Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Alan L. Nichols, Balraj Singh, Jagdish K. Tuli	NDS 113,973 (2012)	15-Apr-2012

Q(β^-)=−1.009×10^4 *syst*; S(n)=1.292×10^4 *4*; S(p)=2927 *16*; Q(α)=−2744.2 *8* 2012Wa38
Note: Current evaluation has used the following Q record −9743 syst 12969 *53* 2932 *16*−2744.2 *7* 2011AuZZ.
ΔQ(β^-)=140 (syst,2011AuZZ).
Q(εp)=2708.3 *11*, S(2n)=28345 *196* (syst), S(2p)=8219.8 *17* (2011AuZZ).
Values in 2003Au03: Q(β^-)=−9760 *140* (syst), S(n)=12980 *60*, S(p)=2940 *30*, Q(α)=−2763 *28*, Q(εp)=2694 *28*, S(2n)=28150 *120* (syst), S(2p)=8234 *28*.
1978Ch11: production and identification of ^{62}Ga in ^{64}Zn(p,3n) reaction, measured half-life. Earlier reports: 1973ChYF and 1972ChYY.
1978Al23: production and identification of ^{62}Ga in ^{58}Ni(^{6}Li,2n) at 25 MeV, measured half-life.
1979Da04: production and identification of ^{62}Ga in ^{58}Ni(^{6}Li,2n) at 25 MeV, measured half-life.
1993Wi03, 1993Wi18: ^{62}Ga produced in fragmentation of ^{78}Kr beam at 75 MeV/nucleon using A1200 spectrometer at NSCL, MSU. Measured isotopic half-life.
Earlier secondary reports of production, identification and $T_{1/2}$ measurements: 1976BaXP, 1976JaZP.
No level or gamma information is available from ^{62}Ge decay to ^{62}Ga.
Mass measurements: 2006Er03 (Penning trap), 2005Gu36.
^{64}Zn(^{6}Li,^{8}He) E=92.5, 98.9 MeV, no events for ^{62}Ga g.s. observed.
Structure calculations:
2007Mi19: calculated level energies from shell model.
2004Gl01: calculated energy differences between T=0 and T=1 states, and pair-transfer amplitudes.
2002Ba58, 2002Va21, 2001Ju06: calculated binding energies, J^π, level energies. Interacting boson model.
2002Sa38: calculated levels, J^π. Deformed shell model with isospin projection.
2001Ju02: calculated features of rotational bands, such as band termination, quadrupole moments and pairing energy. Spherical shell model, cranked Nilsson-Strutinsky model.
2001Sa39: calculated lowest T=0,1 level spectrum. Extended mean-field model.

^{62}Ga Levels

Cross Reference (XREF) Flags

A ^{40}Ca(^{24}Mg,pnγ)
B ^{40}Ca(^{24}Mg,pnγ),(^{28}Si,αpnγ)

E(level)	J$^\pi$	$T_{1/2}$	XREF	Comments
0.0	0$^+$	116.121 ms *21*	AB	%ε+%β^+=100; %εp=? J$^\pi$: log *ft*=3.4877 *2* to 0$^+$, superallowed β decay, $T_{1/2}$: weighted average of 116.100 ms *25* (2008Gr03, earlier value from the same group: 116.01 ms *19* (2005Hy04)), 116.09 ms *17* (2005Ca06), 116.19 ms *4* (2004Bl03), 115.84 ms *25* (2003Hy02), 114 ms *2* (2002Bl17,2002Lo13), 116.34 ms *35* (1979Da04), 115.95 ms *30* (1978Al23), 116.4 ms *15* (1978Ch11); with reduced χ^2=0.90. Others: 113 ms *+6−5* or 110 ms *+6−5* (1993Wi03,1993Wi18), 120.8 ms *20* (1976BaXP), 115 ms *10* (1976JaZP).
571.2‡ *1*	1$^{(+)}$†		AB	J$^\pi$: dipole γ to 0$^+$.
817.2‡ *1*	3$^{(+)}$†	3.4 ns *11*	AB	$T_{1/2}$: from $\gamma\gamma$(t). Weighted average of 4.0 ns *+21−15* (2004Ru03) and 3.2 ns *11* (1998Vi06). J$^\pi$: ΔJ=2, E2 γ to 1$^{(+)}$.
1016.7 *3*	(2)		A	J$^\pi$: ΔJ=1, dipole γ to 1$^{(+)}$. Possible T=1, (2$^+$) analog of 954, 2$^+$ state in ^{62}Zn (2004Ru03).
1193.5‡ *2*	(5$^+$)†		AB	J$^\pi$: ΔJ=2, Q γ to 3$^{(+)}$.

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Adopted Levels, Gammas (continued)

^{62}Ga Levels (continued)

E(level)	J^π	XREF	Comments
1439.4 *2*	$(4^+,5^+)$	AB	J^π: ΔJ=1,D+Q or ΔJ=2, Q γ to $3^{(+)}$. Possible lowest T=0, (4^+) state (2004Ru03).
2234.0 *5*		A	J^π: γ to $3^{(+)}$ suggests (3,4,5). Possible T=1, (4^+) analog of 2186, 4^+ state in ^{62}Zn (2004Ru03).
2373.6 *3*	(6^+)	AB	J^π: ΔJ=1, D+Q γ to (5^+). Possible lowest T=0, (6^+) state (2004Ru03).
2434.3‡ *2*	(7^+)†	AB	J^π: ΔJ=2, Q γ to (5^+).
2674.5 *3*	(6)	A	J^π: ΔJ=1, dipole γ to (5^+).
3014.8 *3*	$(6^+,7^+)$	A	J^π: ΔJ=0, dipole or D+Q γ to (6^+).
3491.8 *3*	(7)	A	J^π: ΔJ=1, dipole γ to (6^+); ΔJ=0, dipole γ to (7^+).
3922.0# *3*	(8^+)	AB	J^π: ΔJ=1, D+Q γ to (7^+); ΔJ=2, Q or ΔJ=1, D+Q γ to $(6^+,7^+)$.
4657.8 *4*	(8)	A	J^π: ΔJ=1, D+Q γ to (7).
4789.1‡ *3*	(9^+)†	AB	J^π: ΔJ=2, Q γ to (7^+); ΔJ=1, D+Q γ to (8^+).
4945.2# *4*	$(9^+,10^+)$	A	J^π: ΔJ=2, Q or ΔJ=1, D+Q γ to (8^+).
5735.0‡ *4*	(11^+)†	AB	J^π: ΔJ=2, Q γ to (9^+).
6842.3‡ *5*	†	AB	

† Positive parity from comparison with shell-model calculated spectrum for the odd-spin T=0 yrast band.
‡ Band(A): ΔJ=2, T=0, yrast band. Configuration=$\pi f_{5/2}g_{9/2}$.
# Band(a): yrast sequence, α=0.

γ(^{62}Ga)

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Mult.†	α‡	Comments
571.2	$1^{(+)}$	571.2 *1*	100	0.0	0^+	D		
817.2	$3^{(+)}$	246.0 *1*	100	571.2	$1^{(+)}$	E2	0.0243	B(E2)(W.u.)=12 *+6−3*
1016.7	(2)	445.5 *3*	100	571.2	$1^{(+)}$	D		
1193.5	(5^+)	376.3 *1*	100	817.2	$3^{(+)}$	Q		
1439.4	$(4^+,5^+)$	622.3 *1*	100	817.2	$3^{(+)}$	Q,D+Q		
2234.0		794.4 *5*	65 *23*	1439.4	$(4^+,5^+)$			
		1417 *1*	100 *27*	817.2	$3^{(+)}$			
2373.6	(6^+)	934.2 *4*	30 *3*	1439.4	$(4^+,5^+)$			
		1180.1 *3*	100 *4*	1193.5	(5^+)	D+Q		
2434.3	(7^+)	1240.7 *2*	100	1193.5	(5^+)	Q		
2674.5	(6)	1236# *1*	56 *56*	1439.4	$(4^+,5^+)$			
		1481 *1*	100 *17*	1193.5	(5^+)	D		
3014.8	$(6^+,7^+)$	340.4 *2*	100 *22*	2674.5	(6)			
		641.2 *2*	84 *9*	2373.6	(6^+)	D,D+Q		
3491.8	(7)	1057.6 *2*	100 *4*	2434.3	(7^+)	D		Mult.: ΔJ=0 transition.
		1118.2 *2*	47 *4*	2373.6	(6^+)	D		
3922.0	(8^+)	907.3 *3*	45 *5*	3014.8	$(6^+,7^+)$	Q,D+Q		
		1487.7 *3*	100 *5*	2434.3	(7^+)	D+Q		
4657.8	(8)	1166.0 *3*	100	3491.8	(7)	D+Q		
4789.1	(9^+)	867.1 *2*	26.5 *22*	3922.0	(8^+)	D+Q		
		2354.8 *5*	100 *7*	2434.3	(7^+)	Q		
4945.2	$(9^+,10^+)$	1023.1 *2*	100	3922.0	(8^+)	Q,D+Q		
5735.0	(11^+)	789.5# *6*	7 *4*	4945.2	$(9^+,10^+)$			
		945.9 *2*	100 *4*	4789.1	(9^+)	Q		
6842.3		1107.3 *3*	100	5735.0	(11^+)			

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Adopted Levels, Gammas (continued)

$\gamma(^{62}Ga)$ (continued)

† From $^{40}Ca(^{24}Mg,pn\gamma)$ (2004Ru03). The data from the $^{40}Ca(^{24}Mg,pn\gamma),(^{28}Si,\alpha pn\gamma)$ (1998Vi06) are in agreement but less complete.

‡ 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.

Placement of transition in the level scheme is uncertain.

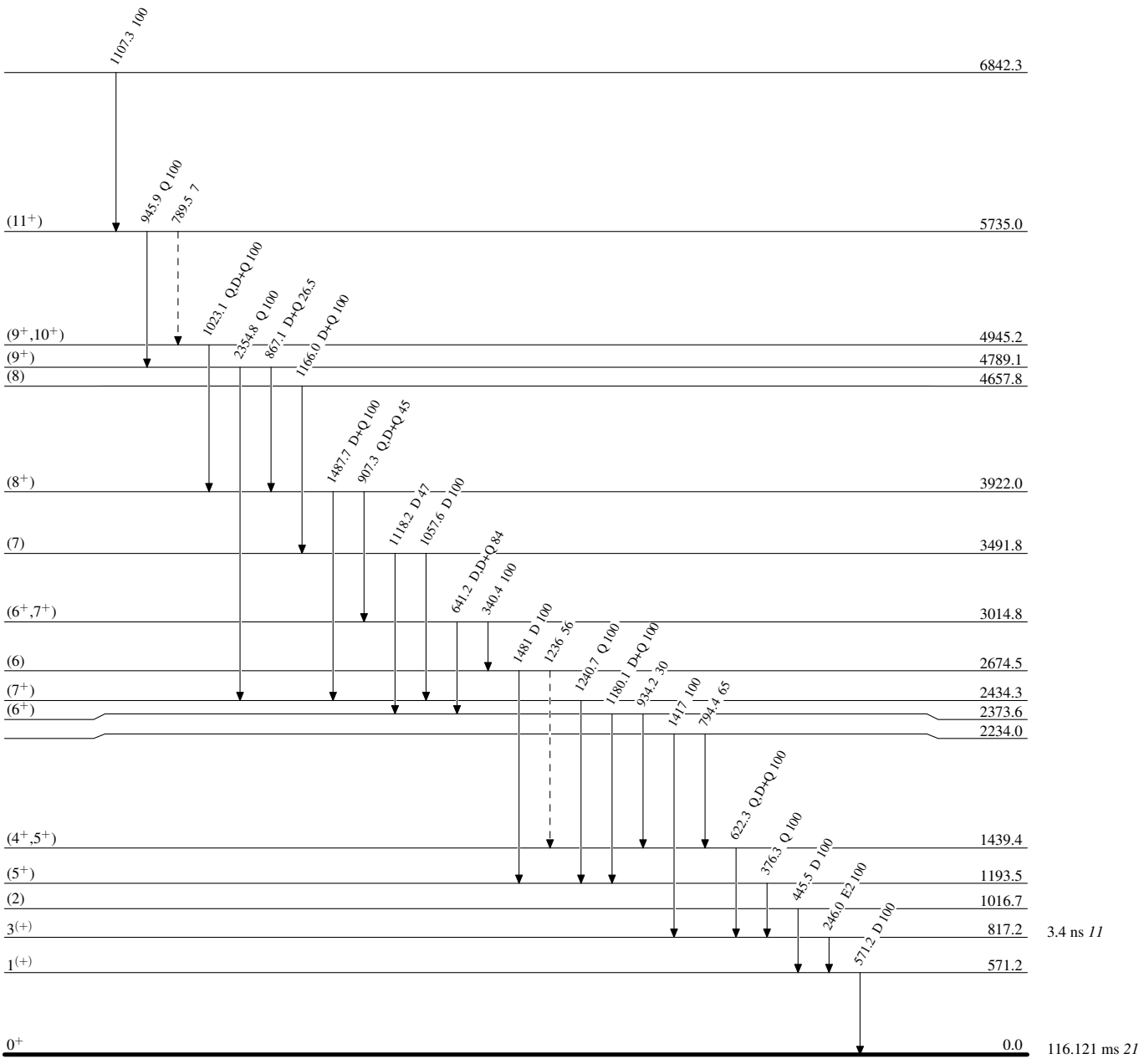
Adopted Levels, Gammas

Legend

Level Scheme

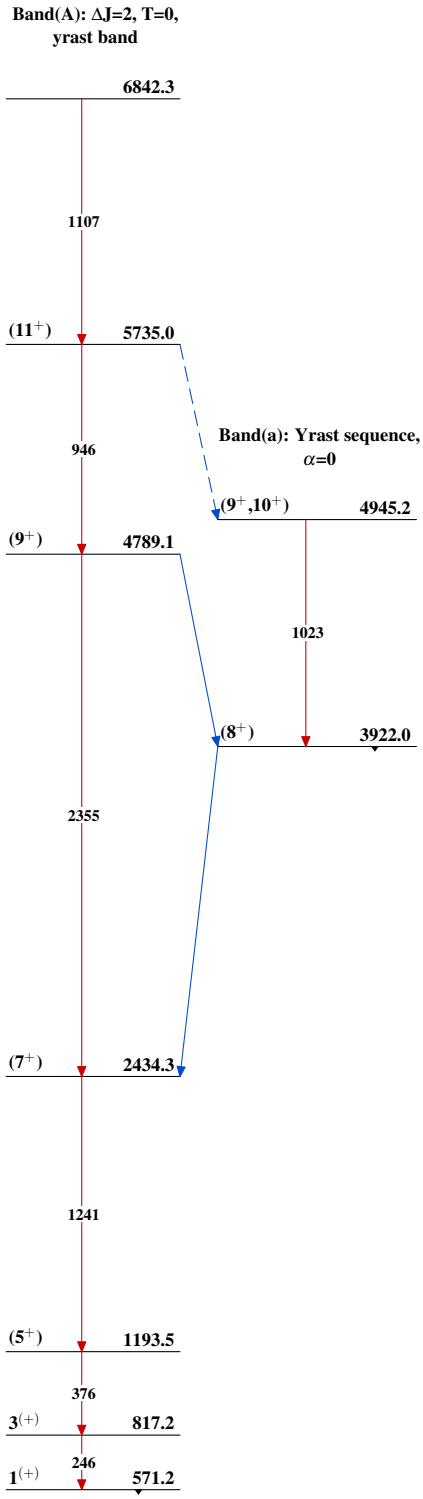
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{62}_{31}Ga_{31}$

Adopted Levels, Gammas



$^{62}_{31}Ga_{31}$