.1	(12$^-$)			Mult.: (E2) in 2021Zh57.
674.0 *7*	1.6 *7*	2020.5+y	(12$^+$)	1346.6+y	(11$^+$)			Mult.: (M1+E2) in 2021Zh57.
676.0 *10*	0.1 *1*	2903.2	(15$^-$)	2226.9	(13$^-$)			Mult.: (E2) in 2021Zh57.
679.1 *7*	5.0 *10*	1726.6+x	(13$^-$)	1047.6+x	(11$^-$)	(E2)	0.00421	DCO(D)=1.6 *5* R_{ac}=1.2 *3*. Mult.: E2 in 2021Zh57.
684.3 *7*	2.6 *10*	2356.4+y	(13$^+$)	1671.7+y	(11$^+$)	(E2)	0.00413	R_{ac}=1.4 *5*. Mult.: E2 in 2021Zh57.
688.5 *7*	2.0 *10*	2024.6	(12$^-$)	1336.1	(10$^-$)	(E2)	0.00407	R_{ac}=1.3 *4*. Mult.: E2 in 2021Zh57.
693.3 *7*	11.0 *30*	1705.1+y	(12$^+$)	1011.5+y	(10$^+$)	E2	0.00400	DCO(Q)=1.2 *4*; pol=+0.07 *2*
693.3 *7*	1.0 *3*	2737.7+x	(16$^+$)	2044.6+x	(14$^+$)			Mult.: (E2) in 2021Zh57.
693.6 *7*	5.0 *20*	2520.4	(14$^-$)	1826.8	(12$^-$)	(E2)	0.00399	R_{ac}=1.3 *3*. Mult.: E2 in 2021Zh57.
695.0 *10*	0.4 *2*	2309.2+x	(15$^+$)	1614.4+x	(13$^+$)			Mult.: (E2) in 2021Zh57.
708.0 *7*	1.1 *6*	1875.1+x		1167.5+x	(13$^+$)			
710.6 *7*	3.6 *7*	2089.2+x	(14$^-$)	1378.6+x	(12$^-$)	(E2)	0.00376	R_{ac}=1.3 *3*. Mult.: E2 in 2021Zh57.

From ENSDF

$^{118}_{55}Cs_{63}$-10

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

$\gamma(^{118}Cs)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[&]	Comments
711.1 *7*	1.6 *9*	2391.0	(13$^-$)	1679.9	(11$^-$)			
726.8 *10*	0.4 *3*	2751.4	(14$^-$)	2024.6	(12$^-$)			Mult.: (E2) in 2021Zh57.
732.8 *7*	2.5 *5*	2459.3+x	(15$^-$)	1726.6+x	(13$^-$)	(E2)	0.00349	R_{ac}=1.4 *3*. Mult.: E2 in 2021Zh57.
733.8 *7*	8.3 *17*	2080.1+y	(13$^+$)	1346.6+y	(11$^+$)	(E2)	0.00348	DCO(Q)=0.8 *2* R_{ac}=1.4 *1*. Mult.: E2 in 2021Zh57.
735.4 *7*	1.7 *8*	1568.6+x		833.2+x	(12$^+$)			
739.5 *7*	1.1 *7*	3130.6	(15$^-$)	2391.0	(13$^-$)			Mult.: (E2) in 2021Zh57.
743.2 *7*	1.0 *6*	3099.6+y	(15$^+$)	2356.4+y	(13$^+$)			Mult.: (E2) in 2021Zh57.
743.4 *7*	3.4 *11*	2924.2	(15$^-$)	2180.8	(13$^-$)	(E2)	0.00337	R_{ac}=1.6 *5*. Mult.: E2 in 2021Zh57.
763.1 *7*	9.0 *20*	2468.1+y	(14$^+$)	1705.1+y	(12$^+$)	(E2)	0.00317	DCO(Q)=1.1 *5* R_{ac}=1.4 *2*. Mult.: E2 in 2021Zh57.
763.9 *7*	3.5 *14*	3284.3	(16$^-$)	2520.4	(14$^-$)	(E2)	0.00316	R_{ac}=1.6 *6*. Mult.: E2 in 2021Zh57.
764.6 *7*	1.9 *9*	2853.3+x	(16$^-$)	2089.2+x	(14$^-$)	(E2)	0.00315	R_{ac}=1.6 *8*. Mult.: E2 in 2021Zh57.
767.9 *7*	13.0 *20*	2565.6+x	(17$^+$)	1798.1+x	(15$^+$)	(E2)	0.00312	DCO(Q)=1.0 *3* Mult.: E2 in 2021Zh57.
779.4 *10*	0.7 *4*	3909.9	(17$^-$)	3130.6	(15$^-$)			Mult.: (E2) in 2021Zh57.
780.0 *7*	19.0 *40*	2245.3+x	(16$^+$)	1465.0+x	(14$^+$)	(E2)	0.00301	DCO(Q)=1.0 *3* R_{ac}=1.4 *2*. Mult.: E2 in 2021Zh57.
781.5 *7*	1.2 *4*	1614.4+x	(13$^+$)	833.2+x	(12$^+$)			Mult.: (M1+E2) in 2021Zh57.
783.6 *7*	5.6 *11*	2863.2+y	(15$^+$)	2080.1+y	(13$^+$)	(E2)	0.00298	R_{ac}=1.4 *2*. Mult.: E2 in 2021Zh57.
785.3 *10*	0.5 *4*	3245.6+x	(17$^-$)	2459.3+x	(15$^-$)			Mult.: (E2) in 2021Zh57.
796.2 *7*	1.1 *6*	1963.7+x		1167.5+x	(13$^+$)			
796.3 *7*	5.3 *12*	3264.7+y	(16$^+$)	2468.1+y	(14$^+$)	(E2)	0.00287	DCO(Q)=1.3 *5* R_{ac}=1.4 *2*. Mult.: E2 in 2021Zh57.
797.7 *10*	0.7 *2*	3650.9+x	(18$^-$)	2853.3+x	(16$^-$)			Mult.: (E2) in 2021Zh57.
806.7 *7*	4.2 *10*	3669.8+y	(17$^+$)	2863.2+y	(15$^+$)	(E2)	0.00278	R_{ac}=1.3 *2*. Mult.: E2 in 2021Zh57.
813.2 *7*	1.3 *4*	3737.5	(17$^-$)	2924.2	(15$^-$)	(E2)	0.00273	R_{ac}=1.4 *5*. Mult.: E2 in 2021Zh57.
814.0 *10*	0.5 *4*	3913.6+y	(17$^+$)	3099.6+y	(15$^+$)			Mult.: (E2) in 2021Zh57.
823.2 *7*	3.0 *8*	4088.1+y	(18$^+$)	3264.7+y	(16$^+$)	(E2)	0.00265	R_{ac}=1.5 *3*. Mult.: E2 in 2021Zh57.
824.0 *10*	0.8 *6*	3133.1+x	(17$^+$)	2309.2+x	(15$^+$)			Mult.: (E2) in 2021Zh57.
824.8 *7*	1.9 *7*	3562.6+x	(18$^+$)	2737.7+x	(16$^+$)			Mult.: (E2) in 2021Zh57.
828.0 *10*	0.4 *2*	4737.9	(19$^-$)	3909.9	(17$^-$)			Mult.: (E2) in 2021Zh57.

From ENSDF

$^{118}_{55}Cs_{63}$-11

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

$\gamma(^{118}Cs)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	α [&]	Comments
844.1 *7*	1.2 *9*	2309.2+x	(15^+)	1465.0+x	(14^+)			Mult.: (M1+E2) in 2021Zh57.
844.3 *10*	0.8 *3*	4089.9+x	(19^-)	3245.6+x	(17^-)			Mult.: (E2) in 2021Zh57.
848.9 *7*	2.8 *7*	4518.5+y	(19^+)	3669.8+y	(17^+)	(E2)	0.00247	R_{ac}=1.2 *3*. Mult.: E2 in 2021Zh57.
852.3 *7*	1.0 *6*	1557.3+y	(10^+)	704.5+y	(9^+)			Mult.: (M1+E2) in 2021Zh57.
853.1 *7*	1.1 *3*	4137.4	(18^-)	3284.3	(16^-)			Mult.: (E2) in 2021Zh57.
869.9 *10*	0.7 *3*	4520.8+x	(20^-)	3650.9+x	(18^-)			Mult.: (E2) in 2021Zh57.
872.8 *7*	1.7 *9*	1706.0+x		833.2+x	(12^+)			
876.4 *7*	1.1 *3*	4613.9	(19^-)	3737.5	(17^-)			Mult.: (E2) in 2021Zh57.
877.3 *7*	3.4 *9*	2044.6+x	(14^+)	1167.5+x	(13^+)			Mult.: (M1+E2) in 2021Zh57.
884.5 *7*	8.0 *16*	3449.8+x	(19^+)	2565.6+x	(17^+)	(E2)	0.00225	R_{ac}=1.3 *2*. Mult.: E2 in 2021Zh57.
896.0 *7*	8.0 *16*	3141.4+x	(18^+)	2245.3+x	(16^+)	(E2)	0.00218	DCO(Q)=1.1 *4* Mult.: E2 in 2021Zh57.
899.6 *10*	0.3 *2*	4989.6+x	(21^-)	4089.9+x	(19^-)			Mult.: (E2) in 2021Zh57.
902.5 *10*	0.5 *2*	2070.0+x		1167.5+x	(13^+)			
913.5 *10*	0.5 *4*	4046.7+x	(19^+)	3133.1+x	(17^+)			Mult.: (E2) in 2021Zh57.
931.2 *7*	1.7 *5*	1360.9+y	(9)	429.68+y	(8^+)			Mult.: (M1+E2) in 2021Zh57.
935.9 *7*	1.4 *4*	5073.3	(20^-)	4137.4	(18^-)			Mult.: (E2) in 2021Zh57.
937.8 *7*	1.0 *5*	4500.4+x	(20^+)	3562.6+x	(18^+)			Mult.: (E2) in 2021Zh57.
939.3 *7*	2.2 *15*	2737.7+x	(16^+)	1798.1+x	(15^+)			Mult.: (M1+E2) in 2021Zh57.
953.8 *10*	0.9 *3*	5567.7	(21^-)	4613.9	(19^-)			Mult.: (E2) in 2021Zh57.
959.4 *10*	0.2 *1*	5480.2+x	(22^-)	4520.8+x	(20^-)			Mult.: (E2) in 2021Zh57.
980.3 *10*	0.6 *2*	1681.0+x		700.7+x	(11^+)			
987.8 *7*	9.0 *20*	4437.6+x	(21^+)	3449.8+x	(19^+)	(E2)	1.76×10^{-3}	R_{ac}=1.3 *2*. Mult.: E2 in 2021Zh57.
997.0 *7*	1.3 *4*	3562.6+x	(18^+)	2565.6+x	(17^+)			Mult.: (M1+E2) in 2021Zh57.
1001.0 *10*	5.0 *10*	4142.6+x	(20^+)	3141.4+x	(18^+)	(E2)	1.71×10^{-3}	R_{ac}=1.5 *3*. Mult.: E2 in 2021Zh57.
1011.9 *10*	0.1 *1*	6001.5+x	(23^-)	4989.6+x	(21^-)			Mult.: (E2) in 2021Zh57.
1013.1 *10*	1.3 *4*	6086.4	(22^-)	5073.3	(20^-)			Mult.: (E2) in 2021Zh57.
1016.2 *10*	1.0 *5*	1849.4+x		833.2+x	(12^+)			
1041.1 *10*	0.8 *3*	6608.8	(23^-)	5567.7	(21^-)			Mult.: (E2) in 2021Zh57.
1076.4 *10*	3.6 *10*	5514.1+x	(23^+)	4437.6+x	(21^+)	(E2)	1.46×10^{-3}	R_{ac}=1.3 *4*. Mult.: E2 in 2021Zh57.
1097.9 *10*	0.3 *1*	7184.3	(24^-)	6086.4	(22^-)			Mult.: (E2) in 2021Zh57.
1098.4 *10*	2.2 *6*	5241.0+x	(22^+)	4142.6+x	(20^+)	(E2)	1.40×10^{-3}	R_{ac}=1.5 *7*. Mult.: E2 in 2021Zh57.
1108.0 *10*	0.6 *3*	1808.7+x		700.7+x	(11^+)			
1131.0 *10*	2.1 *9*	6645.1+x	(25^+)	5514.1+x	(23^+)	(E2)	1.32×10^{-3}	R_{ac}=1.5 *5*. Mult.: E2 in 2021Zh57.
1133.3 *10*	0.6 *3*	7742.1	(25^-)	6608.8	(23^-)			Mult.: (E2) in 2021Zh57.
1177.1 *10*	0.6 *3*	6418.1+x	(24^+)	5241.0+x	(22^+)			Mult.: (E2) in 2021Zh57.

From ENSDF

$^{118}_{55}Cs_{63}$-12

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)

$\gamma(^{118}Cs)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1195.3 *10*	0.3 *2*	7840.4+x	(27^+)	6645.1+x	(25^+)	Mult.: (E2) in 2021Zh57.
1197.8 *10*	0.2 *1*	8382.1	(26^-)	7184.3	(24^-)	Mult.: (E2) in 2021Zh57.
1220.7 *10*	0.3 *2*	8015.8+x	(27^+)	6795.1+x	(25^+)	Mult.: (E2) in 2021Zh57.
1241.2 *10*	0.2 *1*	8983.4	(27^-)	7742.1	(25^-)	Mult.: (E2) in 2021Zh57.
1257.2 *10*	0.2 *1*	7675.3+x	(26^+)	6418.1+x	(24^+)	Mult.: (E2) in 2021Zh57.
1281.0 *10*	0.5 *4*	6795.1+x	(25^+)	5514.1+x	(23^+)	Mult.: (E2) in 2021Zh57.
1283.0 *10*	0.2 *1*	9123.4+x	(29^+)	7840.4+x	(27^+)	Mult.: (E2) in 2021Zh57.
1294.4 *10*	0.1 *1*	9676.7	(28^-)	8382.1	(26^-)	Mult.: (E2) in 2021Zh57.
1296.0 *10*	0.1 *1*	9311.8+x	(29^+)	8015.8+x	(27^+)	Mult.: (E2) in 2021Zh57.
1338.9 *10*	0.1 *1*	9014.2+x	(28^+)	7675.3+x	(26^+)	Mult.: (E2) in 2021Zh57.

[†] From 2021Zh57, with uncertainties assigned by evaluator as 0.3 keV for Eγ<500 keV, 0.7 keV for Eγ=500-1000 keV, 1.0 keV for Eγ>1000 keV and for Iγ<1.0 relative units, based on authors′ general statement in Table I, that uncertainties are <0.3 keV for Eγ<500 keV, 0.7 keV for Eγ=500 to 1000 keV, 1.0 keV for Eγ>1000 keV and for Iγ<1.0 relative units. Uncertainties of 0.5 keV for a few of the low-energy transitions below 200 keV or so from low-lying levels are assigned by the evaluator for the purpose of least-squares fitting of the level scheme.

[‡] From 2021Zh57, normalized to the intensity of the 200.1-keV, $(10^+) \rightarrow (8^+)$ transition in Band #1 in authors′ Fig. 1.

[#] From 2021Zh57, from $\gamma\gamma(\theta)$ and $\gamma\gamma$(linear pol) data.

[@] Ordering of the 64.7γ → 61.4γ and 46.3γ → 79.0γ cascades is not established (2021Zh57). Authors assign firm assignments from any one value or multiple values are available from $\gamma\gamma(\theta)$(DCO), $\gamma\gamma$(angular anisotropy) and $\gamma\gamma$(linear polarization is available, and consistent with the assigned mutipolarity. When none of these values are available, authors assign multipolarity in brackets. Evaluator assigns definite multipolarity only when $\gamma\gamma$(linear polarization data are available. In other cases, multipolarities M1+E2 or E2 are assigned in brackets when DCO and/or $\gamma\gamma$(angular anisotropy) data are available, and reasonably consistent with those assigned by 2021Zh57. When no supporting data are available, evaluator has not assigned any multipolarity, with the exception of low-energy transitions of <100 or keV or so with large conversion coefficients are large, where [M1+E2] is assumed, based on ΔJ^π. Although, DCO and angular asymmetry data are parity insensitive, evaluator assigns (M1+E2) and (E2), based on interconnected band structures, and lack of evidence for any long level lifetimes, making (E1+M2) and (M2) transitions highly unlikely, except a (7^+) isomer at 125.9+x discovered by 2021Zh57 with $T_{1/2}$=0.55 μs *6*.

[&] 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.

From ENSDF

$^{118}_{55}Cs_{63}$-13

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

Level Scheme

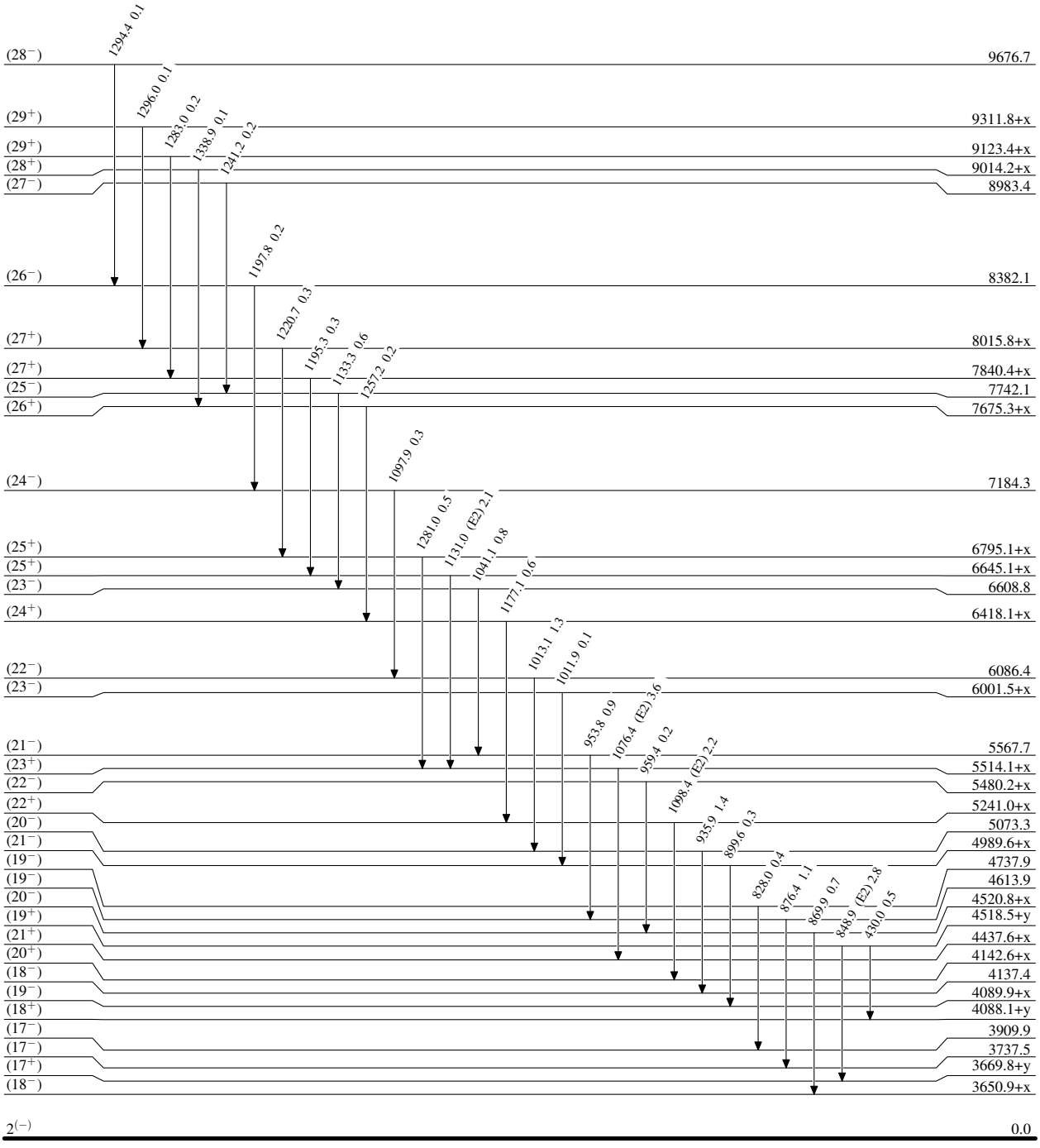
Intensities: Relative I_γ

Legend

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

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

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

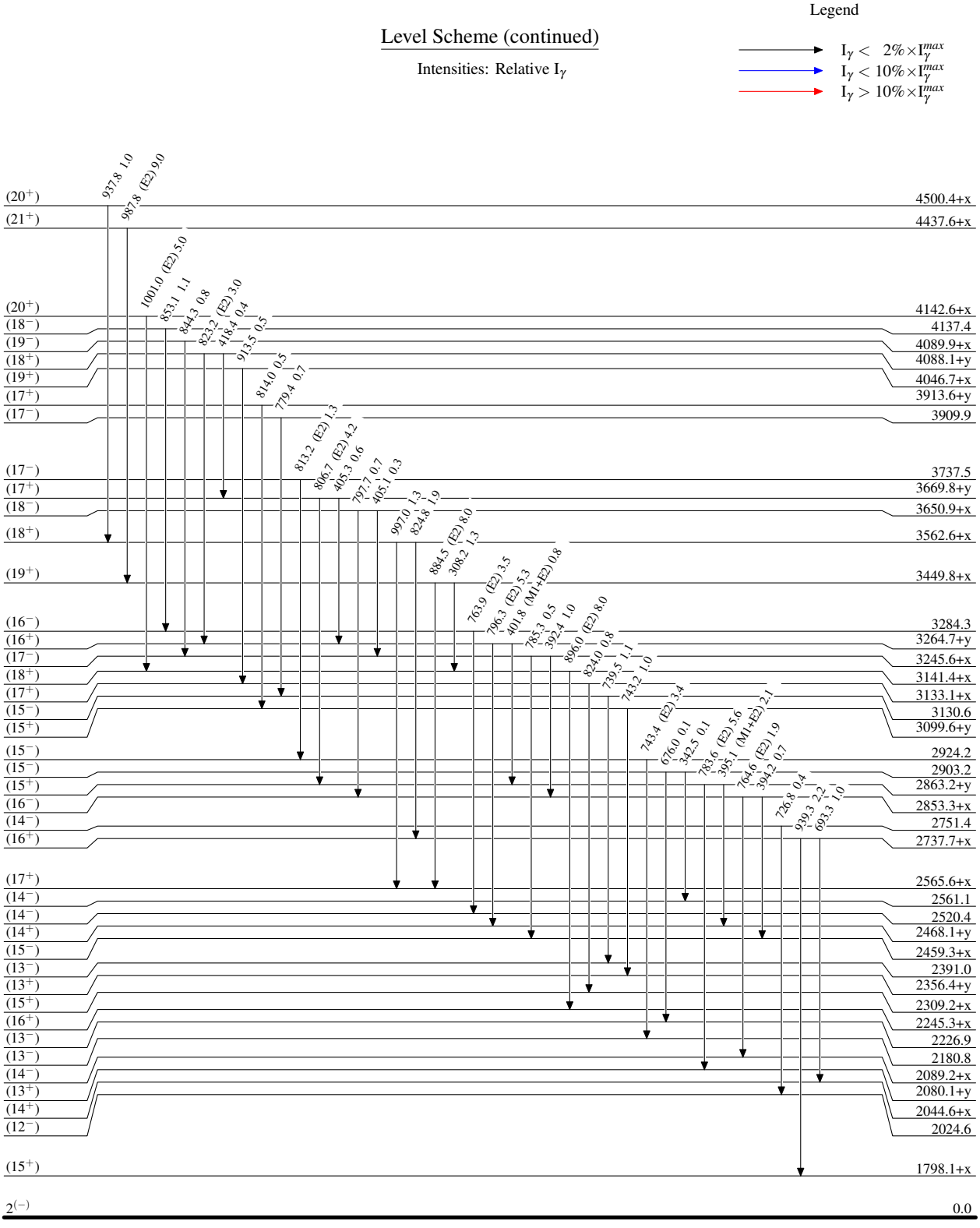


$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

Level Scheme (continued)

Intensities: Relative I_γ

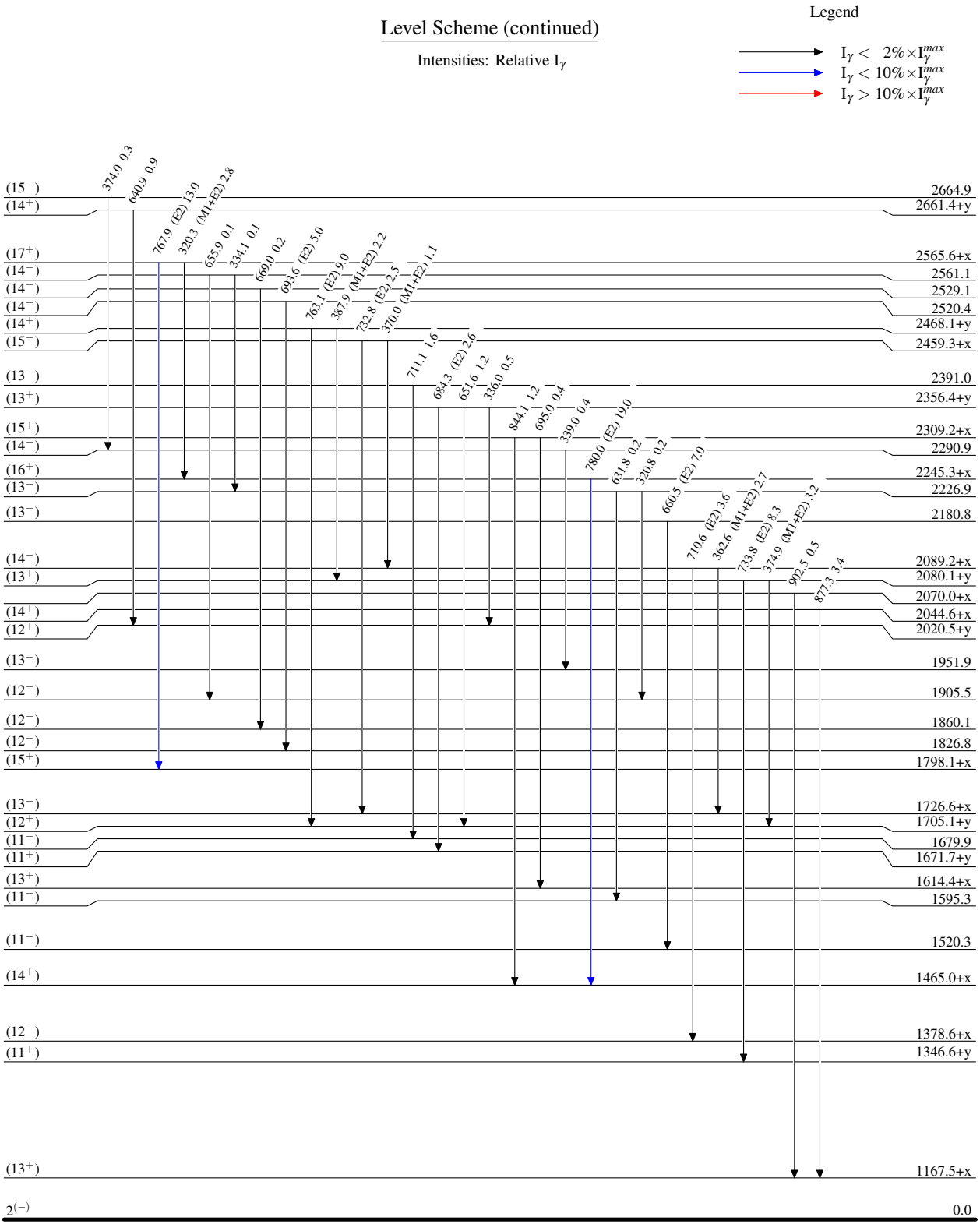


$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

Level Scheme (continued)

Intensities: Relative I_γ

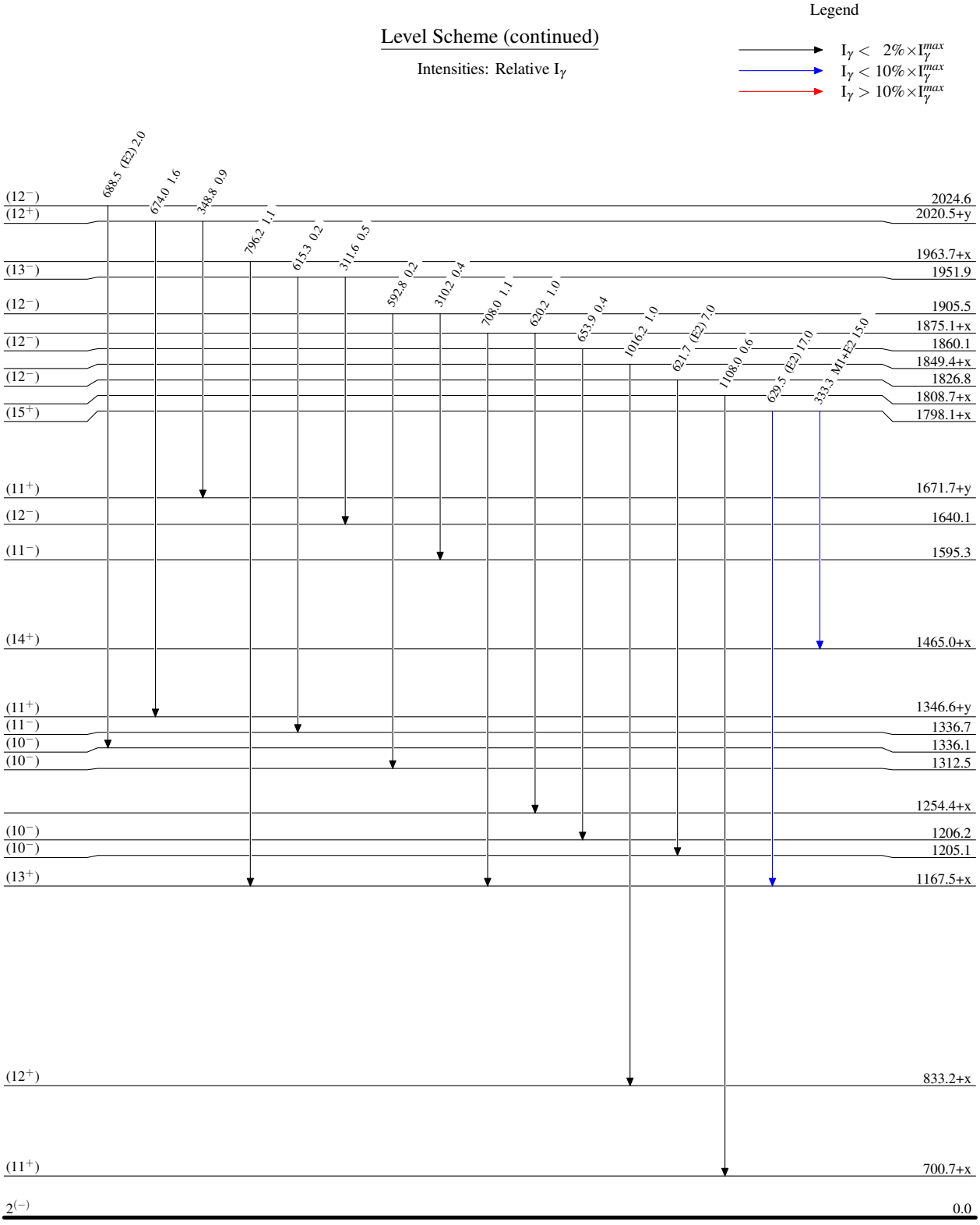


$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

Level Scheme (continued)

Intensities: Relative I_γ



$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

Level Scheme (continued)

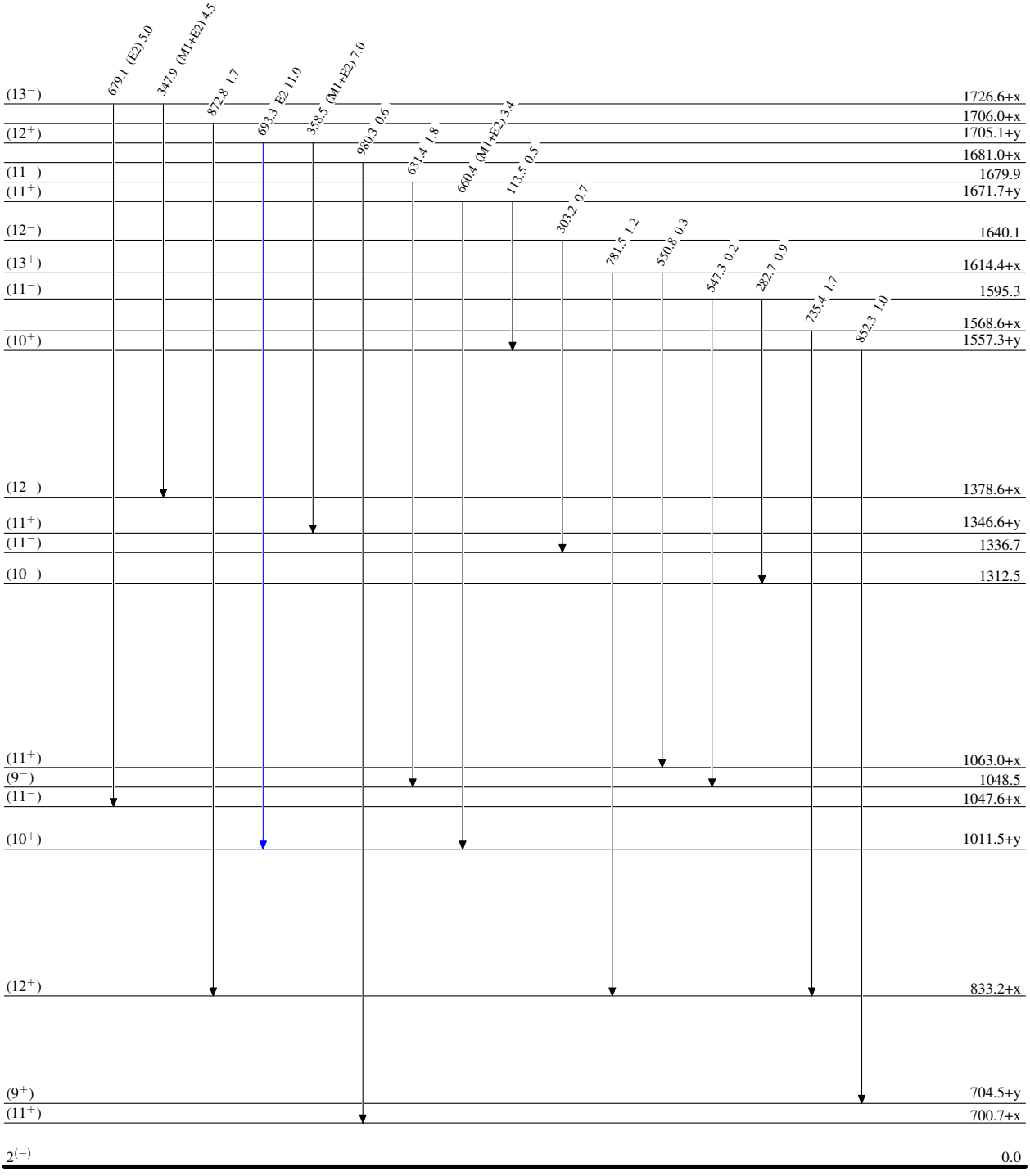
Intensities: Relative I_γ

Legend

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

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

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

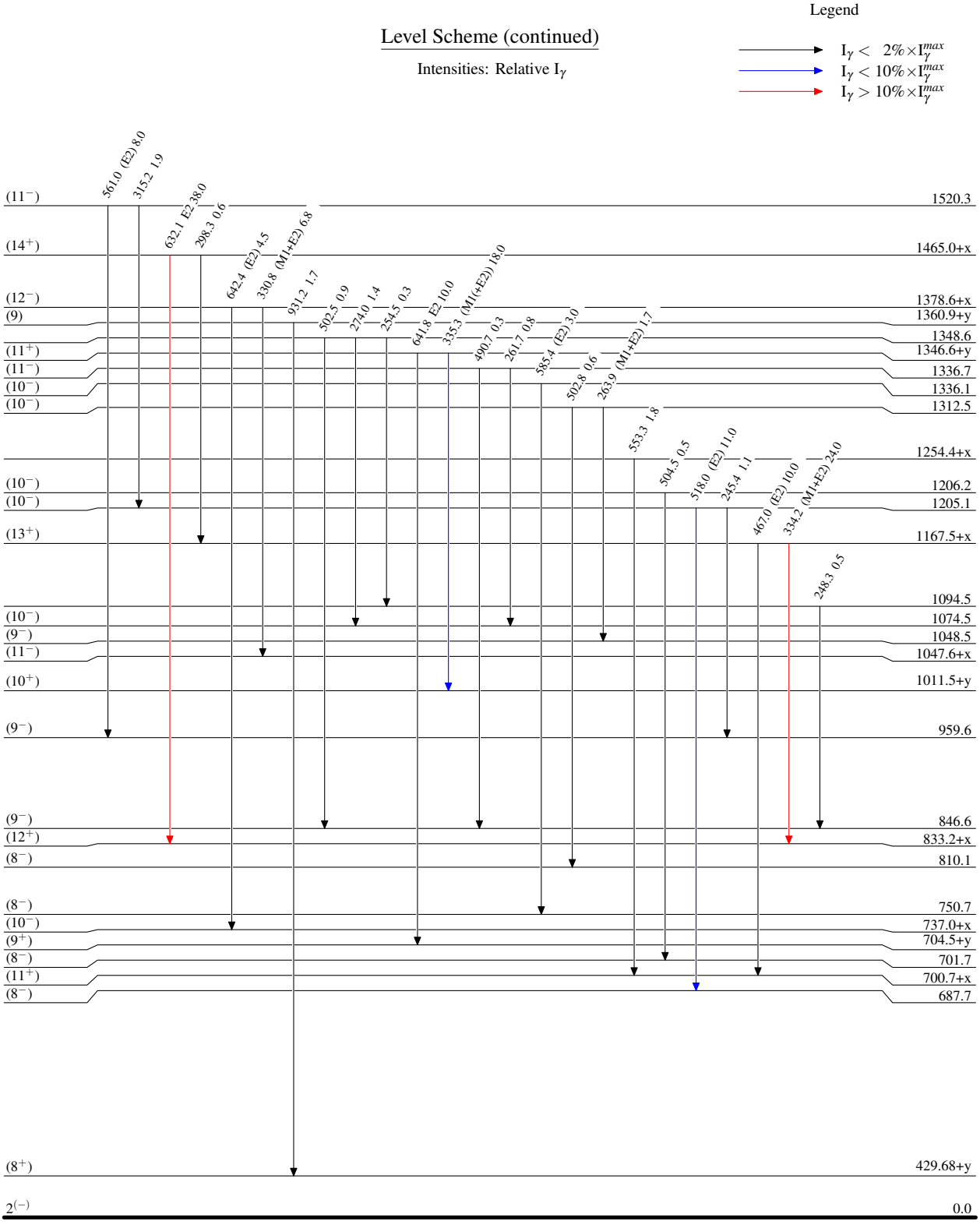


$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

Level Scheme (continued)

Intensities: Relative I_γ



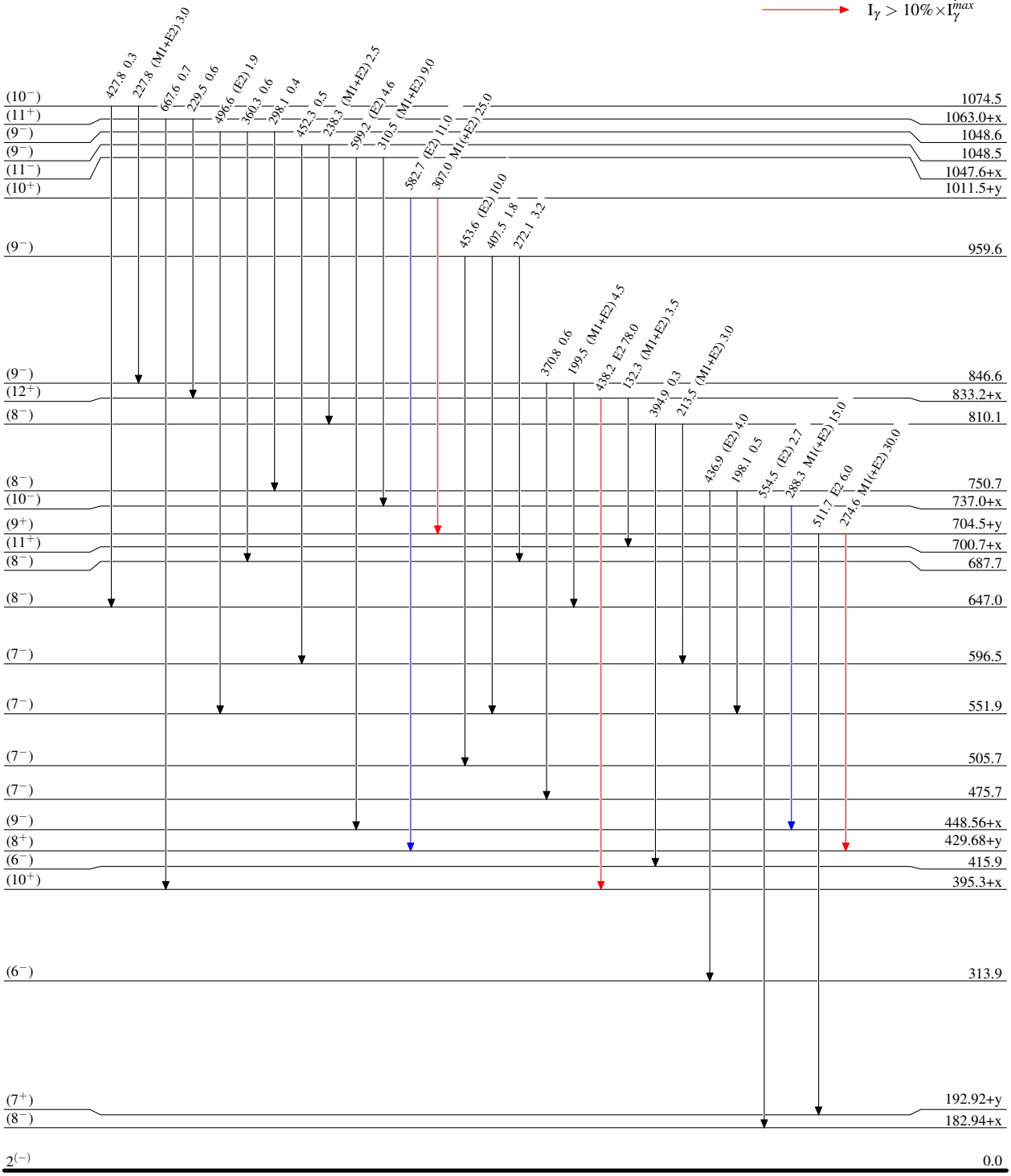
$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

Level Scheme (continued)

Intensities: Relative I_γ

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

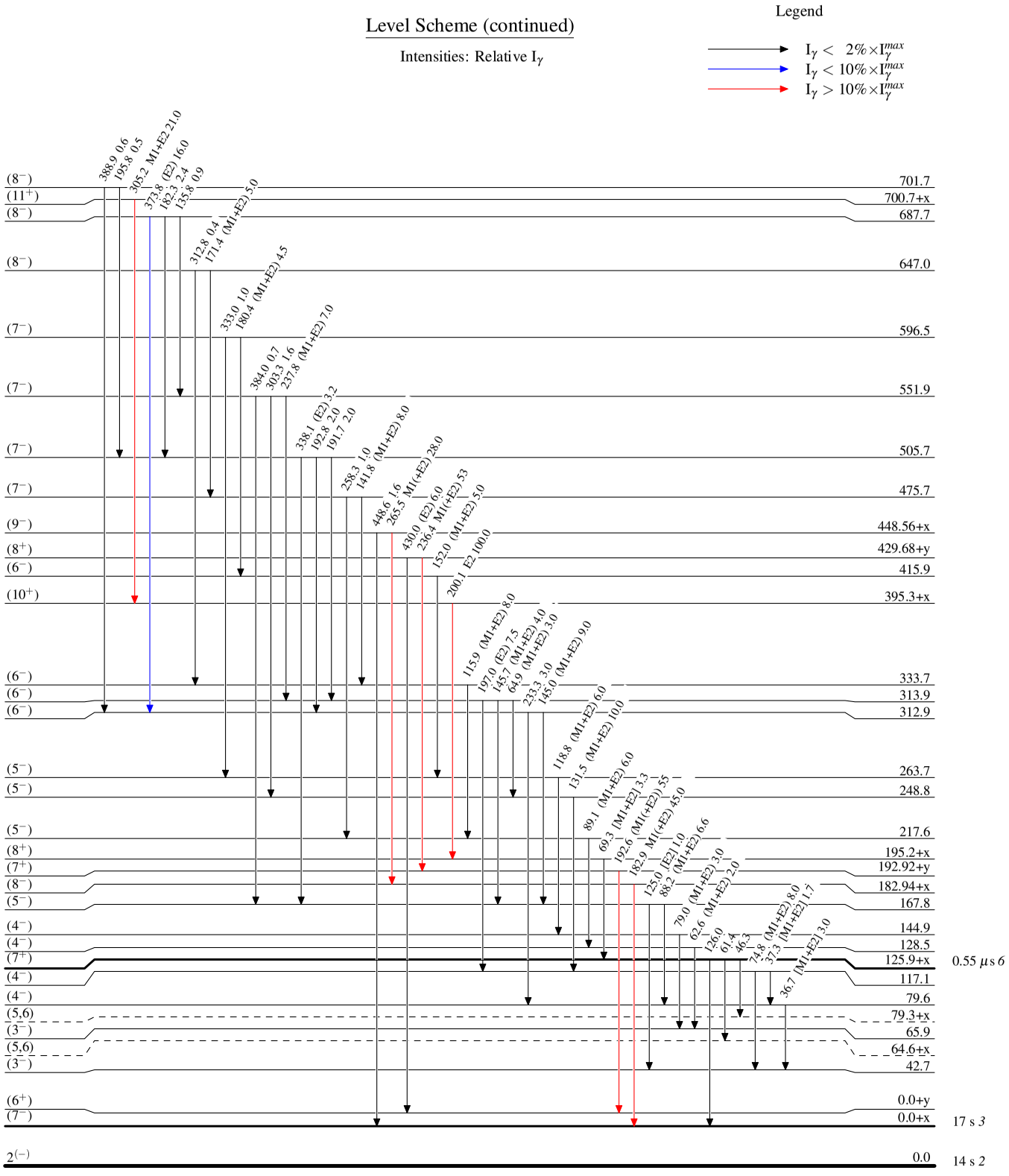


$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

Level Scheme (continued)

Intensities: Relative I_γ

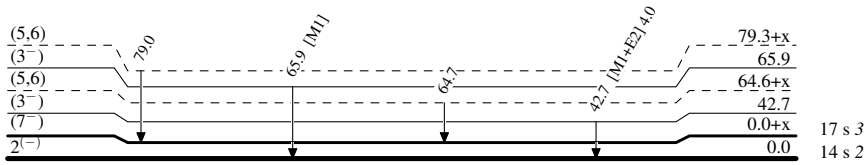


$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57

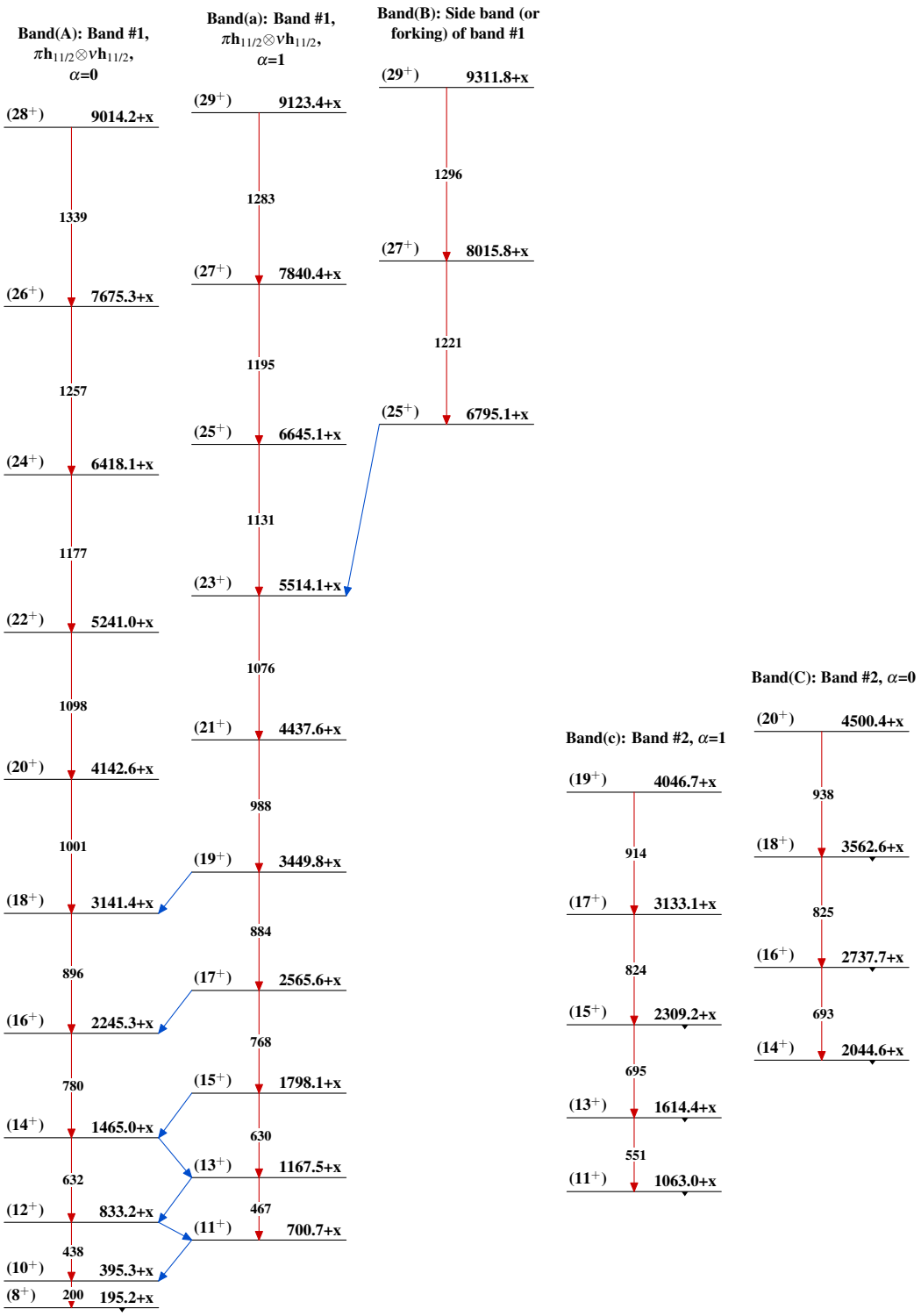
Level Scheme (continued)

Intensities: Relative I_γ



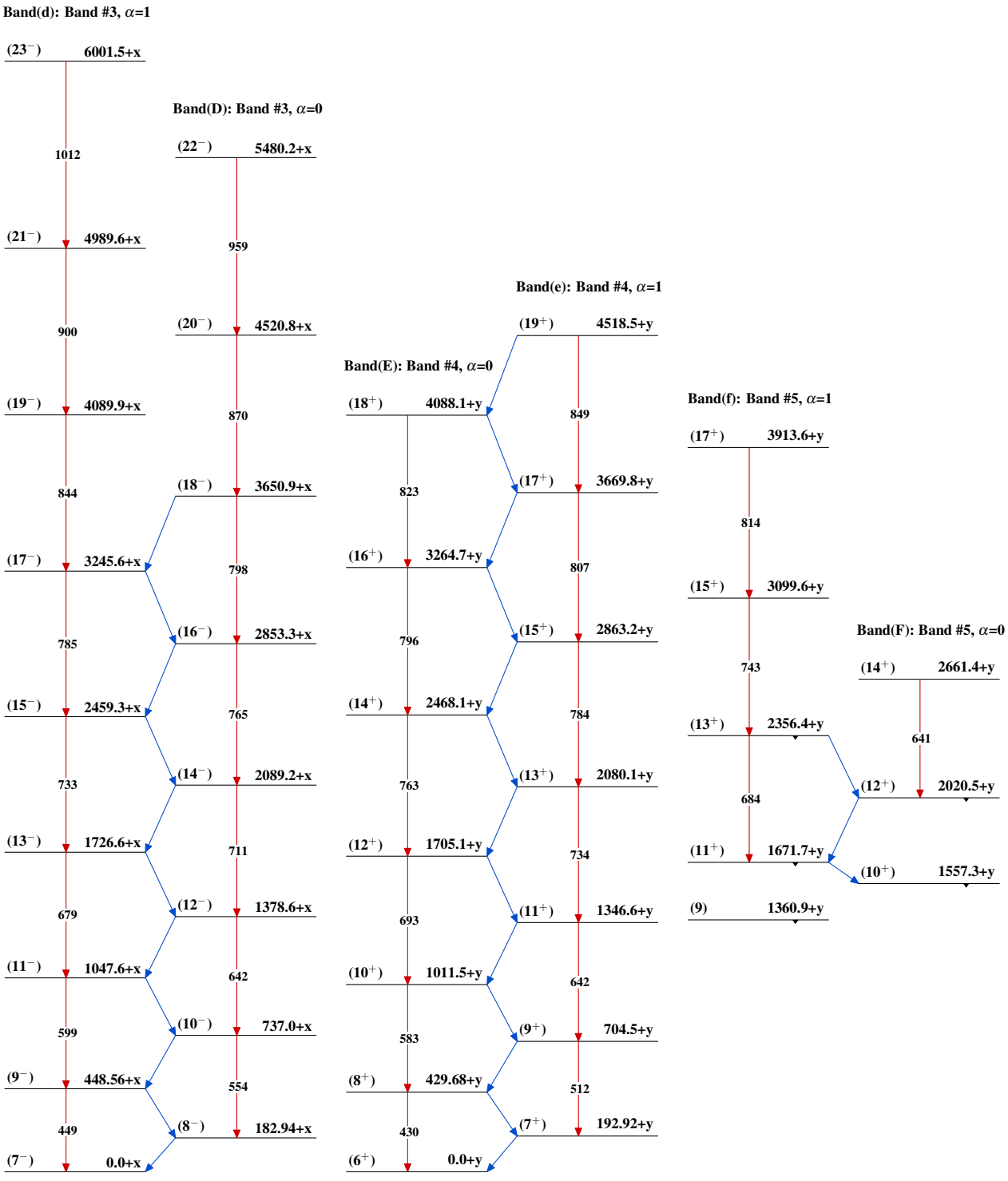
$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57



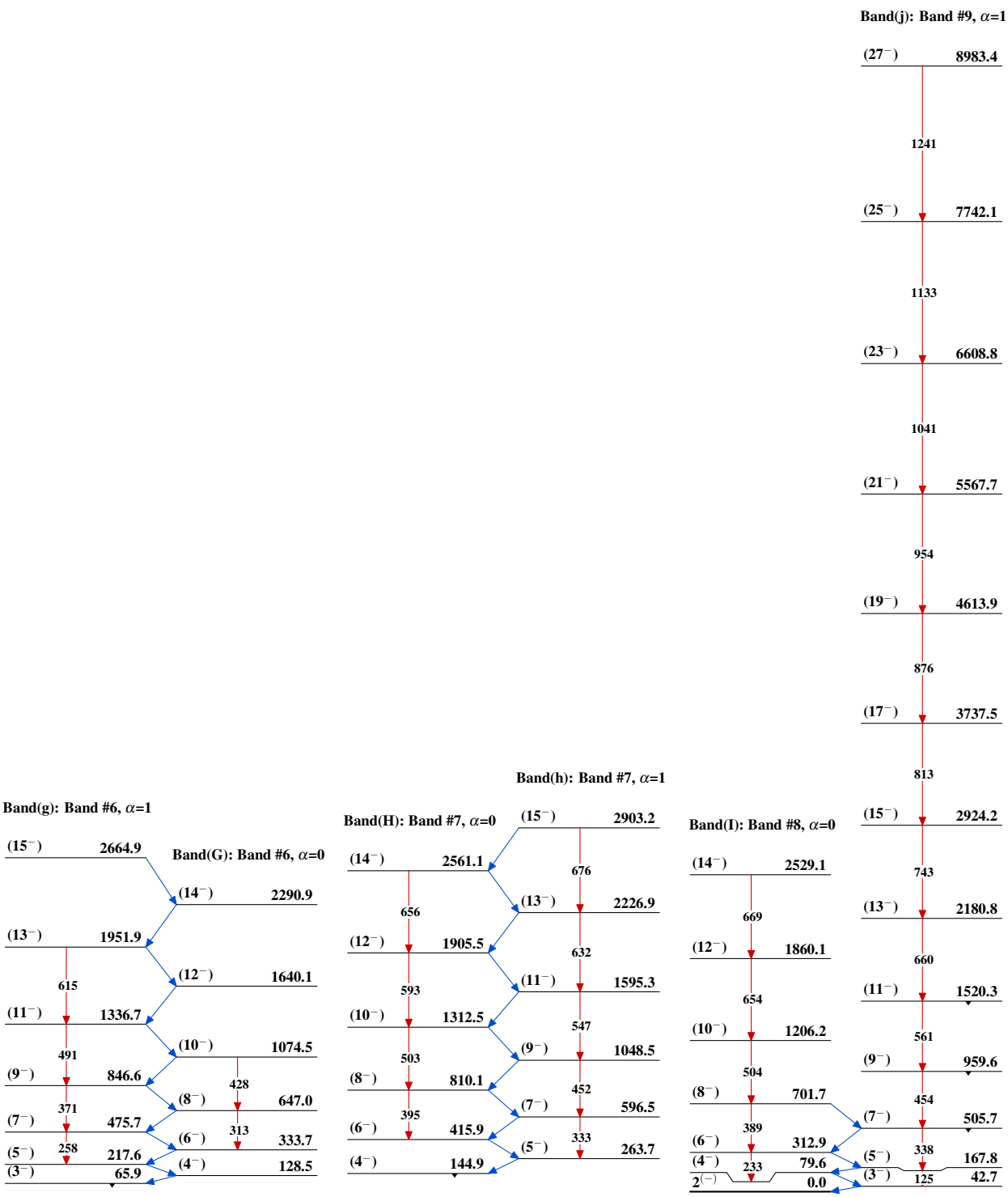
$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)



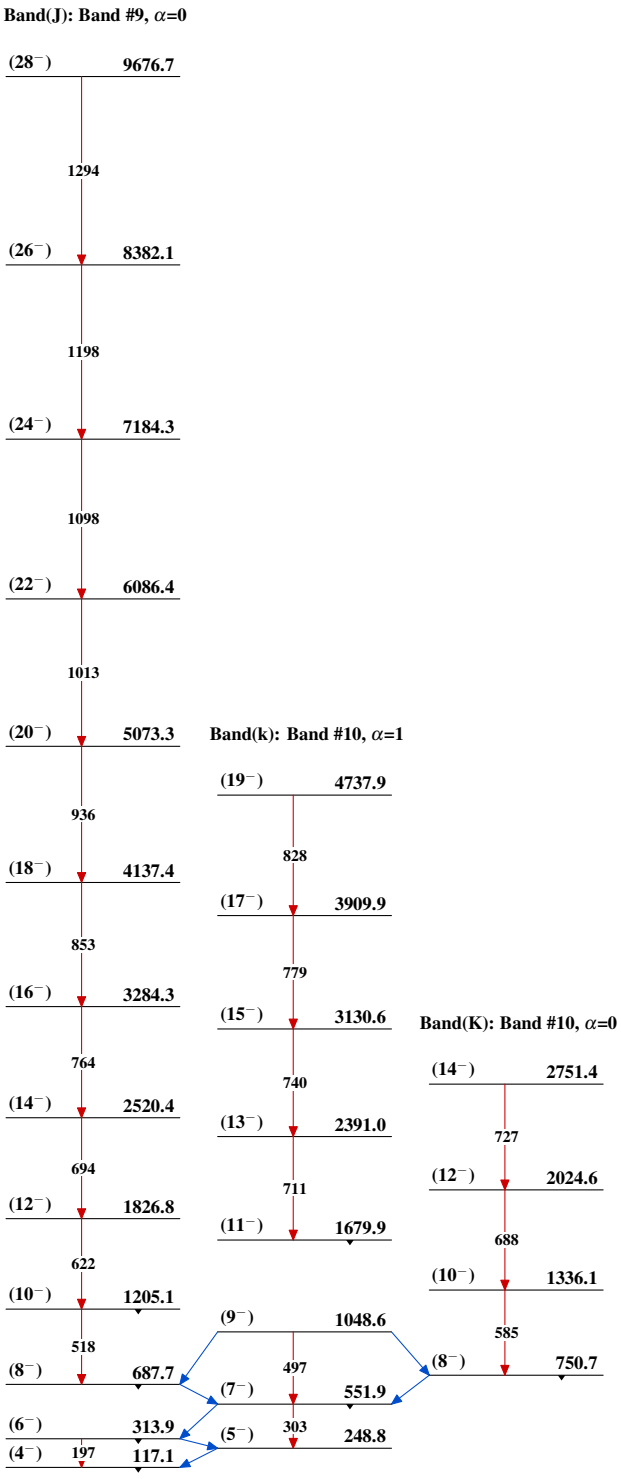
$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)



$^{118}_{55}Cs_{63}$

^{58}Ni(^{64}Zn,3pnγ) 2021Zh57 (continued)



$^{118}_{55}Cs_{63}$