

⁶⁸Zn(p,n γ) 1993Ti03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 113, 1735 (2012)	1-Mar-2012

All data are from 1993Ti03, unless indicated otherwise.

1993Ti03: E(p)=4.5-5.1 MeV. Measured E γ , I γ , $\gamma\gamma$ coincidences, internal conversion electrons, and $\sigma(E(p),E\gamma)$ with four HPGe detectors (FWHM=2 keV at 1.3 MeV), a LEPS (FWHM=0.8 keV at 0.12 keV) and magnetic plus Si(Li) spectrometer; Hauser-Feshbach analysis.

1987LaZU: E(p)=1.5-4.4 MeV. Measured E γ , I γ .

1968Bi01,1968Bi03: E(p)=3.1-5.2 MeV. Measured E γ , I γ , $\gamma(\theta)$, and excitation function with two Ge(Li) detectors ($\Delta E=0.1$ keV).

1967Me18: E(p)=5.8 MeV. Measured internal conversion electrons, $\gamma(\theta)$.

Other: 1995Fe15, 1966Re05.

α : Additional information 1.

⁶⁸Ga Levels

E(level) [†]	J π [‡]	Comments
0	1 ⁺	
175.017 7	2 ⁺	J π : 2 from $\gamma(\theta)$ (1968Bi03) and Hauser-Feshbach analysis (1993Ti03); π from M1(+E2) 175 γ to 1 ⁺ .
320.976 10	1 ⁺	J π : 1 from Hauser-Feshbach analysis (1993Ti03); π from M1(+E2) 321 γ to 1 ⁺ .
374.571 12	2 ⁺	J π : 2 from $\gamma(\theta)$ of 375 γ (1968Bi03) and Hauser-Feshbach analysis (1993Ti03); π from M1+E2 374.6 γ to 1 ⁺ .
375.577 10	3 ⁺	J π : 3 from $\gamma(\theta)$ of 201 γ (1968Bi03); π from M1+E2 201 γ to 2 ⁺ .
496.094 16	4 ⁺	J π : 4 from Hauser-Feshbach analysis (1993Ti03); π from M1(+E2) 121 γ to 3 ⁺ .
514.298 15	1 ⁺	J π : 1 from Hauser-Feshbach analysis (1993Ti03); π from M1(+E2) 339 γ to 2 ⁺ .
555.471 15	0 ⁺	J π : 0 from Hauser-Feshbach analysis (1993Ti03); π from M1 555 γ to 1 ⁺ .
564.525 12	2 ⁺	J π : 2 from Hauser-Feshbach analysis (1993Ti03); π from M1(+E2) 565 γ to 1 ⁺ .
583.790 15	2 ⁻	J π : 2 from Hauser-Feshbach analysis (1993Ti03); π from E1(+M2) 584 γ to 1 ⁺ .
676.045 19	3 ⁺	J π : 3 from Hauser-Feshbach analysis (1993Ti03); π from M1 501 γ to 2 ⁺ .
806.161 17	4 ⁺	J π : 4 from Hauser-Feshbach analysis (1993Ti03); π from M1(+E2) 310 γ to 4 ⁺ .
825.340 14	1 ⁺ ,2 ⁺	
838.720 16	1 ⁺ ,2 ⁺	
841.185 18	3 ⁺	J π : 3 from Hauser-Feshbach analysis (1993Ti03); π from M1(+E2) 467 γ to 2 ⁺ .
876.751 18	4 ⁻	J π : 4 from Hauser-Feshbach analysis (1993Ti03); π from E2 293 γ to 2 ⁻ .
946.866 17	1 ⁺ ,2 ⁺	
1055.95 3	3 ⁻	J π : 3 from Hauser-Feshbach analysis (1993Ti03); π from M1(+E2) 472 γ to 2 ⁻ .
1064.116 21	(1,2,3)	
1101.203 20	(1,2,3)	
1103.53 3	5 ⁻	J π : 5 from Hauser-Feshbach analysis (1993Ti03), 607 γ to 4 ⁺ .
1117.148 22	0 ⁺ ,1 ⁺ ,2 ⁺	
1123.181 18	1 ⁺ ,2,3 ⁺	
1210.55 4	2 ⁺ ,3 ⁺	
1216.18 8	2 ⁺ ,3,4 ⁺	
1223.25 12	(5) ⁺	
1225.17 3	1 ⁺ ,2,3 ⁺	
1228.81 3	(1,2)	
1231.70 3	(3,4)	
1239.85 3	(0,1,2)	
1267.21 3	(1,2) ⁺	
1287.00 5	2 ⁺ ,3,4 ⁺	
1296.43 5	(2,3,4)	

[†] From least-squares fit to E γ 's by evaluator.

[‡] From 1993Ti03. Supporting arguments for definite spin assignments are noted in the Comments.

⁶⁸Zn(p,n γ) **1993Ti03** (continued)

$\gamma(^{68}\text{Ga})$

$\alpha(\text{K})(\text{exp})$: From **1993Ti04** normalized to $\alpha(\text{K})=0.0142$ (**2008Ki07**) for 175 γ assumed to be M1. Note that **1993Ti04** and **1993Ti03** in (p,n γ) quote the same set of values for transitions seen in the two reactions, which are a weighted average of their (α ,n γ) and (p,n γ) measurements.

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. #	$\delta^\#$	α	Comments
120.52 2	67 4	496.094	4 ⁺	375.577	3 ⁺	M1(+E2)	<0.21	0.045 3	$\alpha(\text{K})\text{exp}=0.043$ 6 $\alpha(\text{K})=0.040$ 3; $\alpha(\text{L})=0.0043$ 4; $\alpha(\text{M})=0.00063$ 5; $\alpha(\text{N+..})=3.29\times 10^{-5}$ 21
128.06 8	0.9 2	1231.70	(3,4)	1103.53	5 ⁻				
139.74 3	7.9 5	514.298	1 ⁺	374.571	2 ⁺	D			$\alpha(\text{K})\text{exp}=0.022$ 5
145.94 2	21.6 12	320.976	1 ⁺	175.017	2 ⁺	M1(+E2)	<0.16	0.0255	$\alpha(\text{K})\text{exp}=0.022$ 4 $\alpha(\text{K})=0.0228$ 4; $\alpha(\text{L})=0.00239$ 4; $\alpha(\text{M})=0.000349$ 5; $\alpha(\text{N+..})=1.86\times 10^{-5}$ 3
175.01 1	1000 53	175.017	2 ⁺	0	1 ⁺	M1		0.01592	Mult.: $\alpha(\text{K})=0.0142$ for mult=M1 is used by the evaluator as the normalization value. $\delta=+0.01$ 2 from $\gamma(\theta)$ (1967Me18).
188.91 8	1.4 2	564.525	2 ⁺	375.577	3 ⁺				
189.93 7	7.6 5	564.525	2 ⁺	374.571	2 ⁺				
193.26 8	2.5 3	514.298	1 ⁺	320.976	1 ⁺				
199.52 16	11.7 7	374.571	2 ⁺	175.017	2 ⁺				
200.56 1	199 10	375.577	3 ⁺	175.017	2 ⁺	M1+E2	+0.25 @ 5	0.0136 10	$\alpha(\text{K})\text{exp}=0.018$ 3 $\alpha(\text{K})=0.0121$ 9; $\alpha(\text{L})=0.00128$ 10; $\alpha(\text{M})=0.000186$ 14; $\alpha(\text{N+..})=9.8\times 10^{-6}$ 7 $\alpha(\text{K})\text{exp}$: Other: 0.0095 8 (1967Me18). Mult.: D+Q with $\delta=+0.25$ 5 from $\gamma(\theta)$ (1968Bi03); M1+E2 from $\alpha(\text{K})\text{exp}$. δ : Other: 0.54 12 from $\alpha(\text{K})\text{exp}$.
234.49 2	16.2 9	555.471	0 ⁺	320.976	1 ⁺	M1(+E2)	<0.24	0.0082 6	$\alpha(\text{K})\text{exp}=0.0078$ 14 $\alpha(\text{K})=0.0073$ 6; $\alpha(\text{L})=0.00076$ 6; $\alpha(\text{M})=0.000111$ 9; $\alpha(\text{N+..})=5.9\times 10^{-6}$ 4
238.66 15	1.2 2	1064.116	(1,2,3)	825.340	1 ⁺ ,2 ⁺				
243.53 3	9.0 5	564.525	2 ⁺	320.976	1 ⁺	M1(+E2)	<0.21	0.0073 4	$\alpha(\text{K})\text{exp}=0.0069$ 13 $\alpha(\text{K})=0.0065$ 4; $\alpha(\text{L})=0.00068$ 4; $\alpha(\text{M})=9.9\times 10^{-5}$ 6; $\alpha(\text{N+..})=5.3\times 10^{-6}$ 3
260.86 6	2.4 3	825.340	1 ⁺ ,2 ⁺	564.525	2 ⁺				
262.91 9	1.3 2	583.790	2 ⁻	320.976	1 ⁺				
270.75 10	1.0 2	946.866	1 ⁺ ,2 ⁺	676.045	3 ⁺				
275.95 15	2.1 8	1101.203	(1,2,3)	825.340	1 ⁺ ,2 ⁺				
276.67 4	6.8 4	841.185	3 ⁺	564.525	2 ⁺	M1(+E2)	<0.19	0.00523 21	$\alpha(\text{K})\text{exp}=0.0048$ 12 $\alpha(\text{K})=0.00467$ 18; $\alpha(\text{L})=0.000482$ 20; $\alpha(\text{M})=7.1\times 10^{-5}$ 3; $\alpha(\text{N+..})=3.78\times 10^{-6}$ 14

⁶⁸Zn(p,n γ) 1993Ti03 (continued)

$\gamma(^{68}\text{Ga})$ (continued)

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Mult.#	$\delta^\#$	α	Comments
278.34 17	0.7 2	1117.148	0 ⁺ ,1 ⁺ ,2 ⁺	838.720	1 ⁺ ,2 ⁺				
283.25 7	3.6 3	838.720	1 ⁺ ,2 ⁺	555.471	0 ⁺				
284.34 24	0.5 3	1123.181	1 ⁺ ,2,3 ⁺	838.720	1 ⁺ ,2 ⁺				
292.98 2	20.2 12	876.751	4 ⁻	583.790	2 ⁻	E2		0.01297	$\alpha(\text{K})_{\text{exp}}=0.0109$ 17 $\alpha(\text{K})=0.01155$ 17; $\alpha(\text{L})=0.001230$ 18; $\alpha(\text{M})=0.000179$ 3; $\alpha(\text{N+..})=9.08\times 10^{-6}$ 13
297.78 14	1.1 5	1123.181	1 ⁺ ,2,3 ⁺	825.340	1 ⁺ ,2 ⁺				
300.40 5	8.5 5	676.045	3 ⁺	375.577	3 ⁺	M1(+E2)	<0.34	0.0045 4	$\alpha(\text{K})_{\text{exp}}=0.0044$ 10 $\alpha(\text{K})=0.0040$ 4; $\alpha(\text{L})=0.00042$ 4; $\alpha(\text{M})=6.1\times 10^{-5}$ 6; $\alpha(\text{N+..})=3.3\times 10^{-6}$ 3
310.07 2	10.9 6	806.161	4 ⁺	496.094	4 ⁺	M1(+E2)	<0.38	0.0042 5	$\alpha(\text{K})_{\text{exp}}=0.0042$ 10 $\alpha(\text{K})=0.0038$ 4; $\alpha(\text{L})=0.00039$ 5; $\alpha(\text{M})=5.7\times 10^{-5}$ 6; $\alpha(\text{N+..})=3.1\times 10^{-6}$ 3
320.98 2	402 21	320.976	1 ⁺	0	1 ⁺	M1(+E2)	+0.05 @ 5	0.00353 7	$\alpha(\text{K})_{\text{exp}}=0.0036$ 6 $\alpha(\text{K})=0.00315$ 6; $\alpha(\text{L})=0.000324$ 7; $\alpha(\text{M})=4.74\times 10^{-5}$ 9; $\alpha(\text{N+..})=2.55\times 10^{-6}$ 5 Mult.: D(+Q) with $\delta=+0.05$ 5 from $\gamma(\theta)$ (1968Bi03); M1(+E2) from $\alpha(\text{K})_{\text{exp}}$. δ : <0.31 from $\alpha(\text{K})_{\text{exp}}$.
321.05 7	3.1 9	496.094	4 ⁺	175.017	2 ⁺				
339.28 2	234 12	514.298	1 ⁺	175.017	2 ⁺	M1(+E2)	<0.28	0.00324 18	$\alpha(\text{K})_{\text{exp}}=0.0031$ 5 $\alpha(\text{K})=0.00290$ 16; $\alpha(\text{L})=0.000298$ 17; $\alpha(\text{M})=4.36\times 10^{-5}$ 25; $\alpha(\text{N+..})=2.34\times 10^{-6}$ 13
345.11 4	6.1 4	841.185	3 ⁺	496.094	4 ⁺				
354.97 5	1.6 5	1231.70	(3,4)	876.751	4 ⁻				
374.57 2	389 20	374.571	2 ⁺	0	1 ⁺	M1+E2	-0.07 @ 4	0.00244 4	$\alpha(\text{K})_{\text{exp}}=0.0026$ 4 $\alpha(\text{K})=0.00218$ 4; $\alpha(\text{L})=0.000224$ 4; $\alpha(\text{M})=3.27\times 10^{-5}$ 6; $\alpha(\text{N+..})=1.77\times 10^{-6}$ 3 Mult.: D+Q with $\delta=-0.07$ 4 from weighted average of -0.10 5 and -0.03 5 from $\gamma(\theta)$ (1968Bi03); M1+E2 from $\alpha(\text{K})_{\text{exp}}$. δ : Other: <0.66 from $\alpha(\text{K})_{\text{exp}}$.
375.60 3	91 5	375.577	3 ⁺	0	1 ⁺				
380.65 3	5.0 3	876.751	4 ⁻	496.094	4 ⁺				
382.44 11	1.9 8	946.866	1 ⁺ ,2 ⁺	564.525	2 ⁺				
389.51 2	21.9 11	564.525	2 ⁺	175.017	2 ⁺	M1(+E2)	<0.23	0.00222 4	$\alpha(\text{K})_{\text{exp}}=0.0019$ 4 $\alpha(\text{K})=0.00198$ 3; $\alpha(\text{L})=0.000203$ 3; $\alpha(\text{M})=2.97\times 10^{-5}$ 5; $\alpha(\text{N+..})=1.601\times 10^{-6}$ 23
408.78 4	3.5 3	583.790	2 ⁻	175.017	2 ⁺				
419.72 6	1.7 2	1296.43	(2,3,4)	876.751	4 ⁻				
430.59 2	9.1 5	806.161	4 ⁺	375.577	3 ⁺				
432.54 4	3.9 3	946.866	1 ⁺ ,2 ⁺	514.298	1 ⁺				

68Zn(p,n γ) 1993Ti03 (continued) γ (68Ga) (continued)

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Mult.#	$\delta^\#$	α	Comments
441.98 12	1.0 2	1267.21	(1,2) ⁺	825.340	1 ⁺ ,2 ⁺				
449.79 3	8.6 5	825.340	1 ⁺ ,2 ⁺	375.577	3 ⁺				
450.88 16	4.6 4	825.340	1 ⁺ ,2 ⁺	374.571	2 ⁺				
464.24 7	15.2 8	838.720	1 ⁺ ,2 ⁺	374.571	2 ⁺	M1(+E2)	<0.45	0.001474 21	$\alpha(K)\text{exp}=0.0012$ 3 $\alpha=0.001474$ 21; $\alpha(K)=0.001319$ 19; $\alpha(L)=0.0001345$ 19; $\alpha(M)=1.97\times 10^{-5}$ 3 $\alpha(N+..)=1.064\times 10^{-6}$
465.65 7	7.7 16	841.185	3 ⁺	375.577	3 ⁺				
466.60 2	40.9 21	841.185	3 ⁺	374.571	2 ⁺	M1(+E2)	<0.38	0.00153 8	$\alpha(K)\text{exp}=0.0014$ 3 $\alpha(K)=0.00137$ 8; $\alpha(L)=0.000140$ 8; $\alpha(M)=2.05\times 10^{-5}$ 12; $\alpha(N+..)=1.11\times 10^{-6}$ 6
472.16 2	38.3 20	1055.95	3 ⁻	583.790	2 ⁻	M1(+E2)	<0.84	0.00147 6	$\alpha(K)\text{exp}=0.0014$ 3 $\alpha(K)=0.00132$ 6; $\alpha(L)=0.000134$ 6; $\alpha(M)=1.97\times 10^{-5}$ 8; $\alpha(N+..)=1.06\times 10^{-6}$ 4
501.04 2	91 5	676.045	3 ⁺	175.017	2 ⁺	M1(+E2)	<0.38	0.001238 18	$\alpha(K)\text{exp}=0.00102$ 19 $\alpha=0.001238$ 18; $\alpha(K)=0.001108$ 16; $\alpha(L)=0.0001128$ 16; $\alpha(M)=1.651\times 10^{-5}$ 24 $\alpha(N+..)=8.93\times 10^{-7}$ 13
501.15 3	13 5	876.751	4 ⁻	375.577	3 ⁺				
504.33 3	11.3 6	825.340	1 ⁺ ,2 ⁺	320.976	1 ⁺				
514.31 10	46 9	514.298	1 ⁺	0	1 ⁺				
517.74 2	100 5	838.720	1 ⁺ ,2 ⁺	320.976	1 ⁺	M1(+E2)	<0.45	0.001150 16	$\alpha(K)\text{exp}=0.00097$ 18 $\alpha=0.001150$ 16; $\alpha(K)=0.001029$ 15; $\alpha(L)=0.0001047$ 15; $\alpha(M)=1.532\times 10^{-5}$ 22 $\alpha(N+..)=8.29\times 10^{-7}$ 12
536.77 16	1.0 2	1101.203	(1,2,3)	564.525	2 ⁺				
555.47 2	107 6	555.471	0 ⁺	0	1 ⁺	M1(+E2)	<0.52	0.00104 7	$\alpha(K)\text{exp}=0.00098$ 19 $\alpha(K)=0.00093$ 6; $\alpha(L)=9.5\times 10^{-5}$ 6; $\alpha(M)=1.39\times 10^{-5}$ 9; $\alpha(N+..)=7.5\times 10^{-7}$ 5
564.53 2	162 9	564.525	2 ⁺	0	1 ⁺	M1(+E2)	<0.28	0.000966 24	$\alpha(K)\text{exp}=0.00088$ 14 $\alpha=0.000966$ 24; $\alpha(K)=0.000865$ 22; $\alpha(L)=8.80\times 10^{-5}$ 23; $\alpha(M)=1.29\times 10^{-5}$ 4 $\alpha(N+..)=6.96\times 10^{-7}$ 17
571.42 15	6.5 15	946.866	1 ⁺ ,2 ⁺	375.577	3 ⁺				
572.28 2	84 5	946.866	1 ⁺ ,2 ⁺	374.571	2 ⁺	M1(+E2)	<0.30	0.00094 3	$\alpha(K)\text{exp}=0.00086$ 17 $\alpha(K)=0.000841$ 23; $\alpha(L)=8.55\times 10^{-5}$ 24; $\alpha(M)=1.25\times 10^{-5}$ 4; $\alpha(N+..)=6.76\times 10^{-7}$ 18
583.80 2	267 14	583.790	2 ⁻	0	1 ⁺	E1(+M2)	<0.22	0.000444 7	$\alpha(K)\text{exp}=0.00040$ 8 $\alpha=0.000444$ 7; $\alpha(K)=0.000397$ 6; $\alpha(L)=4.01\times 10^{-5}$ 6; $\alpha(M)=5.85\times 10^{-6}$ 9; $\alpha(N+..)=3.14\times 10^{-7}$ 5
602.85 2	37.2 20	1117.148	0 ⁺ ,1 ⁺ ,2 ⁺	514.298	1 ⁺	M1(+E2)	<0.29	0.000834 20	$\alpha(K)\text{exp}=0.00076$ 15 $\alpha=0.000834$ 20; $\alpha(K)=0.000747$ 18; $\alpha(L)=7.58\times 10^{-5}$ 19;

⁶⁸Zn(p,n γ) **1993Ti03 (continued)**

$\gamma(^{68}\text{Ga})$ (continued)

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Mult. #	$\delta^\#$	α	Comments
									$\alpha(M)=1.11\times 10^{-5}$ 3 $\alpha(N+..)=6.00\times 10^{-7}$ 14
607.42 3	3.6 4	1103.53	5 ⁻	496.094	4 ⁺				
608.90 3	13.0 8	1123.181	1 ⁺ ,2,3 ⁺	514.298	1 ⁺				
625.92 3	11.0 6	946.866	1 ⁺ ,2 ⁺	320.976	1 ⁺				
631.09 4	2.5 3	806.161	4 ⁺	175.017	2 ⁺				
645.83 10	2.1 3	1210.55	2 ⁺ ,3 ⁺	564.525	2 ⁺				
647.92 5	2.2 3	1231.70	(3,4)	583.790	2 ⁻				
650.32 4	5.0 3	825.340	1 ⁺ ,2 ⁺	175.017	2 ⁺				
660.76 11	1.7 2	1225.17	1 ⁺ ,2,3 ⁺	564.525	2 ⁺				
663.67 4	24.7 14	838.720	1 ⁺ ,2 ⁺	175.017	2 ⁺	M1(+E2)	<1.3	0.000662 10	$\alpha(K)\text{exp}=0.00057$ 17 $\alpha=0.000662$ 10; $\alpha(K)=0.000593$ 9; $\alpha(L)=6.01\times 10^{-5}$ 9; $\alpha(M)=8.79\times 10^{-6}$ 13; $\alpha(N+..)=4.76\times 10^{-7}$ 7
673.29 7	3.5 3	1228.81	(1,2)	555.471	0 ⁺				
675.97 7	3.6 3	676.045	3 ⁺	0	1 ⁺				
683.46 12	1.2 6	1267.21	(1,2) ⁺	583.790	2 ⁻				
688.63 10	4.3 4	1064.116	(1,2,3)	375.577	3 ⁺				
702.63 5	7.5 5	1267.21	(1,2) ⁺	564.525	2 ⁺				
712.57 7	1.4 8	1296.43	(2,3,4)	583.790	2 ⁻				
720.17 13	0.8 2	1216.18	2 ⁺ ,3,4 ⁺	496.094	4 ⁺				
725.35 13	3.5 3	1239.85	(0,1,2)	514.298	1 ⁺				
726.78 10	2.9 3	1101.203	(1,2,3)	374.571	2 ⁺				
727.15 12	1.0 3	1223.25	(5) ⁺	496.094	4 ⁺				
735.60 7	1.2 5	1231.70	(3,4)	496.094	4 ⁺				
747.52 13	4.0 4	1123.181	1 ⁺ ,2,3 ⁺	375.577	3 ⁺				
748.65 3	6.8 4	1123.181	1 ⁺ ,2,3 ⁺	374.571	2 ⁺				
752.97 9	1.1 2	1267.21	(1,2) ⁺	514.298	1 ⁺				
772.02 36	0.9 3	946.866	1 ⁺ ,2 ⁺	175.017	2 ⁺				
790.84 13	0.5 2	1287.00	2 ⁺ ,3,4 ⁺	496.094	4 ⁺				
796.18 5	3.7 3	1117.148	0 ⁺ ,1 ⁺ ,2 ⁺	320.976	1 ⁺				
802.13 10	4.2 3	1123.181	1 ⁺ ,2,3 ⁺	320.976	1 ⁺				
825.33 2	102 5	825.340	1 ⁺ ,2 ⁺	0	1 ⁺	M1(+E2)	<0.46	0.000424 11	$\alpha(K)\text{exp}=0.00039$ 8 $\alpha=0.000424$ 11; $\alpha(K)=0.000380$ 10; $\alpha(L)=3.84\times 10^{-5}$ 11; $\alpha(M)=5.62\times 10^{-6}$ 15 $\alpha(N+..)=3.04\times 10^{-7}$ 8
835.00 4	11.5 7	1210.55	2 ⁺ ,3 ⁺	375.577	3 ⁺				
838.71 3	17.3 9	838.720	1 ⁺ ,2 ⁺	0	1 ⁺				
840.32 13	1.6 8	1216.18	2 ⁺ ,3,4 ⁺	375.577	3 ⁺				
841.21 10	11.2 6	841.185	3 ⁺	0	1 ⁺				
849.61 20	1.2 8	1225.17	1 ⁺ ,2,3 ⁺	375.577	3 ⁺				
850.52 5	11.1 6	1225.17	1 ⁺ ,2,3 ⁺	374.571	2 ⁺				
856.18 20	0.7 2	1231.70	(3,4)	375.577	3 ⁺				
889.09 2	33.0 17	1064.116	(1,2,3)	175.017	2 ⁺				

5

68Zn(p,n γ) 1993Ti03 (continued) γ (68Ga) (continued)

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π
892.59 6	3.2 3	1267.21	(1,2) ⁺	374.571	2 ⁺	1050.16 5	12.6 7	1225.17	1 ⁺ ,2,3 ⁺	175.017	2 ⁺
904.20 10	1.5 2	1225.17	1 ⁺ ,2,3 ⁺	320.976	1 ⁺	1053.71 6	3.5 3	1228.81	(1,2)	175.017	2 ⁺
907.81 6	5.2 3	1228.81	(1,2)	320.976	1 ⁺	1064.14 25	1.0 2	1064.116	(1,2,3)	0	1 ⁺
918.86 6	5.2 3	1239.85	(0,1,2)	320.976	1 ⁺	1092.23 6	2.1 3	1267.21	(1,2) ⁺	175.017	2 ⁺
926.17 2	26.4 14	1101.203	(1,2,3)	175.017	2 ⁺	1101.21 17	2.6 3	1101.203	(1,2,3)	0	1 ⁺
941.95 14	1.0 2	1117.148	0 ⁺ ,1 ⁺ ,2 ⁺	175.017	2 ⁺	1111.98 5	5.0 3	1287.00	2 ⁺ ,3,4 ⁺	175.017	2 ⁺
946.22 6	5.3 4	1267.21	(1,2) ⁺	320.976	1 ⁺	1123.12 3	23.1 12	1123.181	1 ⁺ ,2,3 ⁺	0	1 ⁺
946.85 10	1.0 8	946.866	1 ⁺ ,2 ⁺	0	1 ⁺	1225.21 6	3.8 3	1225.17	1 ⁺ ,2,3 ⁺	0	1 ⁺
948.19 20	1.2 2	1123.181	1 ⁺ ,2,3 ⁺	175.017	2 ⁺	1228.85 4	28.1 15	1228.81	(1,2)	0	1 ⁺
1035.41 30	2.0 2	1210.55	2 ⁺ ,3 ⁺	175.017	2 ⁺	1239.86 4	19.0 10	1239.85	(0,1,2)	0	1 ⁺
1041.35 13	1.9 2	1216.18	2 ⁺ ,3,4 ⁺	175.017	2 ⁺	1267.22 9	1.6 2	1267.21	(1,2) ⁺	0	1 ⁺

† Weighted average of (p,n γ) (1993Ti03) and (α ,n γ) (1993Ti04) data. 1993Ti04 and 1993Ti03 in their (α ,n γ) and (p,n γ) datasets, respectively, use the same set of energies for transitions seen in both reactions.

‡ Relative intensity with I(175 γ)=1000, measured at E(p)=5.1 MeV.

From α (K)exp (1993Ti03), unless indicated otherwise.

@ From γ (θ) (1968Bi03).

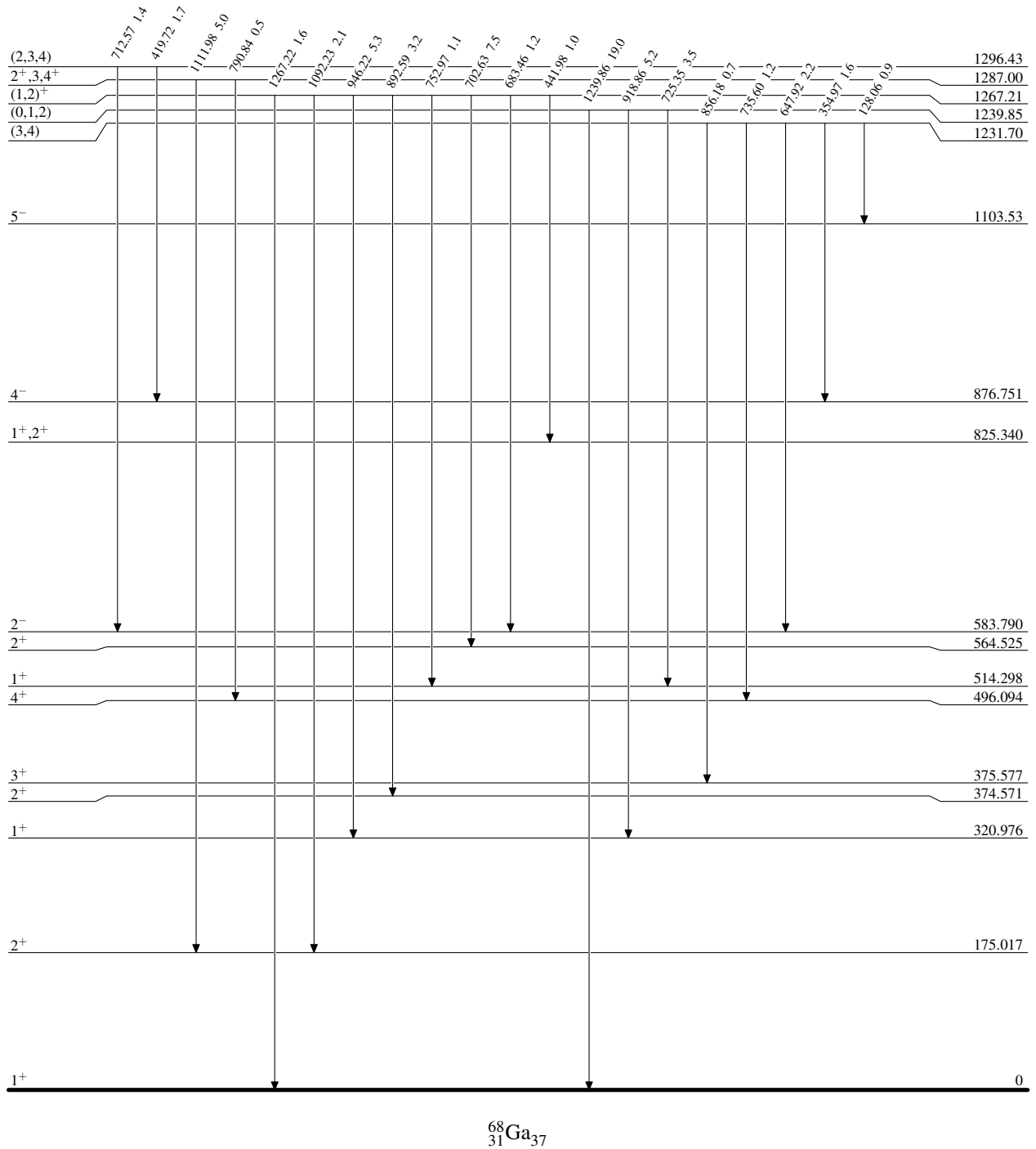
$^{68}\text{Zn}(p,n\gamma)$ 1993Ti03

Level Scheme

Intensities: Relative I_γ

Legend

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



$^{68}_{31}\text{Ga}_{37}$

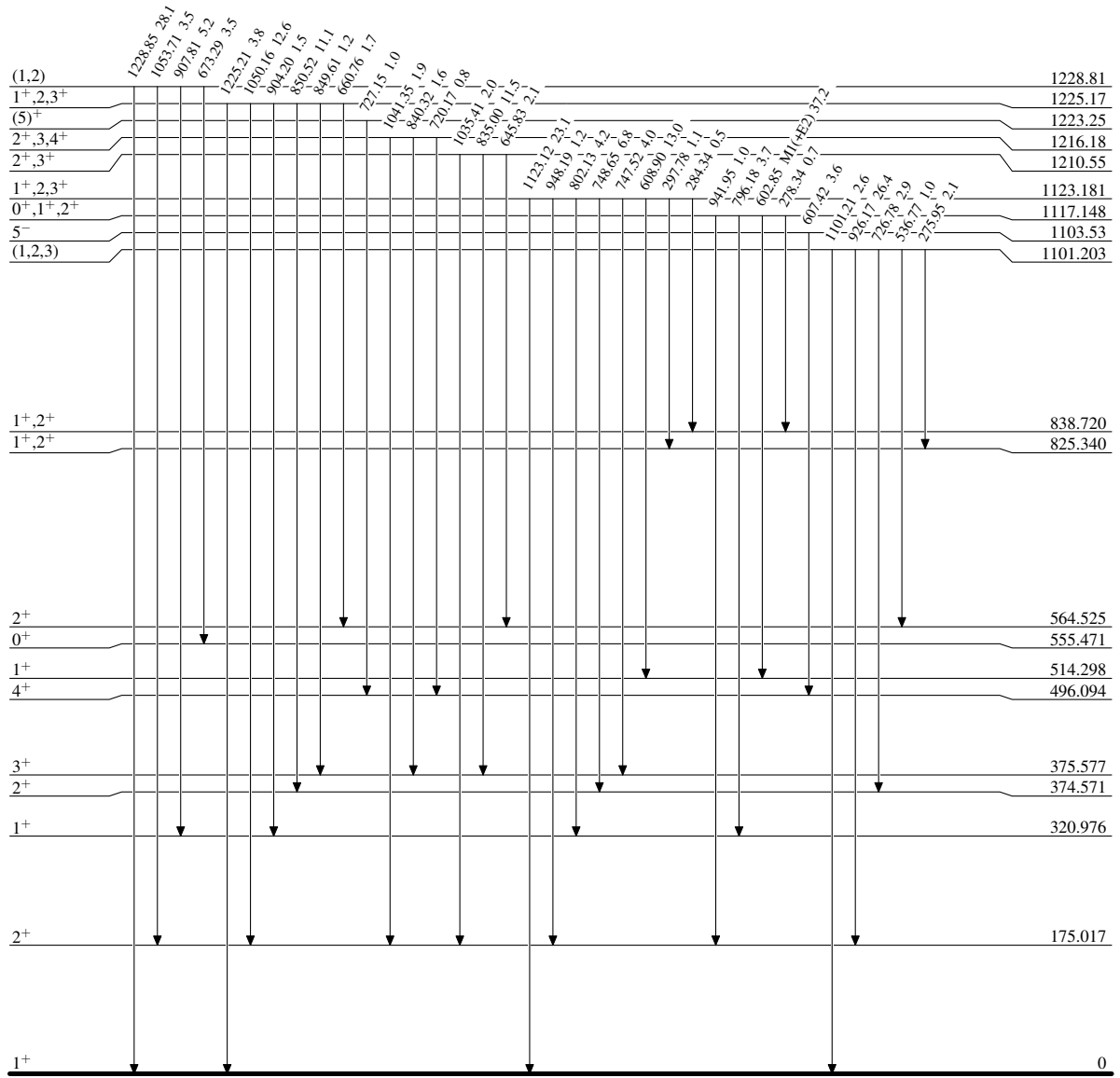
⁶⁸Zn(p,n)^γ 1993Ti03

Level Scheme (continued)

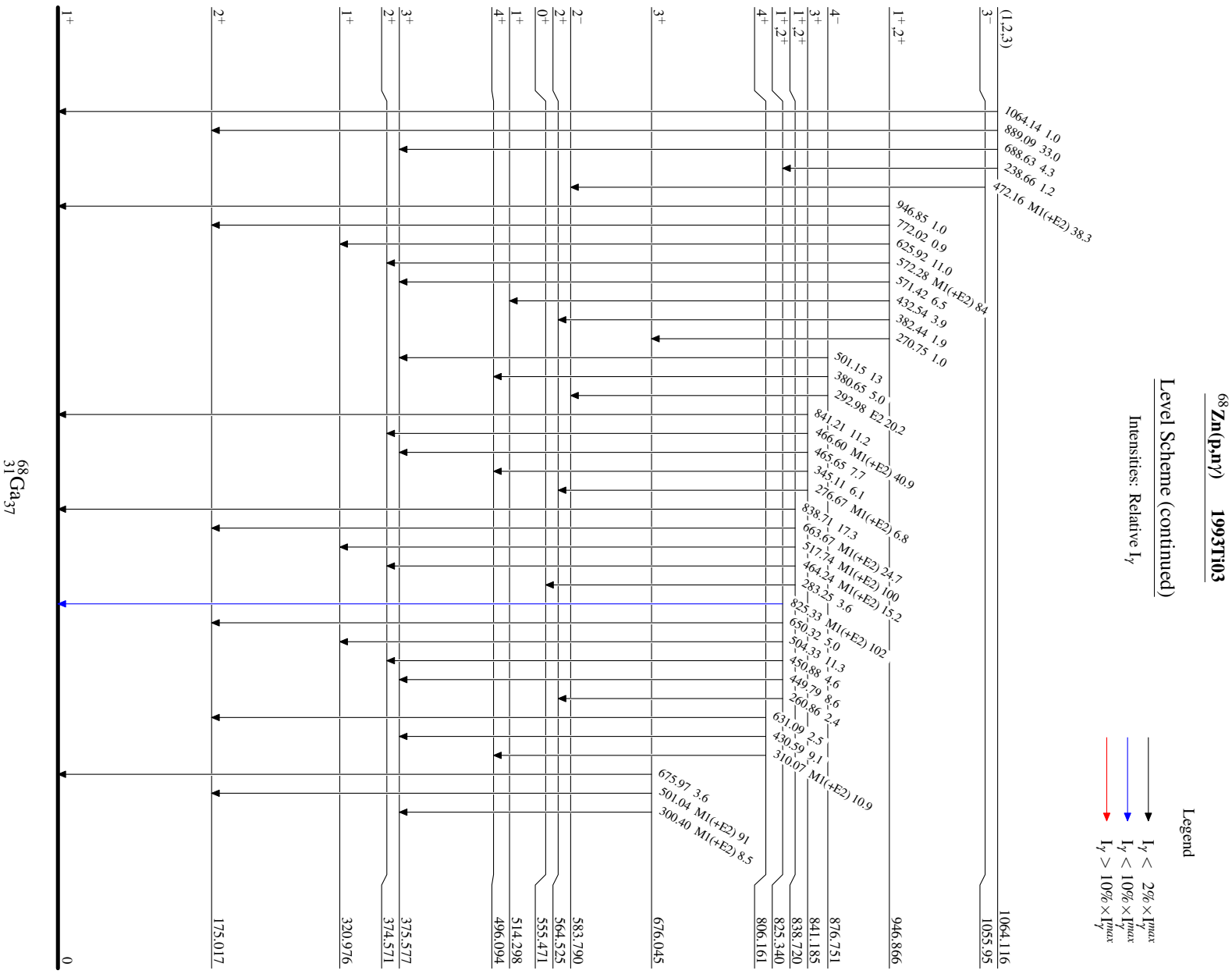
Intensities: Relative I_γ

Legend

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



⁶⁸Ga₃₇



⁶⁸Ga₃₇
³¹Ga₃₇

