

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty		NDS 186, 2 (2022)	31-Mar-2022

$Q(\beta^-) = -13884.77 \text{ 23}$; $S(n) = 16531.22 \text{ 3}$; $S(p) = 11692.69 \text{ 1}$; $Q(\alpha) = -9316.56 \text{ 1}$ [2021Wa16](#)

$S(2n) = 29676.23 \text{ 16}$, $S(2p) = 20486.805 \text{ 22}$ ([2021Wa16](#)).

Other reactions:

[2004Be18](#), [2004Be08](#): $^{12}\text{C}(^{24}\text{Mg}, ^{12}\text{C})$, $E = 130 \text{ MeV}$; measured E_γ (particle) γ -coin.

[2011Fr14](#): $^{12}\text{C}(^{13}\text{C}, n)$ $E = 12, 13.5, 20 \text{ MeV}$; measured reaction products ^{25}Mg ; deduced ^{24}Mg excited states and reported resonance energies at 13.25 MeV 20 and 14.25 MeV 20 .

[2001Di12](#): $^{11}\text{B}(^{13}\text{N}, X)$, $(^{13}\text{N}, ^{12}\text{C})$, $E = 29.5, 45 \text{ MeV}$. Measured particle spectra, fusion σ . Deduced ^{24}Mg $6-\alpha$ decay features, isospin purity/mixing in ^{24}Mg at excitation energy $\sim 47 \text{ MeV}$, GDR γ -emission features.

[2006Va20](#): $^{28}\text{Si}(p, p')^{24}\text{Mg}$, $E = 1 \text{ GeV}$; measured E_γ ; deduced σ .

 ^{24}Mg LevelsCross Reference (XREF) Flags

A	$^{24}\text{Na } \beta^-$ decay (14.956 h)	N	$^{20}\text{Ne}(\alpha, \gamma)$: Resonances	Others:
B	$^{24}\text{Na } \beta^-$ decay (20.18 ms)	O	$^{20}\text{Ne}(\alpha, \alpha'), (\alpha, \alpha')$: Resonances	AA Coulomb excitation
C	$^{24}\text{Al } \varepsilon$ decay (2.053 s)	P	$^{20}\text{Ne}(^6\text{Li}, d), (^7\text{Li}, t)$	AB $^{24}\text{Mg}(\alpha, \alpha' \gamma)$
D	$^{24}\text{Al } \varepsilon$ decay (130.7 ms)	Q	$^{22}\text{Ne}(^3\text{He}, n)$	AC $^{24}\text{Mg}(^6\text{Li}, ^6\text{Li}')$
E	$^{25}\text{Si } \varepsilon p$ decay	R	$^{23}\text{Na}(p, \gamma), (p, p'), (p, X)$,	AD $^{24}\text{Mg}(^{16}\text{O}, ^{16}\text{O}')$
F	$^{26}\text{P } \varepsilon 2p$ decay	S	$^{23}\text{Na}(^3\text{He}, d), (^3\text{He}, d\gamma)$	AE $^{25}\text{Mg}(p, d)$
G	$^{28}\text{P } \varepsilon \alpha$ decay	T	$^{24}\text{Mg}(\gamma, \gamma')$	AF $^{25}\text{Mg}(^3\text{He}, ^4\text{He})$
H	$^{12}\text{C}(^{12}\text{C}, \gamma)$	U	$^{24}\text{Mg}(e, e')$	AG $^{27}\text{Al}(\mu^-, \nu 3n\gamma)$
I	$^{12}\text{C}(^{12}\text{C}, p)$: Resonances	V	$^{24}\text{Mg}(\pi^+, \pi^+'), (\pi^-, \pi^-')$	AH $^{27}\text{Al}(p, \alpha)$
J	$^{12}\text{C}(^{14}\text{N}, d)$	W	$^{24}\text{Mg}(p, p'), (\text{pol } p, p')$,	AI $^{28}\text{Si}(d, ^6\text{Li})$
K	$^{12}\text{C}(^{24}\text{Mg}, ^{12}\text{C}\gamma)$	X	$^{24}\text{Mg}(n, n' \gamma)$	AJ $^{28}\text{Si}(^{28}\text{Si}, X\gamma)$
L	$^{12}\text{C}(^{16}\text{O}, \alpha), (^{16}\text{O}, \alpha\gamma)$	Y	$^{24}\text{Mg}(^3\text{He}, ^3\text{He}')$	
M	$^{12}\text{C}(^{24}\text{Mg}, 2^{12}\text{C}), (^{20}\text{Ne}, 2^{12}\text{C})$	Z	$^{24}\text{Mg}(\alpha, \alpha')$	

E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF	Comments
0 ^P	0 ⁺	stable	ABCDEFGHIJKL N PQRSTUVWXYZ	XREF: Others: AA, AB, AD, AE, AF, AG, AH, AI, AJ $\delta \langle r^2 \rangle (^{26}\text{Mg}, ^{24}\text{Mg}) = +0.140 \text{ fm}^2 \text{ 5 (stat) 25 (syst)}$ (2012Yo01). $\langle r^2 \rangle ^{1/2} (^{24}\text{Mg}) = 3.0570 \text{ 16}$ (charge radius) (2013An02 evaluation). Others: $3.0570 \text{ fm 7 (stat) 48 (syst)}$ (2012Yo01), 3.030 fm 30 (1971Li26 – (e, e')). XREF: Others: AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ $\mu = +1.08 \text{ 3}$; $Q = -0.29 \text{ 3}$ $g = 0.538 \text{ 13}$ (2015Ku05) $T = 0$ (2015Ku05) J ^π : L=2 in $^{24}\text{Mg}(p, p')$. E2 to 0 ⁺ . T _{1/2} or Γ: From $\tau = 1.96 \text{ ps 5}$: weighted average of mean lifetimes of (α, γ) : 2.25 ps 9 (1973Br33), $(^{16}\text{O}, \alpha), (^{16}\text{O}, \alpha\gamma)$: 1.82 ps 14 (1974Fo11), 2.11 ps 16 (1970Al10), 2.09 ps 13 (1975Ho15), 2.07 ps 34 (1970Cu02); (e, e'): 1.9 ps 2 (1956He83), 1.87 ps 5 (1969Ti01), 1.9 ps 2 (1972Na06), 1.97 ps 11 (1974Jo10); (γ, γ') : 1.76 ps 21 (1981Ca10), 1.8 ps 2 (1977Ca14), 1.92 ps 15 (1971Sw07), 1.95 ps 26 (1966Sk01); Coul Ex: 1.91 ps 10 (1979Fe05), 1.92 ps 10 (1977Sc36), 2.00 ps 14 (1970Ha04), 2.02 ps 10 (1971Vi01), 1.93 ps 13 (1975Bi03), 1.65 ps 15 (1969Pe11); (p, γ): 1.97 ps 16
1368.667 ^{P 5}	2 ⁺	1.36 ps 3	A CDEF H JKL N PQRSTUVWXYZ	

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

<u>E(level)[†]</u>	<u>J^π</u>	<u>T_{1/2} or Γ^j</u>	<u>XREF</u>	<u>Comments</u>
				(1989Ke04), 2.00 ps 45 (1973Le15). Others τ: (α,α'γ): 1.44 ps +11-9 (1968Ro05); (γ,γ'): 1.11 ps 13 (1970He01), 1.1 ps 2 (1965Ka15); (p,γ): 1.40 ps 45 (1972Me09) – omitted as outlier. μ: From 2020StZV, 2015Ku05 – Time Dependent Recoil in Vacuum. Other: +1.02 4 from 2014StZZ – Recoil into Vacuum, Differential method (1975Ho15), Perturbed Angular Correlation after Ion Implantation (1974Eb02). Q: From 2021StZZ – Coulomb Excitation Reorientation (1990Gr11). Others: -0.18 2 (1981Sp07), -0.178 13 (13) (1979Fe05), -0.07 3 (1981Ko06) – also listed in 2014StZZ. Uncertainty in g-factor includes 0.011 (statistical) and 0.007 (systematic).
4122.853 ^P 12	4 ⁺	24.3 fs 21	A C E H jKL N P RS U WXYZ	XREF: Others: AB, AD, AE, AF, AG, AH, AI, AJ μ=+1.7 12 XREF: AJ(4115.1). J ^π : L=4 in (α,α') and in $^{24}\text{Mg}(p,p')$; E2 to 2 ⁺ . T _{1/2} or Γ: From mean lifetime τ=35 fs 3: Weighted average of τ values from ($^{16}\text{O},\alpha$), ($^{16}\text{O},\alpha\gamma$): 53 fs 9 (1975Br10) and 48 fs 9 (1983Sp01); (p,γ), (p,p'): 32 fs 3, 33 fs 2 (both from 1989Ke04), 40 fs 4 (1973Le15), 25 fs 5 (1972Me09); ($^3\text{He},d$), ($^3\text{He},d\gamma$): 68 fs 25 (1969An08); (n,n'γ): 56 fs 19 (1984El12); (p,p'), (pol p,p'): 65 fs 19 (1972Ba93); (α,α'γ): 51 fs +33-28 (1968Ro05). Other: mean lifetime τ=169 fs 34 (outlier) (1971Ha32 – (α,α'γ)). μ: From 2020StZV, 1983Sp01 – Transient Field.
4238.35 ^q 4	2 ⁺	45.7 fs 35	A CDE H jKL N P RS UVWXYZ	XREF: Others: AB, AD, AE, AF, AG, AH, AI, AJ μ=+1.3 4 J ^π : L=2 in (α,α') and $^{24}\text{Mg}(p,p')$. T _{1/2} or Γ: From τ=66 fs 5: Weighted average of mean lifetimes ($^{16}\text{O},\alpha$), ($^{16}\text{O},\alpha\gamma$): τ=85 fs 15 (1975Br10), 110 fs 26 (1970Cu02 – revised value of τ=83 fs 16 (1968Cu05)); (p,γ), (p,p'): 66 fs 5, 63 fs 5 (1989Ke04), 88 fs 11 (1973Le15), 53 fs 9 (1972Me09); ($^3\text{He},d$), ($^3\text{He},d\gamma$): τ=86 fs 30 (1969An08); (e,e'): 63 fs 10 (1974Jo10), 60 fs 6 (1978Za07), 69 fs 12 (1969Ti01); (p,p'), (pol p,p'): 120 fs 30 (1967AlZV), 95 fs 25 (1972Ba93); (α,α'γ): 101 fs 25. Others: (α,α'γ): 185 fs 33 (1971Ha32); (n,n'γ): τ=105 fs 5 (1984El12). μ: From 2020StZV, 1983Sp01 – Transient Field.
5235.16 ^q 5	3 ⁺	68 fs 5	A C H JKL N RS W Y	XREF: Others: AB, AE, AF, AG, AH, AI, AJ XREF: AH(5251). J ^π : L(p,d)=0+2, unnatural parity ($^{16}\text{O},\alpha$). Band assignment. L=3 in $^{24}\text{Mg}(p,p')$ gives π=- is inconsistent. T _{1/2} or Γ: From τ=98 fs 7: weighted average of data from ($^{16}\text{O},\alpha$), ($^{16}\text{O},\alpha\gamma$): τ=109 fs 15 (1975Br10); (p,γ), (p,p'): 105 fs 16, 101 fs 7 (1989Ke04), 65 fs 11 (1972Me09), 120 fs 16 (1973Le15); ($^3\text{He},d$), ($^3\text{He},d\gamma$): 95 fs 25 (1969An08); (p,p'), (pol p,p'): 130 fs 70 (1967AlZV) and 128 fs 32 (1972Ba93); (α,α'γ): 173 fs 46 (1971Ha32), 79 fs +47-51 (1968Ro05).
6010.34 ^q 5	4 ⁺	53 fs 4	C H JKL N P RS UVWXYZ	XREF: Others: AB, AD, AE, AF, AH, AI, AJ μ=+2.1 16 XREF: V(5.93E3)AD(6.1E3)AJ(6007.3).

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Adopted Levels, Gammas (continued)

^{24}Mg Levels (continued)					
E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF		Comments
					J ^π : L=4 in (α,α') and $^{24}\text{Mg}(\text{p,p}')$, natural parity ($^{16}\text{O},\alpha$).
					T _{1/2} or Γ: From τ=77 fs 6: weighted average of data from ($^3\text{He},\text{d}$),($^3\text{He},\text{d}\gamma$): τ=50 fs 25 (1969An08); (p,p'),(pol p,p'): 85 fs 22 (1972Ba93); ($^{16}\text{O},\alpha$),($^{16}\text{O},\alpha\gamma$): 77 fs 14 (1975Br10); (p,γ),(p,p'): 63 fs 10 and 83 fs 6 (1989Ke04); and 83 fs 10 (1973Le15), 46 fs 14 (1972Me09); (n,n'γ): 115 fs 20 (1984El12); (α,α'γ): 71 fs +37-40 (1968Ro05). Others: (p,p'),(pol p,p'): 200 fs 40 (1967AlZV); (α,α'γ): 124 fs 20 (1971Ha32).
6432.2 10	0 ⁺	69 fs 12		JKL N PQR UVW YZ	μ: From 2020StZV, 1984Sp03 – Transient Field. XREF: Others: AB, AD, AE, AF, AH, AI XREF: AF(6448).
					J ^π : L=0 in (α,α') and $^{24}\text{Mg}(\text{p,p}')$, natural parity in ($^{16}\text{O},\alpha$).
					T _{1/2} or Γ: From τ=100 fs 17: Weighted average of τ values from ($^{16}\text{O},\alpha$),($^{16}\text{O},\alpha\gamma$): 66 fs 29 (1976Br34); (p,γ),(p,p'): 105 fs 45, 140 fs 30 (1989Ke04), 110 fs 17 (1973Le15); and (p,p'),(pol p,p'): 77 fs 23 (1972Ba93). Others: (p,p'),(pol p,p'): 270 fs 60 (1967AlZV); (α,α'γ): 241 fs +25-17 (1968Ro05); (p,γ),(p,p'): 66 fs 13 (1972Me09). Uncertainty of τ=100 fs 17 is the lowest input value.
7.0×10 ³					XREF: Others: AD
7348.60 10	2 ⁺	6.5 fs 22	C	JKL N P RS UVW YZ	XREF: Others: AD, AE, AF, AH, AI, AJ
					J ^π : L=2 in (α,α') and $^{24}\text{Mg}(\text{p,p}')$, natural parity ($^{16}\text{O},\alpha$).
					T _{1/2} or Γ: Weighted average of 4.5 fs 14 from (p,γ), 10 fs 2 from (e,e'), and 24 fs 11 from (p,p').
7555.3 10	1 ⁻	270 ^l fs 55		JKL N RS W YZ	XREF: Others: AD, AE, AF, AH XREF: J(7.58E3).
					J ^π : L=1 in $^{24}\text{Mg}(\text{p,p}')$, natural parity ($^{16}\text{O},\alpha$).
7616.41 7	3 ⁻	1.01 ps 15	C H	KL N RS UVW YZ	XREF: Others: AE, AF, AH, AI XREF: V(7.55E3).
					J ^π : L=3 in (α,α') and $^{24}\text{Mg}(\text{p,p}')$, natural parity ($^{16}\text{O},\alpha$).
					T _{1/2} or Γ: From τ=1.46 ps 22: Weighted average of τ values from (p,γ),(p,p'): 1.19 ps 20 (1989Ke04), 2.00 ps 55 (1973Le15); (p,p'),(pol p,p'): 2.1 ps 4 (1967AlZV) and 1.8 ps 6 (1972Ba93).
7747.7 2	1 ⁺	12.5 fs 28		L N RS W Y	XREF: Others: AF
					E(level): Other values: 7750 3 ($^3\text{He},\text{d}$) and 7746 3 (p,p').
					J ^π : L($^3\text{He},\text{d}$)=0+2 and unnatural parity ($^{16}\text{O},\alpha$).
7812.4 5	(4 ⁻ ,5 ⁺)	21 fs 3	C	JKL N RS W Y	XREF: Others: AF, AH XREF: AH(7797).
					T _{1/2} or Γ: Weighted average of 24 fs 3 ($^{16}\text{O},\alpha$) and 17 fs 4 (p,γ).
					J ^π : γ to 3 ⁺ and 4 ⁺ states; and γ from 5 ⁻ . Unnatural parity ($^{16}\text{O},\alpha$).
8113.2 ^p 10	6 ⁺	3.6 fs 12		JKL P RS W Y	XREF: Others: AD, AF, AH, AI, AJ XREF: Y(8120)AJ(8104.7).

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF				Comments
							J ^π : L=6 in (p,p'), natural parity ($^{16}\text{O},\alpha$). T _{1/2} or Γ: Weighted average of 3.9 fs 21 ($^{16}\text{O},\alpha\gamma$) and 3.5 fs 12 (p,γ).
8358.1 [‡] 3	3 ⁻	63 fs 8	H jKL N	RS UVW YZ			XREF: Others: AD , AF , AH , AI J ^π : L=3 in (p,p'), natural parity ($^{16}\text{O},\alpha$). T _{1/2} or Γ: Weighted average of 76 fs 38 ($^{16}\text{O},\alpha\gamma$), 54 fs 8 (p,γ), 76 fs 13 (e,e'), and 82 fs 17 (p,p').
8438.4 10	1 ⁻	9 fs 2	jK N	RS W YZ			XREF: Others: AB , AD , AH , AI T=0
8439.29 5	4 ⁺	3.2 fs 14	C H KL N R				J ^π : D γ to 0 ⁺ and L=1 in $^{24}\text{Mg}(p,p')$. XREF: Others: AF , AH
8654.9 [‡] 4	2 ⁺	14 fs 3	L N P RS	W Y			J ^π : γ to 2 ⁺ . log ft=3.93 from 4 ⁺ . Natural parity. XREF: Others: AF , AI
							E(level): Other values: 8655 3 ($^3\text{He},d$), 8654 3 (p,p'), and 8661 10 ($^3\text{He},^4\text{He}$). J ^π : L=2 in (p,p'), γ to 0 ⁺ , natural parity.
8864.5 [‡] 2	2 ⁻	5.5 fs 21	L N RS	W Y			T _{1/2} or Γ: From τ=20 fs 5: Unweighted ave. of data from ($^{16}\text{O},\alpha$), ($^{16}\text{O},\alpha\gamma$): t=28 fs 7 (1976Br34); (p,γ), (p,p'): 10 fs 2 (1989Ke04), 13 fs 5 (1972Me09), and 29 fs 7 (1973Le15). XREF: Others: AF , AI
							E(level): Others: 8870 3 ($^3\text{He},d$), 8864 3 (p,p'), and 8866 10 ($^3\text{He},^4\text{He}$). J ^π : 2 from γγ(θ) in $^{23}\text{Na}(p,\gamma)$ (1969Ba47). Unnatural parity ($^{16}\text{O},\alpha$).
9003.5 [‡] 2	2 ⁺	8.4 ^m fs 12	L N RS U W YZ				XREF: Others: AB , AF , AI E(level): Others: 8995 21 from (e,e'), 9002 3 from (p,p'), and 9012 10 from ($^3\text{He},^4\text{He}$). J ^π : L=2 in (p,p'). Natural parity ($^{16}\text{O},\alpha$).
9146.2 [‡] 3	1 ⁻		L RS W YZ				XREF: Others: AB , AF , AI XREF: S(9166)AF(9166). J ^π : L=1 in (p,p'). Natural parity ($^{16}\text{O},\alpha$).
9160 15	[5 ⁻] ^h		J				
9284.4 3	2 ⁺ , 4 ⁺	11 fs 3	H KL N RS u W Y				XREF: Others: AF J ^π : L=2 in ($^3\text{He},d$), natural parity ($^{16}\text{O},\alpha$), γ from (3 ⁻) and 4 ⁺ .
9299.8 [‡] 3			K n R				
9301.07 9	(4 ⁺)	7 fs 2	C H L n R VW				J ^π : γ's to 2 ⁺ and 4 ⁺ . log ft=4.8 from 4 ⁺ in ^{24}Al ε decay (2.053 s).
9305.39 24	0 ⁺	173 ⁿ fs 35	L R u Z				J ^π : From $^{24}\text{Mg}(\alpha,\alpha')$, based on comparison of differential cross sections to DWBA calculations.
9450 15	[5 ⁻ , 6 ⁺] ^h		J				XREF: Others: AI
9457.81 4	(3) ⁺	4.3 fs 21	C L N RS W Y				XREF: Others: AF J ^π : L=2 in ($^3\text{He},d$), in ($^3\text{He},^4\text{He}$), and in ($^3\text{He},^3\text{He}'$); γ's to 1 ⁺ and 4 ⁺ . Tentative unnatural parity in ($^{16}\text{O},\alpha$).
9516.18 5	4 ⁺	12 fs 5	C L N RS W				XREF: Others: AF T=1
							J ^π : γ's to 2 ⁺ and 4 ⁺ , isobaric analog to ^{24}Na ground state. Natural parity ($^{16}\text{O},\alpha$). L($^3\text{He},d$)=2.
9527.6 ^q 7	(6 ⁺)	8 ⁿ fs 4	KL W Y				XREF: Others: AF , AI , AJ XREF: W(9521)Y(9520)AJ(9523).

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Adopted Levels, Gammas (continued)

²⁴ Mg Levels (continued)									
E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF					Comments	
9532.7 [±] 2	(2,3) ⁺	14 fs 7		R	W				J ^π : L=(6) in (³ He, ³ He'); band member in (²⁴ Mg, ¹² Cγ). XREF: Others: AF , AI T=0 XREF: AF(9650). J ^π : L(p,p')=2 and γ to 3 ⁻ . T _{1/2} or Γ: Weighted average of 34 fs 14 (p,p'),(pol p,p') and 11 fs 5 (p,γ),(p,p').
9828.0 [±] 20	1 ⁺	0.30 ^m fs 7	D	N	RSTU	W	Y		XREF: Others: AF T=0&1 J ^π : Log ft=4.6 from 1 ⁺ ; γ to 0 ⁺ ; D γ from 0 ⁺ at 13048.
9940 15 9965.3 11	[5 ⁻] ^h 1 ⁺	71 ^m as 7	D	J N	RSTU	W			XREF: Others: AF T=1 J ^π : Log ft=3.5 from 1 ⁺ ; γ to 0 ⁺ . T _{1/2} or Γ: Weighted average of 93 as 18 from (γ,γ') and 69 as 6 from (e,e').
10027.97 [±] 9	5 ⁻	62 ⁿ fs 18	H	KL	N	RS	VW	Y	XREF: Others: AI T=0 XREF: V(9.97E3). J ^π : L=5 in (p,p') and in (³ He, ³ He'), natural parity (¹⁶ O,α).
10059.1 [±] 4	(1,2) ⁺	<3 fs	D	L	N	RS	W		XREF: Others: AF T=1 E(level): Other: Least-squares fit yields 10059 3. J ^π : log ft=4.5 from 1 ⁺ , L=(0)+2 (³ He,d).
10110.9 [±] 4	(0 ⁺)	<5 ^o keV		L	N	R	W	Y	T=0 J ^π : L=0 in (³ He, ³ He'); also in 1968OI04 (¹⁶ O,αγ), based on simultaneous fits to the angular correlations of the two cascade gamma rays involved.
10161 3	(0 ⁺)			L	N	S	W		XREF: Others: AF J ^π : L=0 in (p,p'). γ to 2 ⁺ . Tentative L(³ He,d)=(1) inconsistent for π=+. E(level): From (p,p'),(pol p,p').
10250 15 10333.6 [±] 2	[4 ⁺ ,5 ⁻] ^h 3 ^{-c}	<7 ^o keV		J H	L	N	RS	W	T=0 J ^π : L=3 in (p,p').
10360.7 [±] 3	2 ⁺	1.0 fs 3		KL	N	RSTU	W	YZ	XREF: Others: AF , AI T=0 T _{1/2} or Γ: weighted average of 0.8 fs 2 from (γ,γ') and 1.3 fs 3 from (e,e'). J ^π : L=2 in (α,α'), ²⁴ Mg(p,p') and (³ He, ³ He'); γ's to 0 ⁺ .
10575.93 8	(4) ⁺	9 ⁿ fs 2	C	J	L	N	S	w	XREF: Others: AI T=0 XREF: J(10490). J ^π : L=4 in (p,p') for doublet. log ft=4.5 in from 4 ⁺ in ²⁴ Al ε decay (2.053 s).
10581.26 [±] 13	(2 ⁺ ,3 ⁺ ,4 ⁺)	<2 fs					R	w	XREF: Others: AF , AI J ^π : γ's to 2 ⁺ and 4 ⁺ . L=4 in (p,p') for doublet.
10659.8 [±] 2	(1,2 ⁺)			L		Rs			J ^π : γ's to 0 ⁺ and 2 ⁺ .

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Adopted Levels, Gammas (continued)

^{24}Mg Levels (continued)					
E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF		
10660.17 [‡] 17	(3 ⁺ ,4 ⁺)	<2 fs		N Rs W	J ^π : γ's to 3 ⁺ and 4 ⁺ . L=4 in (p,p') for doublet.
10679.7 [‡] 3	0 ⁺	2.1 ⁿ eV 8	D	L N Rs W YZ	XREF: Others: AF T=0 J ^π : Spin=0 from γγ(θ) in (α,γ); π=+ from L=2 in (³ He, ⁴ He). Also L=0 in (³ He, ³ He').
10712.2 [‡] 2	1 ⁺	23 ^m as 2		L R TU W	T=1 J ^π : M1 excitation in (e,e') and (γ,γ').
10731.1 [‡] 2	2 ⁺	7 fs 3		L N RS W	XREF: Others: AF T=0 J ^π : 6491.8γ D to 2 ⁺ , ΔJ=0; π=+ from L(=3He,d)=0+2.
10820.8 4	3 ⁺ ,4 ⁺	7.5 ⁿ eV 11	C	L N RS W Y	XREF: Others: AF XREF: S(10838). J ^π : γ to 2 ⁺ , L=4 in ²⁴ Mg(p,p'), and RUL.
10917.2 [‡] 3	2 ⁺	0.8 ^m fs 1	D	L N RSTU W Y	XREF: Others: AF, AI T=0 XREF: U(10939). J ^π : L=2 in (³ He, ⁴ He), (³ He,d), and (³ He, ³ He'); γ's to 0 ⁺ and 4 ⁺ , and RUL.
11012 3	3,5 ⁺ ^c			L N s	T=1 E(level): Weighted average of 11008 4 (¹⁶ O,α) and 11014 3 (α,γ).
11018 3	2 ⁺	<3 ^o keV	D	L N s vW Y	XREF: Others: AF, AI T=0 E(level): Weighted average of 11017 3 from (p,p'), 11018 4 from (¹⁶ O,α), 11020 3 from (α,γ), 11022 10 from (³ He, ⁴ He), 11016 7 (d, ⁶ Li). J ^π : L=2 in (³ He, ³ He'); γ's to 0 ⁺ and 4 ⁺ ; and RUL; also in (α,γ) based on αγ(θ) for spin 2.
11133 3		26 ⁿ fs 4		L N vW	E(level): From (α,γ). Others: 11128 3 (¹⁶ O,α), 11128 3 (p,p').
11150 15	[6 ⁺ ,7 ⁻] ^h		J		
11165 2	3 ⁻	<3 ^o keV		L N W Y	T=0 E(level): Weighted average of 11161 4 (¹⁶ O,α), 11167 2 (α,γ), and 11161 3 (p,p'). J ^π : L=3 in (p,p') and (³ He, ³ He'); spin=3 from αγ(θ) in (α,γ).
11181 3				L N W	E(level): From (p,p'),(pol p,p'). Others: 11182 4 (¹⁶ O,α) and 11185 (α,γ). J ^π : L=3 in (p,p') possibly for doublet.
11187.3 [‡] 3				K N R W	
11207 3		0.0022 ⁿ eV 12		L N R W	T=0&1 XREF: N(11215). E(level): From (p,p').
11216.69 [‡] 18	3 ⁺ ,4 ⁺	0.78 ⁿ eV 11	C	L N R W Y	XREF: Others: AF T=0 XREF: N(11226)AF(11228). J ^π : L=4 in (p,p') and (³ He, ³ He'); γ to 2 ⁺ .
11293 3		20 ⁿ fs 3		L N s W	E(level): From (p,p').
11314.4 15	(3,4) ⁺		C	L N s W Y	XREF: Others: AF

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF				Comments
11330 3			L	N	Rs	W	J ^π : log ft=5.2 in ^{24}Al ε decay (2.053 s). γ to 2 ⁺ . E(level): From (p,p').
11390 20	0 ⁺ ⁱ					Z	
11391 3	1 ⁻	0.5 ^o keV	L	NO	Rs	U W Y	XREF: Others: AF T=0 E(level): Weighted average of 11390 4 ($^{16}\text{O},\alpha$), 11395 3 (α,γ), 11390 5 (α,α), 11389 3 (p,p'). J ^π : L=1 in (p,p') and ($^3\text{He},^3\text{He}'$); γ to 0 ⁺ .
11394 [#] 4			L		s		XREF: Others: AF L($^3\text{He},^4\text{He}$)=1 probably for a doublet.
11452.8 [‡] 4	2 ⁺	<2 ^o keV	L	N	R	u W Y	T=0 J ^π : L=2 in (p,p') and ($^3\text{He},^3\text{He}'$).
11457 3	(0 ⁺) ^{&}		D	NO	S		XREF: Others: AF T=0 E(level): Weighted average of 11455 4 ($^{16}\text{O},\alpha$), 11461 4 (α,γ), 11460 5 (α,α), 11457 3 ($^3\text{He},\text{d}$), and 11456 3 (p,p').
11522 2	2 ⁺	0.5 ^o keV	D	L	N	Rs U W Y	XREF: Others: AF T=0 XREF: U(11474). E(level): Weighted average of 11523 2 (α,γ), 11519 4 ($^{16}\text{O},\alpha$), and 11521 3 (p,p'). J ^π : L=2 in (p,p') and spin=2 from $\alpha\gamma(\theta)$ in (α,γ).
11527 4	(2 ⁺) ^{&}		J	L	O	s	XREF: Others: AF E(level): Weighted average of 11528 4 ($^{16}\text{O},\alpha$), 11526 5 (α,α).
11568	(2 ⁺)					Y	J ^π : L=2 in ($^3\text{He},^3\text{He}'$).
11600 2	3 ⁻	15 ⁿ fs 4	L	N		W	XREF: Others: AF, AI T=0 E(level): From (α,γ). J ^π : spin=3 from $\alpha\gamma(\theta)$ in (α,γ), natural parity ($^{16}\text{O},\alpha$).
11618 3			L	N		W	E(level): From (p,p').
11698.2 13	4 ⁺	1.6 ⁿ eV 6	C	L	N	S W	XREF: Others: AF, AI T=0 E(level): Weighted average of 11700 2 (α,γ), 11698.6 13 ($^3\text{He},\text{d}$), 11694 3 (p,p'), 11694 4 ($^{16}\text{O},\alpha$), and 11701 10 ($^3\text{He},^4\text{He}$). J ^π : L=4 in (p,p'); spin=4 from $\alpha\gamma(\theta)$ in (α,γ).
11730 2	0 ⁺ ⁱ	10 ^o keV 2	L	NO	S	W Z	T=0 E(level): Weighted average of 11727 4 ($^{16}\text{O},\alpha$), 11732 2 (α,γ), 11735 5 (α,α), 11724 5 ($^3\text{He},\text{d}$), and 11727 3 (p,p'). J ^π : L=0 in (p,p'). XREF: J(11810).
11830 2			J	L	N	S W	E(level): Weighted average of 11827 4 ($^{16}\text{O},\alpha$), 11831.7 18 ($^3\text{He},\text{d}$), and 11828 3 (p,p').
11860 [‡] 2	(8 ⁺)	63 ⁿ fs 24	KL	N			XREF: Others: AI XREF: N(11865). J ^π : From linear polarization measurements (1978We03) ($^{16}\text{O},\alpha\gamma$); γ to 6 ⁺ ; π=N ($^{16}\text{O},\alpha$). The possibility of 6 ⁺ assignment discarded with 85% confidence (1978We03). T _{1/2} or Γ: From ($^{16}\text{O},\alpha$).

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

E(level) [†]	J ^π	T _{1/2} or Γ ^J	XREF				Comments
11862.8 13	1 ⁻ⁱ	7.0 ^o keV 3	NO	RS	W	Z	T=0 E(level): Weighted average of 11868 5 (α,α'), 11869 3 (α,γ), 11862.7 12 (³ He,d), 11862 3 (p,p'), and 11860 2 (p,γ). J ^π : L=1 in (p,p'); spin=1 from αγ(θ) in (α,γ).
11909 2		5.5 ^o keV 22	N	R			T=0 E(level): Weighted average of 11904 4 (α,γ) and 11910 2 (p,γ),(p,p'),(p,x).
11932.9 [‡] 2	(3) ⁺	<0.02 keV	L N	RS	W		XREF: Others: AF J ^π : L(3He,d)=2,0+2; γ to 2 ⁺ and 2 ⁻ and 4 ⁺ and (4 ⁻ ,5 ⁺).
11966.6 [‡] 5	2 ⁺	2.0 keV 4	L NO	RS	W		T=0 J ^π : L=2 in (p,p'); spin=2 from αγ(θ) in (α,γ). T _{1/2} or Γ: Weighted average of 2.4 keV 5 (α,γ) and 1.8 keV 4 (p,γ).
11988.5 [‡] 1	2 ⁺	<0.02 keV	L	RS	W		XREF: Others: AI T=0 J ^π : L=2 in (p,p'); L=0+2 in (³ He,d); γ to 2 ⁺ ,4 ⁺ .
12003 3		<1 ^o keV	N		W		T=0 E(level): Weighted average of 12004 4 (α,γ) and 12002 3 (p,p').
12017.2 [‡] 6	3 ⁻	0.7 keV 2	N	RS	U W		T=0 XREF: U(11990). J ^π : L=3 in (p,p'); L(³ He,d)=1; populated in (α,γ) implies natural parity. In (e,e') 11990 keV25 overlaps two lower levels; J ^π =3 ⁻ implies excitation of this level.
12051.3 [‡] 5	4 ⁺	<0.02 keV	C	N	RS	VW	XREF: Others: AF T=0&1 J ^π : L=4 in (p,p'); populated in (α,γ) implies natural parity.
12119.0 [‡] 10	4 ⁺ ^f	1.9 ^o keV 3	C	L N	R	W	T=0 J ^π : log ft=5.3 from 4 ⁺ ; γ's to 2 ⁺ and 4 ⁺ ; populated in (α,γ) implies natural parity.
12128 [‡] 3					R	W	
12162 3	4 ⁺	0.9 ^o keV 3	C	N		W	T=0 E(level): Weighted average of 12163 4 (α,γ) and 12161 3 (p,p'). J ^π : L=4 in (p,p'); populated in (α,γ): resonance – implies natural parity.
12183.3 [‡] 1		<0.046 keV			R	W	γ's to 0 ⁺ and 4 ⁺ .
12244 3						W	
12259.3 [‡] 5	2 ⁻	<0.06 keV			R	W	J ^π : From (p,γ) 1963GI05 , based on γ(θ) and γ-γ correlation measurements. L=3 in (p,p') for doublet.
12259.8 [‡] 4	3 ⁻	1.8 ^o keV 3		N	R	W	T=0 J ^π : From 1956Ba96 , based on elastic scattering (p ₀) in ²³ Na(p,p). L=3 in (p,p') for doublet.
12273 5	(3 ⁻) ^{&}				O		
12340 15	[7 ⁺] ^h		J				
12340.2 [‡] 4	3 ⁺	<0.07 keV			R	W	J ^π : From (p,γ) 1963GI05 , based on γ(θ) and γ-γ correlation measurements.
12342 3		3.5 ⁿ fs 14	L			W	E(level): From (p,p'),(pol p,p').

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF				Comments
12385	0 ^{-d}	7 keV 2		R			
12400.3 [±] 5	3 ⁺	<0.09 keV		R			T=0 J ^π : From 1963GI05, based on γ(θ) and γ-γ angular correlation measurements.
12404.9 [±] 5	2 ⁺	<0.1 keV	D	N	R	W	T=0&1 J ^π : L=2 in (p,p'); Log ft=5.5 from 1 ⁺ ; γ to 4 ⁺ .
12443 3	6 ⁺ , 7 ⁻	11 ⁿ fs 3		L	N		W T=0 E(level): Weighted average of 12446 4 (α,γ) and 12441 3 (p,p'). J ^π : From αγγ angular correlations ((¹⁶ O,αγ) – 2012Di04).
12450 3	1 ^{-d}	5.7 ^o keV 4		N	R	W	T=0 E(level): Weighted average of 12456 4 (α,γ) and 12447 3 (p,p').
12467 3	2 ⁺	5.1 ^k keV 1	D	NO		W	T=0 E(level): Weighted average of 12467 4 (α,γ), 12466 5 (α,α), and 12467 3 (p,p'). J ^π : L=2 in (p,p').
12478 3	2 ⁺ &d	3.8 ^o keV 3		NO	R	W	E(level): Weighted average of 12472 4 (α,γ), 12484 5 (α,α), and 12479 3 (p,p'); populated in (α,γ), (α,α) resonances – implies natural parity.
12507 3	4 ⁺	2.3 ^o keV 3		NO	R	W	T=0 XREF: O(12515). E(level): Weighted average of 12508 4 (α,γ), 12515 5 (α,α), and 12504 3 (p,p'). J ^π : L=4 in (p,p'); populated in (α,γ), (α,α) resonances – implies natural parity.
12527.6 [±] 6	1 ⁺ d	7.5 keV 10	L		R	U	W T=0&1 XREF: L(12.54E3). J ^π : 2 ⁺ in (e,e') for 12522 30 (larger uncertainty) is inconsistent.
12581 3	2 ⁺ d	5.5 keV 6		NO	R	W	T=0 E(level): Unweighted average of 12580 4 (α,γ), 12587 2 (α,α), and 12577 3 (p,p'). J ^π : L=2 in (p,p'). T _{1/2} or Γ: Weighted average of 6.2 keV 6 (α,γ), 5.2 keV 9 (α,α), and 4 keV 1 (p,γ).
12638.7 [±] 1	4 ⁺	0.03 keV 2	L	N	R	W	T=0&1 J ^π : L=4 in (p,p'); populated in (α,γ): resonance – implies natural parity.
12659.1 [±] 1		0.08 keV 8			R	W	
12660.8 [±] 5	3 ⁻	0.9 ^o keV 3		NO	R	W	T=0 J ^π : L=3 in (p,p').
12670.0 [±] 5	2 ^{-d}	4.0 keV 5			R	U	W T=1 J ^π : 8430.1γ D to 2 ⁺ , ΔJ=0.
12733.3 [±] 6		<0.6 keV		o	R	U	XREF: U(12706).
12739.0 [±] 7	2 ⁺	8.0 ^o keV 7		No	R	W	T=0 J ^π : L=2 in (p,p'); populated in (α,γ): resonance – implies natural parity. T _{1/2} or Γ: weighted average of 8.3 keV 5 from (α,γ) and 6.7 keV 10 from (p,γ).
12744 1	(2 ⁺) ^a	11 ^k keV 2		O			

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Adopted Levels, Gammas (continued)

^{24}Mg Levels (continued)					
E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF		
12747 2	(4 ⁺) ^a	2 ^k keV 2	O		
12778 [‡] 1	2 ⁺ ^e	30 keV 5	O R W		T=0
12784 2	(1 ⁻) ^a	28 ^k keV 4	O		
12807.8 [‡] 5	2 ⁺	1.8 keV 6	N R W		T=0 J ^π : L=2 in (p,p'); populated in (α,γ): resonance – implies natural parity. T _{1/2} or Γ: Unweighted average of 2.3 keV 3 (α,γ) and 1.2 keV 1 (p,γ).
12818.1 [‡] 2	1 ⁺ ^{de}	2.3 keV 4	O R		T=0&1
12846.9 [‡] 5	(3 ⁻ ,4 ⁺)	0.2 keV 1	L R W		T=0 J ^π : L=3 or 4 in (p,p').
12852.3 [‡] 5		0.3 keV 1	N R		T=0
12854 1	(1 ⁺ ,2 ⁺ ,3 ⁺)	0.4 keV 1	R		J ^π : γ to 0 ⁺ and 3 ⁺ . Others: (1 ⁺ ,2,3 ⁻) in 1972Me09 ; (0 ⁻) in 1987Va24 probably erroneous – both in (p,γ),(p,p'),(p,x).
12861 3	2 ⁺ ,3 ⁻	<1 ^o keV	N W		T=0 E(level): From (p,p'),(pol p,p'). J ^π : γ's to 1 ⁻ and 4 ⁺ .
12895.1 [‡] 5	1 ⁺ ^{de}	0.3 keV 2	R W		T=0
12921.6 [‡] 5	(2 ⁺ ,3 ⁻ ,4 ⁺)	6.5 keV 5	N R W		T=0&1 J ^π : γ's to 2 ⁺ and 4 ⁺ ; populated in (α,γ): resonance – implies natural parity. T _{1/2} or Γ: Weighted average of 6.7 keV 6 (α,γ) and 6.3 keV 5 (p,γ).
12955.5 [‡] 1	1 ⁺	1.9 keV 1	L R W		T=1 J ^π : 1 from γγ(θ) measurements in ²³ Na(p,γ) (1969Ba47); γ's to 0 ⁺ and 2 ⁺ . 1 ⁺ in 1987Va24 – ²³ Na(p,x).
12963.9 [‡] 5	2 ⁻ ^e	3.5 keV 2	R W		T=0
12967.9 5		<1.5 keV	R		
12975 3	4 ⁺	3.3 ^o keV 3	C NO W		T=0 XREF: O(12983). E(level): Weighted average of 12973 3 (p,p'), 12977 4 (α,γ), and 12983 10 (α,α). J ^π : L=4 in (p,p').
12997.9 [‡] 5		0.3 keV 2	O QR U W		XREF: O(13005?).
13029.8 [‡] 1	2 ⁺ ,3 ⁻ ^e	0.7 keV 1	R W		T=1 γ's to 1 ⁻ and 4 ⁺ . 2 ⁺ in (p,γ),(p,p'),(p,x).
13048 2	0 ⁺	3.0 keV 7	L NO R W		T=1 E(level): Weighted average of 13047 4 (α,γ), 13049 2 (p,γ), and 13047 3 (p,p'). J ^π : D γ to 1 ⁺ , based on γγ(θ) in (α,γ); populated in (α,γ), (α,α') resonances – implies natural parity. T _{1/2} or Γ: Unweighted average of 2.3 keV 4 (α,γ) and 3.7 keV 5 (p,γ).
13050.0 [‡] 1	4 ⁺ ^d	0.09 keV 3	N R W		T=0&1 J ^π : L=4 in (p,p'); populated in (α,γ) resonance – implies natural parity.
13057 3	5 ⁻ ^f	<1 ^o keV	L N W		T=0 XREF: L(13070). E(level): Weighted average of 13070 20 (¹⁶ O,α), 13061 4 (α,γ), and 13055 3 (p,p').

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF				Comments
13088.8 [±] 5	2 ⁺	9 keV 3	N	R	W	T=0&1 J ^π : L=2,3 in (p,p'), γ to 4 ⁺ and 0 ⁺ . T _{1/2} or Γ: Unweighted average of 11.9 keV 6 (α,γ), and 6.4 keV 7 (p,γ).	
13095 2	(2 ⁺) ^a	14 ^k keV 3		O			
13133 3	0 ⁺ ⁱ	7 keV 1	J	N	R	Z	
						T=0 E(level): Weighted average of 13136 4 (α,γ) and 13132 3 (p,γ). T _{1/2} or Γ: Weighted average of 9 keV 2 (α,γ) and 6 keV 1 (p,γ).	
13138 3		5.4 ^o keV 5		N	R	W	
						T=0 XREF: N(13141). E(level): Weighted average of 13141 4 (α,γ) and 13137 3 (p,p').	
13146		3.2 keV 5			R		
13160.5 [±] 7		1.7 keV 7			R	W	
13178 3						W z	
13184.6 [±] 8		5.6 ^o keV 4		N	R	W z	
13196 2	0 ⁺ ⁱ	2.7 ^o keV 4	I	NO	R	W z	
						T=0 E(level): Weighted average of 13202 4 (α,γ), 13194 2 (α,α), and 13198 3 (p,p'). J ^π : From α ₀ (θ) in ²³ Na(p,X), X=α ₀ . T _{1/2} or Γ: Others: 12 keV 3 (α,α),(α,α'); 3 keV 1 (p,γ).	
13206 2	(4 ⁺) ^a	14 ^k keV 3		O			
13212.8		2.3 ⁿ fs 12	KL				
13260 4	1 ⁻ ^e	36 ^o keV 3		N	R	V	
						T=0 E(level): From (α,γ).	
13268.7 7	(1) ⁺ ^e	≈8 keV			R		
13275.5 10		≈2 keV			R	T=0	
13335 3	1 ⁻ ^e	33 ^o keV 3		N	R	T=0 E(level): Weighted average of 13338 4 from (α,γ), 13334 3 from (p,γ).	
13345.7 [±] 6	3 ⁻	0.6 keV 2		O	R	W	
						T=0&1 J ^π : L=3 in (p,p'). T _{1/2} or Γ: Other: 42 keV 3 (α,α),(α,α').	
13352					R		
13355.0 8	2 ⁻ ^e	15.2 keV 2			R		
13366.9 [±] 8	(2)	1.6 keV 7			R	U	
						T=1 XREF: U(13371). J ^π : γ to 0 ⁺ and (4 ⁻ ,5 ⁺).	
13370 10	0 ⁺ ⁱ					Z	
13390 15	[7 ⁻] ^h		J				
13413 4		2.8 ^o keV 3		No			
13419.3 8		3.2 keV 7		no	R		
						T=0 T _{1/2} or Γ: From (α,γ) for doublet.	
13424.7 [±] 12		3.2 keV 7		no	R		
						T=0 T _{1/2} or Γ: From (α,γ) for doublet.	
13437 4	3 ⁻	15.0 ^o keV 25		No		W	
						T=0 E(level): Weighted average of 13436 4 (α,γ) and 13440 7 (p,p'). J ^π : L(p,p')=3; populated in (α,γ); resonance – implies natural parity.	
13446.8 [±] 8	(1,2)	<0.4 keV		No	R	T=0	

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF		Comments
13450 [#] 20	6 ⁺ ^f	<15 ⁿ keV	J	L	J ^π : γ to 0 ⁺ and 1 ⁻ and 2 ⁺ .
13452.4 8	2 ⁺ , (1 ⁺) ^e	3.2 keV 7		R	T=0
13474.9 [‡] 8	2 ⁺ , 3, 4 ⁺	<1 keV		R	J ^π : γ's to 2 ⁺ and 4 ⁺ .
13482.9 [‡] 8		1.2 ^o keV 3	N	R	T=0
13542.3 8		6.9 keV 10		R	T=0
13585 [‡]	(1) ^{-e}	21 keV 2	n	R	T=0
13587.1 [‡] 10	1 ^{-a}	8.0 keV 10	n0	R	T _{1/2} or Γ: From (α, γ).
					T=0
					J ^π : Also from α ₀ (θ) in ²³ Na(p, X), X=α ₀ T
					Other: and 33 keV 5 (α, α) is comparable
					with 21 keV 2 of 13585 level, however, the
					level energy 13589 2 matches with this level.
13632.6 11		2.1 keV 12		R	T=0
13677.4 [‡] 9		6.5 ^k keV 17	N	R	T=0
					T _{1/2} or Γ: Unweighted average of 4.8 keV 8
					(α, γ) and 8.2 keV 5 (p, γ).
13686 [‡] 1	2 ^{-e}	23 keV 3	C	O R	
13708	(3 ⁻) ^b	≈130 ^k keV		O	
13722 4	2 ⁺	4.3 ^o keV 3	N	R	T=0
					E(level): From (α, γ).
					J ^π : From α ₀ (θ) in ²³ Na(p, X), X=α ₀ .
13738 1	(2 ⁺) ^a	13 ^k keV 3		O	
13771 3	5 ^{-e}	5.5 keV 23	N	R	T=0
					E(level): Weighted average of 13768 4 (α, γ)
					and 13772 3 (p, γ).
					J ^π : From L(p, α ₀)=5 (1987Va24);
					T _{1/2} or Γ: Unweighted average of 3.2 keV 4
					(α, γ) and 7.8 keV 10 (p, γ).
13788 10	(4 ⁺) ^b	≈21 ^k keV		O	E(level): Weighted average of 13786 10 from
					(α, α), and 13790 10 from ²⁴ Mg(α, α').
					Uncertainty is the input value.
13800 3	0 ⁺ ⁱ	4.5 ^o keV 7	N	R	Z T=0
					XREF: Z(13790).
					T _{1/2} or Γ: Weighted average of 4.4 keV 4
					(α, γ) and 8 keV 2 (p, γ).
13813 3	1 ^{-e}	24 keV 4		R	
13819 2	2 ^{-e}	39 keV 9		R	T=0
13841 3		2.5 keV 5	1	R	
13850 4		<1 ^o keV	1 N		T=0
13882 [‡] 2	1 ⁺ ^e	2.0 keV 2		O R	T=0
					XREF: O(13868).
13886 [‡] 3	2 ⁺ ^e	38 keV 8		O R	T=0
					XREF: O(13890).
					Γ: Weighted average of 32 keV 8 (α, α) and
					48 keV 10 (p, γ).
13893 [‡] 3	0 ⁺ ⁱ	13 keV 2	N	R	Z T=0
					XREF: N(13885)Z(13890).
					Γ: weighted average of 12.0 keV 18 (α, γ) and
					15 keV 3 (p, γ).
13910 1	4 ⁺ ^a	18 ^k keV 3		O	
13933 2	(1, 2, 3) ⁺ ^e	3.0 keV 6		R	T=0
13948 3	1 ⁺ ^e	4.0 keV 8		R	T=0

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF			Comments
13984 3	(1,2,3) ^{+e}	4.9 keV 5		R		T=0
14019 4	3 ^{-e}		O	R	V	T=0 XREF: V(13.96E3). E(level): Weighted average of 14007 10 (α,α) and 14020 3 (p,γ).
14026 [‡] 3	2 ^{+e}	5.1 keV 8	N	R		T=0 T _{1/2} or Γ: Weighted average of 6.2 keV 7 (α,γ) and 4.5 keV 5 (p,γ).
14037 2	(1 ⁻) ^a	21 ^k keV 4	O			
14060 10		<4 ^k keV	O			
14079 4		24 ^o keV 5	NO			E(level): Unweighted average of 14080 4 (α,γ) and 14077 (α,α). Uncertainty from (α,γ).
14081 3	1 ^{+e}	6.0 keV 6	NO	R		T=0 XREF: O(14091). E(level): Weighted average of 14084 4 (α,γ) and 14080 3 (p,γ).
14101 4		1.4 ^o keV 4	j	NO		T=0 XREF: O(14097). E(level): From (α,γ).
14150 4	8 ^{+f}	1.8 ^o keV 4	j	L	N	T=0 E(level): From (α,γ).
14152 4		6.2 ^o keV 7	N		W	T=0 E(level): From (α,γ).
14157 4			N			T=0
14165 1	(4 ⁺) ^a	11.1 ^k keV 19	O			
14245 4		11.3 ^o keV 14	N			T=0
14264 1	(4 ⁺) ^a	16 ^k keV 2	O			
14329 4	4 ^{+f}	<1 ^o keV	L	N		T=0 E(level): From (α,γ).
14355 12	(3 ⁻) ^a	112 ^k keV 29	O			
14397 2	4 ^{+af}	12 ^k keV 3	L	O		T=0 XREF: L(14410).
14461 [@] 10		46 ^k keV	OP			
14500					W	
14568 10	(3 ⁻ ,5 ⁻) ^a	<13 ^k keV	L	O		XREF: L(14560).
14582 10		61 ^k keV	O			
14648 [@] 6		11 ^k keV 9	L	O		J ^π : (4 ⁺) in (¹⁶ O,α),(¹⁶ O,αγ). 6 ⁺ in ²⁰ Ne(α,α),(α,α').
14696 [@] 1	(5 ⁻) ^{&}	9 ^k keV 1	OP			J ^π : L=3 in (α,α),(α,α').
14745 [@] 10	(4 ⁺) ^b	13 ^k keV	L	O		XREF: L(14740).
≈14793			I			
14928 [@] 10	(0 ⁺ ,1 ⁻) ^b	≈10 ^k keV	L	O		XREF: L(14920).
14995 10	(4 ⁺ ,5 ⁻) ^b	≈20 ^k keV	O			
15045 35	(6 ⁻)				UVW	T=1 XREF: V(15.1E3)W(15137). E(level),J ^π : From (e,e') 1977Za02. Spin parity assignment based on form factor calculations.
≈15093			I			
15117 [@] 10	(4 ⁺) ^b	15 ^k keV	O		w	
15141 [@] 10	^h	15 ^k keV	J	L	O	T=0 XREF: L(15150).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF		Comments
					J ^π : 4 ⁺ in (α,α),(α,α'), assigned in 1991Ab05 , based on excitation function trend (visual); 6 ⁻ in $^{24}\text{Mg}(\text{p,p}')$ probably for a doublet at 15137 22; 7 ⁻ in ($^{16}\text{O},\alpha$),($^{16}\text{O},\alpha\gamma$) 15150 20; 9 ⁺ in ($^{14}\text{N},\text{d}$) at 15150 15. Appears to be more than one level.
15179 3	(4 ⁺) ^a	57 ^k keV 7	0		
15214 @ 1	(5 ⁻) ^a	36 ^k keV 3	L Op	W	XREF: L(15210)W(15200).
15233 @ 3	(4 ⁺) ^a	27 ^k keV 6	Op		
15266 10	(1 ⁻ ,3 ⁻) ^a	≈8 ^k keV	0		
15330 30	0 ⁺ ⁱ			Z	
15354 3	(4 ⁺) ^a	21 ^k keV 4	0		
15385 @ 3	(4 ⁺) ^a	31 ^k keV 7	0	VW	XREF: W(15370).
15437.5 [±] 6	0 ⁺	0.7 keV 3	QR	W	T=2 J ^π : In 1978Mc07 , (p,p ₀) and (p,α ₀) via l=2 in $^{23}\text{Na}(\text{p,p})$ and l=0 in $^{23}\text{Na}(\text{p},\alpha)$. T _{1/2} or Γ: unweighted average of 1.02 keV 34 from (p,γ) and 0.345 keV 50 from (p,p').
15443 10	(2 ⁺) ^b	13 ^k keV	0		
15484 @ 10	(2 ⁺) ^b	15 ^k keV	I 0		XREF: I(15473).
15533 @ 1	(6 ⁺) ^a	18 ^k keV 2	L OP	W	XREF: L(15540)W(15540). T _{1/2} or Γ: Other: < 15 keV (($^{16}\text{O},\alpha$) – 1984Le21).
15570 15			J		
15611 3	(2 ⁺) ^a	31 ^k keV 8	0		
15640 20	(6 ⁺) ^f		L		
15691 10	(0 ⁺) ^b	≤15 ^k keV	0		
15716 10	(4 ⁺) ^b		0		
15750 15	[7 ⁻ ,8 ⁺] ^h		J		
15790 30	0 ⁺ ⁱ			Z	
15793 10	(4 ⁺) ^b	13 ^k keV	L 0		XREF: L(15800). J ^π : L=2 in (α,α),(α,α').
15828 10		87 ^k keV	0		
15853 10		<13 ^k keV	0		
15886 10	(4 ⁺) ^b	42 ^k keV	0		
15978	(1 ⁻ ,3 ⁻) ^b	≈35 ^k keV	0		J ^π : L=1 in (α,α),(α,α').
16070 [#] 20	6 ⁺ ^f		L P		T=0
16136 10	(3 ⁻) ^b	19 keV 6	L 0		XREF: L(16.15E3). T _{1/2} or Γ: From $^{16}\text{O},\alpha$ 1984Le21 . Other: 29 keV (α,α),(α,α').
16170 10	(4 ⁺ ,6 ⁺) ^b	<8 ^k keV	0		J ^π : L=4 in (α,α),(α,α').
16203 @ 10	(6 ⁺) ^a	8 ^k keV	L OP		
16278 10	(4 ⁺) ^a	30 ^k keV	0		
16309 10		10 ^k keV	L 0		T=0 E(level): From (α,α),(α,α').
16333	(4 ⁺ ,6 ⁺) ^b		0		J ^π : L=4 in (α,α),(α,α').
16343 10	(4 ⁺) ^b	13 ^k keV	0		
16395 4	(2 ⁺) ^a	37 ^k keV 10	0		

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Adopted Levels, Gammas (continued)

^{24}Mg Levels (continued)				
E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF	Comments
16440 10	(7 ⁻) ^b	10 ^k keV	1 0	
16477 @ 1	(6 ⁺) ^b	8 ^k keV 2	1 0P	J ^π : L=4 in (α,α),(α,α').
16529 @ 2	(6 ⁺) ^b	31 ^k keV	0p	J ^π : L=4 in (α,α),(α,α').
16564 10	8 ⁺ ^{fh}		J L 0p	T=0 E(level): From (α,α),(α,α'). J ^π : Other: [10 ⁺] in (¹⁴ N,d).
16602 10	6 ⁺ ^f	30 ^k keV	L 0	T=0 XREF: L(16590). E(level): Weighted average of 16605 10 (α,α),(α,α') and 16590 20 (¹⁶ O,α),(¹⁶ O,αγ). Uncertainty is the lowest input value.
16611 10	(5 ⁻) ^b	≤8 ^k keV	0	
16674 10	6 ⁺ ^f	30 ^k keV	L 0	E(level): From (α,α),(α,α').
16782 10	(4 ⁺ ,6 ⁺) ^b	30 ^k keV	L 0	XREF: L(16.80E3). T _{1/2} or Γ: < 15 keV (¹⁶ O,α) (1984Le21). E(level): From (α,α),(α,α').
16844 10	(6 ⁺) ^b	22 ^k keV	L 0	
16874 @ 6	(5 ⁻) ^a	73 ^k keV 17	J 0P	
16904 3		<7 ⁿ fs	L	T=0
16929 @ 3	(6 ⁺) ^a	44 ^k keV 6	L 0	
17017 @ 3	(7 ⁻) ^a	15 ^k keV 10	L 0P	XREF: P(16.98E3).
17088 @ 3	(6 ⁺) ^a	44 ^k keV 6	0P	XREF: P(17.06E3).
17140 2	(5 ⁻) ^a	26 ^k keV 6	L 0	XREF: L(17.12E3).
17190 15	8 ⁺ ^f		J L	
17227 2	(4 ⁺) ^a	17 ^k keV 3	0	
17.29×10 ³ # 4		≈46 ^k keV	L 0	
17407 10	(6 ⁺) ^b	20 ^k keV	0	
17444 10	(6 ⁺) ^b	20 ^k keV	L 0	E(level): From (α,α),(α,α'). J ^π : Other: (6 ⁺ ,7 ⁻) in (¹⁶ O,α),(¹⁶ O,αγ).
17465 10			0	
17520 15			J L	E(level): From (¹⁴ N,d).
17623 3	(5 ⁻) ^a	23 ^k keV 8	L 0	XREF: L(17.59E3).
17740 10	(4 ⁺) ^b	≈25 ^k keV	0	
17748 10		≈20 ^k keV	0	
17782 10		≈42 ^k keV	0	
17840 10		≈42 ^k keV	0	
17.90×10 ³	(8 ⁺)		L	
17948 3	(4 ⁺) ^b	56 ^k keV 8	0	
17990 10	(6 ⁺) ^b	≈17 ^k keV	0	
18038 3	(5 ⁻) ^a	50 ^k keV 8	0	
18075 10			0	
18097 10		20 ^k keV	0	
18157 10	(5 ⁻) ^b	20 ^k keV	0	
18.16×10 ³ #	8 ⁺ ^f		L	
18169 10	(7 ⁻) ^b	<8 ^k keV	0	E(level): From (α,α),(α,α').
18203 10		≈25 ^k keV	0	
18273 10	(7 ⁻) ^b	≈21 ^k keV	0	

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF	Comments
18332 10		≈17 ^k keV	L 0	XREF: Others: AC E(level): From (α,α),(α,α').
18423 10	(6 ⁺) ^b	≈17 ^k keV	0	
18465 10		≈13 ^k keV	0	
18740 15			J L	XREF: L(18.70E3). E(level): From (¹⁴ N,d).
18.97×10 ³	(8 ⁺) ^f		L	
19.0×10 ³ 3			L	
19110 15	(10 ⁺)		J L	XREF: L(19.07E3). E(level): From (¹⁴ N,d). Other: (19.2 I) × 10 ³ (2001Wi18 – (¹⁶ O,α),(¹⁶ O,αγ)). From measured Eα, 2001Wi18 report the excited level energy of 19139 keV 5 and note that for particle channel an uncertainty of 100 keV was expected with a possibility of doublet. J ^π : From 2012Di04, based on αγγ angular correlations in (¹⁶ O,α),(¹⁶ O,αγ). γ-α branching ratio 0.0007 3 (2001Wi18).
19.2×10 ³ 3			L	
19.21×10 ³ 4	(9 ⁻) ^f		L	
19400 15			J	
19.69×10 ³ 3			L	
19890 15			J L	XREF: L(19.92E3).
19990 15	(7 ⁻) ^f	59 ⁿ keV 5	J L	XREF: L(19.98E3).
20.03×10 ³ 3		28 ⁿ keV 5	L	
20.09×10 ³	(9 ⁻) ^f	35 ⁿ keV 13	L	
20210 15	[10 ⁺] ^h	35 ⁿ keV 13	J L	XREF: L(20.17E3).
20260 15	(8 ⁺) ^f	64 ⁿ keV 8	J L	XREF: L(20.24E3).
20.28×10 ³ # 2	(2 ⁺) ^g		LM	
20.42×10 ³	(9 ⁻) ^f		L	
20.46×10 ³ 1		<15 ⁿ keV	L	
20.53×10 ³ 3	(6 ⁺) ^f	43 ⁿ keV 13	L	
20.68×10 ³ # 5			LM	
20.83×10 ³ 3		<15 ⁿ keV	L	
20.91×10 ³ 3		<15 ⁿ keV	L	
20.94×10 ³ 3			L	
21.20×10 ³ # 2	(4 ⁺) ^g		LM	
21.29×10 ³ 3		<15 ⁿ keV	L	
21.39×10 ³ 2	(6 ⁺) ^f		L	
21.46×10 ³ 2			L	
21.66×10 ³ # 5			Lm	
21.80×10 ³ # 1		<15 ⁿ keV	Lm	
22.3×10 ³ 2	(4 ⁺) ^g		M	
22.4×10 ³ 2	(8) ^g		M	
22.79×10 ³ 2			L	
22.87×10 ³ 1		<15 ⁿ keV	L	
22.93×10 ³ 3		73 ⁿ keV 13	L	
23.00×10 ³ 2			L	
23.10×10 ³ 3			L	

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Adopted Levels, Gammas (continued)

^{24}Mg Levels (continued)				
E(level) [†]	J ^π	T _{1/2} or Γ ^j	XREF	Comments
23.19×10 ³ 3		<15 ⁿ keV	L	
23.26×10 ³ 1		<15 ⁿ keV	L	
23.77×10 ³ # 1	(6 ⁺ , (8 ⁺)) ^g		LM	
24.37×10 ³ 3	(9) ^g	27 ⁿ keV 3	LM	
24.53×10 ³ # 5			L	
24.60×10 ³ # 3	(8 ⁺) ^g		LM	
24.98×10 ³ # 14	(9) ^g		LM	
25.18×10 ³ 3	(6 ⁺) ^g	163 ⁿ keV 6	LM	XREF: M(25.1E3).
25.40×10 ³ 3			L	
25.8×10 ³ 2	(9,10) ^g		LM	
26.2×10 ³ 2	(10) ^g		LM	
26.28×10 ³ 2	(12 ⁺) ^f		L	
26.45×10 ³ 3	(8 ⁺) ^g	115 ⁿ keV 20	LM	XREF: M(26.4E3).
26.67×10 ³ 3	(12 ⁺) ^f		L	
26.8×10 ³ 2	(10) ^g		M	
27.4×10 ³ # 1			LM	
28.0×10 ³ # 1	(10) ^g		LM	XREF: M(27.8E3).
28.5×10 ³ # 1			L	
29.3×10 ³ # 1	(10,12) ^g		LM	XREF: M(29.1E3).
29.7×10 ³ # 1			L	
30.1×10 ³ # 1	(12) ^g		LM	XREF: M(30.3E3).
31.2×10 ³ # 1	(12) ^g		LM	
31.8×10 ³ # 1			L	
32.6×10 ³ # 1	(10) ^g		LM	XREF: M(32.7E3).
33.1×10 ³ # 1			L	
37.5×10 ³			M	
43.0×10 ³			M	
46.4×10 ³	(14 ⁺ , 16 ⁺) ^g		M	

[†] From a least squares fit to the measured γ -ray energies for levels with depopulating γ , assuming $\Delta E=1$ keV where not given, unless where otherwise noted. Calculated E_γ were not considered in the least squares fit.

[‡] From (p, γ).

From ($^{16}\text{O},\alpha$), ($^{16}\text{O},\alpha\gamma$).

@ From (α,α), (α,α'):Resonance.

& From (α,α), (α,α'), based on measured $\sigma(\theta)$ and Legendre polynomial fits (1954Go70).

^a From (α,α), (α,α'), based on fit of measured $\sigma(\theta)$ data (1991Ab05 or 1992Da10).

^b From (α,α), (α,α'), assigned in 1991Ab05, based on excitation function trend (visual).

^c From $\alpha\gamma$ angular correlations (1983Sc17, 1965Sm03) (α,γ).

^d From 1956Ba96 – $^{23}\text{Na}(\text{p},\text{p})$, based on either of the elastic scattering (p_0) or capture $\gamma(\theta)$ measurements.

^e From 1987Va24 – $^{23}\text{Na}(\text{p},\text{p})$, based on the elastic and inelastic scattering through allowed channels for resonances in ^{24}Mg or capture $\gamma(\theta)$ measurements.

^f From 2012Di04 – ($^{16}\text{O},\alpha$), ($^{16}\text{O},\alpha\gamma$), based on $\alpha\gamma\gamma$ angular correlations, the γ cascade is $2614\gamma - 1633\gamma$ in ^{20}Ne , or based on $\alpha\alpha$ angular correlations.

^g From $^{12}\text{C}(^{24}\text{Mg}, ^{212}\text{C}), (^{20}\text{Ne}, ^{212}\text{C})$ based on measured and projected angular correlation measurement data of the decaying state in 2001Sh08 or 2001Fr03. The periodicity of the ridges is described by a Legendre polynomial of order of the spin of the

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Adopted Levels, Gammas (continued) ^{24}Mg Levels (continued)

decaying state. Parity $(-1)^J$ for the decaying state of natural parity, if the recoiling particle has spin-zero.

^h Used for Hauser-feshbach calculations to fit the measured differential cross section data in ($^{14}\text{N},d$).

ⁱ From [2021Ad09](#) ($^{24}\text{Mg}(\alpha,\alpha')$) based on comparison of differential cross sections to DWBA calculations.

^j From $(p,\gamma), (p,p'), (p,X)$ mainly by DSA method, except where otherwise noted.

^k From $(\alpha,\alpha), (\alpha,\alpha')$, from resonance fits.

^l From $(p,p'), (\text{pol } p,p'), (\text{pol } p,p'\gamma)$, by DSA method.

^m From (e,e') , from Γ_0 and adopted γ -ray branching.

ⁿ From $(^{16}\text{O},\alpha), (^{16}\text{O},\alpha\gamma)$, by DSA method.

^o From (α,γ) , by DSA method.

^p Band(A): Prolate $K^\pi=0^+$ band.

^q Band(B): Prolate $K^\pi=2^+$ band.

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$									
$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	Mult. ^d	δ	α^e	Comments
1368.667	2 ⁺	1368.625 5	100	0	0 ⁺	E2		5.62×10^{-5} 8	B(E2)(W.u.)=21.07 +48-46 $\alpha=5.62 \times 10^{-5}$ 8; $\alpha(\text{K})=9.29 \times 10^{-6}$ 13; $\alpha(\text{L})=5.97 \times 10^{-7}$ 9; $\alpha(\text{M})=2.21 \times 10^{-8}$ 3 $\alpha(\text{IPF})=4.63 \times 10^{-5}$ 7 E_γ : From ^{24}Na β^- decay (14.956 h).
4122.853	4 ⁺	2754.016 11	100	1368.667	2 ⁺	E2		6.78×10^{-4}	B(E2)(W.u.)=35.7 +34-29 $\alpha(\text{K})=2.54 \times 10^{-6}$ 4; $\alpha(\text{L})=1.632 \times 10^{-7}$ 23; $\alpha(\text{M})=6.05 \times 10^{-9}$ 9 $\alpha(\text{IPF})=0.000675$ 10 E_γ : Weighted average of 2754.007 11 from ^{24}Na β^- decay (14.956 h), 2754.030 14 from ^{24}Al ε decay (2.053 s). Other: 2751.8 15 ($^3\text{He}, \text{d}\gamma$).
4238.35	2 ⁺	2869.50 6	27.8 8	1368.667	2 ⁺	M1+E2	-23 9	7.30×10^{-4}	B(M1)(W.u.)= 8×10^{-6} +15-4; B(E2)(W.u.)=3.36 27 $\alpha(\text{K})=2.38 \times 10^{-6}$ 4; $\alpha(\text{L})=1.528 \times 10^{-7}$ 22; $\alpha(\text{M})=5.67 \times 10^{-9}$ 8 $\alpha(\text{IPF})=0.000727$ 11 E_γ : From ^{24}Al ε decay (2.053 s). Others: 2871.0 10 (^{24}Na β^- decay (14.956 h)) and 2869.3 4 (^{24}Al ε decay (130.7 ms)). I_γ : weighted average of 30 5 from ^{24}Na β^- decay (14.956 h), 30.5 11 from ^{24}Al ε decay (2.053 s), 3E1 3 from ^{24}Al ε decay (130.7 ms), 33 3 from ^{25}Si $\beta^+ \text{p}$ decay, 24 6 from ($^{12}\text{C}, \gamma$), 30 3 from (α, γ), and 26.7 6 from (p, γ). Mult., δ : From 1960Ba19 (pol p, p' γ) and RUL – see (p, p'), (pol p, p').
		4237.96 [†] 6	100.0 6	0	0 ⁺	[E2]		1.25×10^{-3}	B(E2)(W.u.)=1.72 +14-12 $\alpha(\text{K})=1.330 \times 10^{-6}$ 19; $\alpha(\text{L})=8.53 \times 10^{-8}$ 12; $\alpha(\text{M})=3.16 \times 10^{-9}$ 5 $\alpha(\text{IPF})=0.001253$ 18 E_γ : From ^{24}Al ε decay (2.053 s). I_γ : From (p, γ).
5235.16	3 ⁺	996.83 [†] 10 3866.15 10	2.63 [†] 14 100.0 [†] 5	4238.35 1368.667	2 ⁺ 2 ⁺	D+Q E2(+M1)	-17 4	1.12×10^{-3}	Mult., δ : +5.1 +12-8 and +0.47 4 (1973Le15 – (p, γ)). B(M1)(W.u.)= 1.7×10^{-5} +12-6; B(E2)(W.u.)=2.08 16 $\alpha(\text{K})=1.516 \times 10^{-6}$ 22; $\alpha(\text{L})=9.73 \times 10^{-8}$ 14; $\alpha(\text{M})=3.61 \times 10^{-9}$ 5 $\alpha(\text{IPF})=0.001122$ 16 E_γ : Weighted average of 3866.14 10 from ^{24}Al ε decay (2.053 s), and 3867.2 14 from ($^3\text{He}, \text{d}\gamma$). Mult., δ : From (pol p, p' γ) in 1973Gl01 and RUL. I_γ : From ($^{28}\text{Si}, \text{X}\gamma$). B(M3)(W.u.)= 1.16×10^4 33 exceeds RUL=10.
		5235 ^a	10 3	0	0 ⁺	[M3]			
6010.34	4 ⁺	775.4 [†] 2 1771.92 [†] 7	1.6 [†] 2 11.4 4	5235.16 4238.35	3 ⁺ 2 ⁺			2.11×10^{-4}	B(E2)(W.u.)=14.9 12 $\alpha(\text{K})=5.50 \times 10^{-6}$ 8; $\alpha(\text{L})=3.53 \times 10^{-7}$ 5; $\alpha(\text{M})=1.310 \times 10^{-8}$ 19

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)

<u>E_i(level)</u>	<u>J_i^{π}</u>	<u>E_{γ}</u>	<u>I_{γ}^{<i>b</i>}</u>	<u>E_f</u>	<u>J_f^{π}</u>	<u>Mult.^{<i>d</i>}</u>	<u>α^{<i>e</i>}</u>	<u>Comments</u>
								$\alpha(\text{IPF})=0.000205$ 3 I _{γ} : weighted average of 11.70 29 from ²⁴ Al ε decay (2.053 s), 7.5 32 from (α,γ), and 10.5 5 from (p, γ). Other: 15 4 (²⁸ Si,X γ).
6010.34	4 ⁺	1887.52 [†] 20 4641.19 [†] 9	1.64 [†] 18 100.0 5	4122.853 4 ⁺ 1368.667 2 ⁺		[E2]	1.38×10 ⁻³	B(E2)(W.u.)=1.06 8 $\alpha(\text{K})=1.172\times 10^{-6}$ 17; $\alpha(\text{L})=7.52\times 10^{-8}$ 11; $\alpha(\text{M})=2.79\times 10^{-9}$ 4 $\alpha(\text{IPF})=0.001381$ 20 E _{γ} : Other: 4636.4 16 (³ He,d γ). I _{γ} : Weighted average of 100.0 32 from (α,γ) and 100.0 5 from (p, γ). Other: 100 7 from ²⁴ Al ε decay (2.053 s). Branching to g.s. could, in principle, be deduced from B(E4) ((e,e'), 1978Za07) and level lifetime.
6432.2	0 ⁺	2194 ^a	21.0 9	4238.35 2 ⁺		[E2]	4.13×10 ⁻⁴	B(E2)(W.u.)=6.8 +15-11 $\alpha(\text{K})=3.72\times 10^{-6}$ 6; $\alpha(\text{L})=2.39\times 10^{-7}$ 4; $\alpha(\text{M})=8.86\times 10^{-9}$ 13 $\alpha(\text{IPF})=0.000409$ 6 I _{γ} : Weighted average of 25 13 from (α,γ), 21.1 9 from (p, γ), and 20 3 ²⁴ Mg(pol p,p' γ).
		5063.2 ^{‡‡}	100.0 9	1368.667 2 ⁺		[E2]	1.51×10 ⁻³	B(E2)(W.u.)=0.50 +10-7 $\alpha(\text{K})=1.040\times 10^{-6}$ 15; $\alpha(\text{L})=6.68\times 10^{-8}$ 10; $\alpha(\text{M})=2.48\times 10^{-9}$ 4 $\alpha(\text{IPF})=0.001505$ 21
		6432		0 0 ⁺		E0	8.76×10 ⁻³	E _{γ} : From level energy difference. Mult., α : From pair-conversion electron intensity measurements (2020Do10 – (p,p' γ)). α – estimated by the evaluators using $q_{\pi}^2(\text{E0/E2})=5.8$ 8 (2020Do10) and $\alpha(5063\gamma - \text{E2})=0.00151$. $q_{\pi}^2(\text{E0/E2})=5.8$ 8 – the ratio of the pair-conversion electron intensity (2020Do10 – (p,p' γ)). X(E0/E2)=27 4 – absolute transition rate B(E0)/B(E2) (2020Do10 – (p,p' γ)). $\rho^2(\text{E0})=0.380$ 70 – E0 transition strength (2020Do10 – (p,p' γ)).
7348.60	2 ⁺	5979.5 [†] 8 7347.2 [†] 9	61 3 100 3	1368.667 2 ⁺ 0 0 ⁺		[E2]		B(E2)(W.u.)=0.61 +31-15
7555.3	1 ⁻	3316.7 ^a	49 4	4238.35 2 ⁺		[E1]	1.39×10 ⁻³	B(E1)(W.u.)=1.9×10 ⁻⁵ +5-4 $\alpha(\text{K})=1.369\times 10^{-6}$ 20; $\alpha(\text{L})=8.79\times 10^{-8}$ 13; $\alpha(\text{M})=3.26\times 10^{-9}$ 5 $\alpha(\text{IPF})=0.001393$ 20
		6185.8 ^a	64 4	1368.667 2 ⁺		[E1]		B(E1)(W.u.)=3.8×10 ⁻⁶ +10-7
		7554.0 [‡]	100 6	0 0 ⁺		[E1]		B(E1)(W.u.)=3.3×10 ⁻⁶ +9-6
7616.41	3 ⁻	2381.0 [†] 3 3378.3 [†] 8	7 [†] 2 8.0 [†] 13	5235.16 3 ⁺ 4238.35 2 ⁺		[E1]	1.42×10 ⁻³	B(E1)(W.u.)=2.6×10 ⁻⁶ +9-8 B(E1)(W.u.)=1.04×10 ⁻⁶ +25-21 $\alpha(\text{K})=1.339\times 10^{-6}$ 19; $\alpha(\text{L})=8.59\times 10^{-8}$ 12; $\alpha(\text{M})=3.18\times 10^{-9}$ 5 $\alpha(\text{IPF})=0.001420$ 20
		3493.3 ^a	7.2 14	4122.853 4 ⁺		[E1]	1.47×10 ⁻³	B(E1)(W.u.)=8.5×10 ⁻⁷ +22-19 $\alpha(\text{K})=1.285\times 10^{-6}$ 18; $\alpha(\text{L})=8.24\times 10^{-8}$ 12; $\alpha(\text{M})=3.06\times 10^{-9}$ 5

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)							
$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	Mult. ^d	α^e
$\alpha(\text{IPF})=0.001473$ 21 I_γ : weighted average of 7.4 19 from ^{24}Al ε decay (2.053 s), 9 4 from (α,γ), and 6.9 14 from (p, γ). $B(\text{E}1)(\text{W.u.})=2.06\times 10^{-6}$ +37-28 $B(\text{E}3)(\text{W.u.})=5.6$ +11-8 I_γ : Unweighted average of 41.5 28 from ^{24}Al ε decay (2.053 s), 41.4 86 from (α,γ), and 31.9 28 from (p, γ).							
7616.41	3 ⁻	6246.89 [†] 11 7615.2 [†] 9	100 3 38 3	1368.667 0	2 ⁺ 0 ⁺	[E1] [E3]	
7747.7	1 ⁺	3509.1 ^a 6378.1 ^a 7746.4 ^a	12.9 9 100 3 39 3	4238.35 1368.667 0	2 ⁺ 2 ⁺ 0 ⁺		
7812.4	(4 ⁻ ,5 ⁺)	1800 [#] 2577.4 [†] 8 3690 [#]	12 3 100 ^c 5 51 7	6010.34 5235.16 4122.853	4 ⁺ 3 ⁺ 4 ⁺		
8113.2	6 ⁺	3990.0 [‡]	100	4122.853	4 ⁺	[E2]	1.17×10 ⁻³
8358.1	3 ⁻	2347.7 ^a	22 4	6010.34	4 ⁺	[E1]	8.77×10 ⁻⁴
		3122.7 ^a	33 4	5235.16	3 ⁺	[E1]	
		6988.3 [‡]	100 7	1368.667	2 ⁺	[E1]	
		8356.5 ^a	8.6 10	0	0 ⁺	[E3]	
8438.4	1 ⁻	7068.6 ^a 8436.8 [‡]	25 13 100 13	1368.667 0	2 ⁺ 0 ⁺	[E1] (E1)	
8439.29	4 ⁺	822.0 [†] 6 1090.67 [†] 10 2428.97 [†] 15 3203.88 [†] 8 4200.54 [†] 13	0.05 [†] 2 0.32 [†] 2 1.79 [†] 4 7.21 16 9.5 5	7616.41 7348.60 6010.34 5235.16 4238.35	3 ⁻ 2 ⁺ 4 ⁺ 3 ⁺ 2 ⁺	[E1] [E2] [E2]	
$\alpha(\text{IPF})=0.001473$ 21 I_γ : weighted average of 7.4 19 from ^{24}Al ε decay (2.053 s), 9 4 from (α,γ), and 6.9 14 from (p, γ). $B(\text{E}1)(\text{W.u.})=2.06\times 10^{-6}$ +37-28 $B(\text{E}3)(\text{W.u.})=5.6$ +11-8 I_γ : Unweighted average of 41.5 28 from ^{24}Al ε decay (2.053 s), 41.4 86 from (α,γ), and 31.9 28 from (p, γ). E_γ : Other: 2580 ($^{16}\text{O},\alpha$), ($^{16}\text{O},\alpha\gamma$). I_γ : Weighted average of 59 9 from ($^{16}\text{O},\alpha$), 32 9 from (α,γ), and 55 5 from (p, γ). $B(\text{E}2)(\text{W.u.})=38$ +18-10 $\alpha(\text{K})=1.449\times 10^{-6}$ 21; $\alpha(\text{L})=9.30\times 10^{-8}$ 13; $\alpha(\text{M})=3.45\times 10^{-9}$ 5 $\alpha(\text{IPF})=0.001166$ 17 $B(\text{E}1)(\text{W.u.})=1.34\times 10^{-4}$ +30-27 $\alpha(\text{K})=2.14\times 10^{-6}$ 3; $\alpha(\text{L})=1.375\times 10^{-7}$ 20; $\alpha(\text{M})=5.10\times 10^{-9}$ 8 $\alpha(\text{IPF})=0.000875$ 13 I_γ : From (p, γ). Others: 13 11 (α,γ), 52 10 from ($^{12}\text{C},\gamma$). $B(\text{E}1)(\text{W.u.})=8.6\times 10^{-5}$ +16-13 I_γ : From (p, γ). Others: 35 11 (α,γ), 75 17 from ($^{12}\text{C},\gamma$). $B(\text{E}1)(\text{W.u.})=2.31\times 10^{-5}$ +35-28 I_γ : weighted average of 100 7 from ($^{12}\text{C},\gamma$), 100 11 from (α,γ), and 100 8 from (p, γ). $B(\text{E}3)(\text{W.u.})=10.4$ +20-17 I_γ : deduced from $B(\text{E}3)$ in (e,e') (1974Jo10) and adopted level half-life. $B(\text{E}1)(\text{W.u.})=5.1\times 10^{-5}$ +28-22 $B(\text{E}1)(\text{W.u.})=1.20\times 10^{-4}$ +37-24 Mult.: D from $\gamma(\theta)$ (1969Ca18) - ($\alpha,\alpha'\gamma$) and $\Delta\pi=\text{yes}$ from levels scheme. $B(\text{E}1)(\text{W.u.})=0.00015$ +13-7 $B(\text{E}2)(\text{W.u.})=59$ +43-19 $B(\text{E}2)(\text{W.u.})=59$ +43-19 upper bound exceeds RUL=100. I_γ : Weighted average of 7.13 16 from ^{24}Al ε decay (2.053 s) and 7.49 31 from (p, γ). $B(\text{E}2)(\text{W.u.})=2.1$ +15-6 $\alpha(\text{K})=1.347\times 10^{-6}$ 19; $\alpha(\text{L})=8.64\times 10^{-8}$ 12; $\alpha(\text{M})=3.20\times 10^{-9}$ 5							
							1.24×10 ⁻³

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	Mult. ^d	α^e	Comments
								$\alpha(\text{IPF})=0.001239$ 18 I_γ : Weighted average of 9.3 5 from ^{24}Al ε decay (2.053 s) and 9.7 5 from (p, γ). I_γ : Weighted average of 30.8 14 from ^{24}Al ε decay (2.053 s) and 36.7 16 from (p, γ). $B(\text{E}2)(\text{W.u.})=1.6$ +12-5 $B(\text{E}2)(\text{W.u.})=9.0$ +32-22 $\alpha(\text{K})=3.64\times 10^{-6}$ 5; $\alpha(\text{L})=2.34\times 10^{-7}$ 4; $\alpha(\text{M})=8.66\times 10^{-9}$ 13 $\alpha(\text{IPF})=0.000423$ 6 I_γ : weighted average of 26 7 from (α,γ) and 15.9 25 from (p, γ). $B(\text{E}1)(\text{W.u.})=6.0\times 10^{-5}$ +36-17 $\alpha(\text{K})=1.226\times 10^{-6}$ 18; $\alpha(\text{L})=7.87\times 10^{-8}$ 11; $\alpha(\text{M})=2.92\times 10^{-9}$ 4 $\alpha(\text{IPF})=0.001533$ 22 $B(\text{E}1)(\text{W.u.})=1.2\times 10^{-4}$ +7-3 $B(\text{E}1)(\text{W.u.})=0.00031$ +19-9 $B(\text{M}2)(\text{W.u.})=0.11$ +7-4 $B(\text{E}2)(\text{W.u.})=13$ +6-5 $\alpha(\text{K})=2.84\times 10^{-6}$ 4; $\alpha(\text{L})=1.83\times 10^{-7}$ 3; $\alpha(\text{M})=6.77\times 10^{-9}$ 10 $\alpha(\text{IPF})=0.000591$ 9 $B(\text{E}2)(\text{W.u.})=1.29$ +39-34 $\alpha(\text{K})=1.094\times 10^{-6}$ 16; $\alpha(\text{L})=7.02\times 10^{-8}$ 10; $\alpha(\text{M})=2.60\times 10^{-9}$ 4 $\alpha(\text{IPF})=0.001454$ 21 $B(\text{E}2)(\text{W.u.})=0.172$ +34-26 E_γ : From ($^{12}\text{C},\gamma$). I_γ : Weighted average of 18 6 from (α,γ), and 28.2 26 from (p, γ). Other: 60 10 from ($^{12}\text{C},\gamma$).
8439.29	4 ⁺	4316.00 [†] 12	33 3	4122.853	4 ⁺			
8654.9	2 ⁺	7069.50 [†] 12 2222.3 ^a	100.0 17 6.1 12	1368.667 6432.2	2 ⁺ 0 ⁺	[E2] [E2]	4.27×10 ⁻⁴	
8864.5	2 ⁻	4416.1 ^a 7285.0 ^a 3629.0 ^a	17 3 100.0 25 2.17 16	4238.35 1368.667 5235.16	2 ⁺ 2 ⁺ 3 ⁺	[E1]	1.53×10 ⁻³	
9003.5	2 ⁺	4625.7 ^a 7494.6 ^a 8862.7 ^a 1654.4 ^a 2570.9 ^a	8.9 3 100.0 3 1.03 16 12 4 14 6	4238.35 1368.667 0 7348.60 6432.2	2 ⁺ 2 ⁺ 0 ⁺ 2 ⁺ 0 ⁺	[E1] [E1] [M2] [E2]	5.94×10 ⁻⁴	
9146.2	1 ⁻	4880.1 ^a 9001.7 ^a 4907.3 ^a 7776.2 ^a 9144.3 ^a	35 10 100 12 53 4 60 4 100 6	4122.853 0 4238.35 1368.667 0	4 ⁺ 0 ⁺ 2 ⁺ 2 ⁺ 0 ⁺	[E2] [E2]	1.46×10 ⁻³	
9284.4	2 ⁺ ,4 ⁺	5161	27 4	4122.853	4 ⁺			
9299.8		7914.3 [‡] 1683.3 [‡]	100 3 100	1368.667 7616.41	2 ⁺ 3 ⁻			
9301.07	(4 ⁺)	1952.38 [†] 20 5060.7 [†] 8 5177.51 [†] 20 7930.87 [†] 15	7.3 [†] 5 2.8 [†] 10 76 [†] 8 100 [†] 8	7348.60 4238.35 4122.853 1368.667	2 ⁺ 2 ⁺ 4 ⁺ 2 ⁺			
9305.39	0 ⁺	7935.3 ^a	100	1368.667	2 ⁺			
9457.81	(3) ⁺	1710.0 ^a 2108.65 ^a 3447.21 ^a	2.1 9 1.5 5 2.1 3	7747.7 7348.60 6010.34	1 ⁺ 2 ⁺ 4 ⁺			

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	Mult. ^d	α^e	Comments
9457.81	(3) ⁺	4222.20 ^a	12.0 8	5235.16	3 ⁺			
		5218.81 ^a	5.6 6	4238.35	2 ⁺			
		5334.29 ^a	28.4 9	4122.853	4 ⁺			
		8087.66 ^a	100.0 17	1368.667	2 ⁺			
9516.18	4 ⁺	1076.86 [†] 4	85.8 [†] 17	8439.29	4 ⁺			
		1704.8 [†] 8	0.09 [†] 2	7812.4	(4 ⁻ , 5 ⁺)			
		1899.70 [†] 6	4.74 [†] 12	7616.41	3 ⁻	[E1]	5.75×10 ⁻⁴	B(E1)(W.u.)=0.00023 +15-7 $\alpha(K)=2.89\times10^{-6}$ 4; $\alpha(L)=1.85\times10^{-7}$ 3; $\alpha(M)=6.87\times10^{-9}$ 10 $\alpha(\text{IPF})=0.000572$ 8
		3505.61 [†] 9	11.5 [†] 4	6010.34	4 ⁺			
		4280.62 [†] 13	3.82 [†] 23	5235.16	3 ⁺			I_γ : Other: 7.6 8 in (p, γ).
		5277.2 ^a	2.0 10	4238.35	2 ⁺			
		5392.68 [†] 9	100 6	4122.853	4 ⁺			
		8146.0 ^a	0.16 [†] 4	1368.667	2 ⁺	[E2]		B(E2)(W.u.)=0.00025 +18-9
9527.6	(6 ⁺)	3517.0 [‡]	100 [#] 6	6010.34	4 ⁺	[E2]	1.00×10 ⁻³	B(E2)(W.u.)=25 +22-9 $\alpha(K)=1.742\times10^{-6}$ 25; $\alpha(L)=1.118\times10^{-7}$ 16; $\alpha(M)=4.15\times10^{-9}$ 6 $\alpha(\text{IPF})=0.000999$ 14
		5404.0 [‡]	28 [#] 6	4122.853	4 ⁺	[E2]	1.60×10 ⁻³	B(E2)(W.u.)=0.8 +7-3 $\alpha(K)=9.53\times10^{-7}$ 14; $\alpha(L)=6.12\times10^{-8}$ 9; $\alpha(M)=2.27\times10^{-9}$ 4 $\alpha(\text{IPF})=0.001601$ 23
9532.7	(2,3) ⁺	1916.0 ^a	7.4 10	7616.41	3 ⁻			
		4297.1 ^a	39 6	5235.16	3 ⁺			
		5293.7 ^a	84 6	4238.35	2 ⁺			
		8162.5 ^a	100 26	1368.667	2 ⁺			
9828.0	1 ⁺	3395.2 ^a	2.1 5	6432.2	0 ⁺			
		8457.7 ^a	30.3 20	1368.667	2 ⁺			
		9825.9 ^{&} 20	100.0 19	0	0 ⁺			
9965.3	1 ⁺	8595.1 ^{&} 15	38 ^{&} 6	1368.667	2 ⁺			
		9963.0 ^{&} 15	100 ^{&} 12	0	0 ⁺			
10027.97	5 ⁻	1670 [@]	45.4 22	8358.1	3 ⁻	[E2]	1.66×10 ⁻⁴	B(E2)(W.u.)=32 +14-8 $\alpha(K)=6.17\times10^{-6}$ 9; $\alpha(L)=3.96\times10^{-7}$ 6; $\alpha(M)=1.469\times10^{-8}$ 21 $\alpha(\text{IPF})=0.0001595$ 23
		2215.6 ^a	7.3 12	7812.4	(4 ⁻ , 5 ⁺)			
		2411.2 ^a	8.8 24	7616.41	3 ⁻	[E2]	5.19×10 ⁻⁴	B(E2)(W.u.)=1.0 +5-3 $\alpha(K)=3.17\times10^{-6}$ 5; $\alpha(L)=2.03\times10^{-7}$ 3; $\alpha(M)=7.53\times10^{-9}$ 11 $\alpha(\text{IPF})=0.000515$ 8
		4017.2 ^a	23 3	6010.34	4 ⁺	[E1]	1.69×10 ⁻³	B(E1)(W.u.)=1.9×10 ⁻⁵ +9-5 $\alpha(K)=1.085\times10^{-6}$ 16; $\alpha(L)=6.96\times10^{-8}$ 10; $\alpha(M)=2.58\times10^{-9}$ 4 $\alpha(\text{IPF})=0.001687$ 24

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	Mult. ^d	α^e	Comments
10027.97	5 ⁻	5904.2 [‡]	100 10	4122.853	4 ⁺	[E1]	0.00227	B(E1)(W.u.)=2.6×10 ⁻⁵ +11-6 $\alpha(\text{K})=6.95\times 10^{-7}$ 10; $\alpha(\text{L})=4.46\times 10^{-8}$ 7; $\alpha(\text{M})=1.652\times 10^{-9}$ 24 $\alpha(\text{IPF})=0.00227$ 4 B(E3)(W.u.)=39 +18-11
10059.1	(1,2) ⁺	8657.5 ^a	61 12	1368.667	2 ⁺	[E3]		
		5820.0 ^a	16 4	4238.35	2 ⁺			
		8688.6 ^{&} 25	100 4	1368.667	2 ⁺			
10110.9	(0 ⁺)	8740.5 ^a	100	1368.667	2 ⁺			
10333.6	3 ⁻	6094.4 ^a	61 11	4238.35	2 ⁺			
10360.7	2 ⁺	8963 [@]	100 11	1368.667	2 ⁺	[E2]	1.15×10 ⁻³	B(E2)(W.u.)=1.0 +6-4 $\alpha(\text{K})=1.482\times 10^{-6}$ 21; $\alpha(\text{L})=9.51\times 10^{-8}$ 14; $\alpha(\text{M})=3.53\times 10^{-9}$ 5 $\alpha(\text{IPF})=0.001144$ 16
		3927.9 ^a	1.2 4	6432.2	0 ⁺			
		5124.9 ^a	3.0 7	5235.16	3 ⁺			
10575.93	(4) ⁺	8990.2 [‡]	100 4	1368.667	2 ⁺	[E2]		B(E2)(W.u.)=0.47 +20-11
		10358.3 ^a	72 4	0	0 ⁺			
		1059.78 [†] 8	100 [†] 6	9516.18	4 ⁺			
		1274.71 [†] 10	37.2 [†] 21	9301.07	(4 ⁺)			
		2136.58 [†] 15	59 [†] 3	8439.29	4 ⁺			
10581.26	(2 ⁺ ,3 ⁺ ,4 ⁺)	5340.3 [†] 4	40 [†] 5	5235.16	3 ⁺			
		4570.4 ^a	20.6 8	6010.34	4 ⁺			
		5345.4 ^a	53.4 15	5235.16	3 ⁺			
		6342.0 ^a	100 3	4238.35	2 ⁺			
		6457.4 ^a	37.6 13	4122.853	4 ⁺			
		9210.6 ^a	46.1 15	1368.667	2 ⁺			
10659.8	(1,2 ⁺)	9289.2 ^a	43 11	1368.667	2 ⁺			
10660.17	(3 ⁺ ,4 ⁺)	10657.3 ^a	100 11	0	0 ⁺			
		5424.2 ^a	12 3	5235.16	3 ⁺			
		6536.3 ^a	35 13	4122.853	4 ⁺			
10679.7	0 ⁺	9289.5 ^a	100 13	1368.667	2 ⁺			
		3124 ^a	0.6 ^c 4	7555.3	1 ⁻			
		3331 ^a	2.4 ^c 4	7348.60	2 ⁺			
		6440 ^a	14.7 ^c 12	4238.35	2 ⁺			
		9309 ^a	100 ^c 3	1368.667	2 ⁺			
10712.2	1 ⁺	10709.6 ^a	100	0	0 ⁺			
10731.1	2 ⁺	5495.2 ^a	10 3	5235.16	3 ⁺	(M1)		B(M1)(W.u.)=0.0023 +16-7 Mult.: D from (γ,θ) in (α,γ); $\Delta\pi$ =yes from level scheme.
		6491.8 ^a	27 3	4238.35	2 ⁺			
		9360.5 ^a	100 4	1368.667	2 ⁺			
10820.8	3 ⁺ ,4 ⁺	9450.1 [†] 4	100	1368.667	2 ⁺			
10917.2	2 ⁺	4485 ^a	0.85 ^c 21	6432.2	0 ⁺	[E2]	1.34×10 ⁻³	B(E2)(W.u.)=0.38 +11-10

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)

<u>E_i(level)</u>	<u>J_i^{π}</u>	<u>E_{γ}</u>	<u>I_{γ}</u> ^{<i>b</i>}	<u>E_f</u>	<u>J_f^{π}</u>	<u>Mult.^{<i>d</i>}</u>	<u>α^e</u>	<u>Comments</u>
								$\alpha(\text{K})=1.229\times 10^{-6}$ 18; $\alpha(\text{L})=7.88\times 10^{-8}$ 11; $\alpha(\text{M})=2.92\times 10^{-9}$ 4 $\alpha(\text{IPF})=0.001337$ 19 B(E2)(W.u.)=0.48 +10-8 $\alpha(\text{K})=1.086\times 10^{-6}$ 16; $\alpha(\text{L})=6.97\times 10^{-8}$ 10; $\alpha(\text{M})=2.58\times 10^{-9}$ 4 $\alpha(\text{IPF})=0.001462$ 21
10917.2	2 ⁺	4906.3 ^{<i>a</i>}	1.70 ^{<i>c</i>} 21	6010.34	4 ⁺	[E2]	1.46×10 ⁻³	
		5681.3 ^{<i>a</i>}	2.77 ^{<i>c</i>} 21	5235.16	3 ⁺			
		6677.8 ^{<i>a</i>}	1.06 ^{<i>c</i>} 21	4238.35	2 ⁺			
		6793.3 ^{<i>a</i>}	34.0 ^{<i>c</i>} 21	4122.853	4 ⁺	[E2]		B(E2)(W.u.)=1.90 +29-24
		9546.5 ^{<i>a</i>}	100 ^{<i>c</i>} 4	1368.667	2 ⁺			
11012	3,5 ⁺	10914.5 ^{<i>a</i>}	72 ^{<i>c</i>} 4	0	0 ⁺	[E2]		B(E2)(W.u.)=0.38 +6-5
		2573 ^{<i>a</i>}	100 11	8439.29	4 ⁺			
11018	2 ⁺	5001 ^{<i>a</i>}	47 9	6010.34	4 ⁺			
		1048 ^{<i>a</i>}	2.5 ^{<i>c</i>} 6	9965.3	1 ⁺			
		3270 ^{<i>a</i>}	0.62 ^{<i>c</i>} 12	7747.7	1 ⁺			
		3462 ^{<i>a</i>}	0.37 ^{<i>c</i>} 12	7555.3	1 ⁻			
		5007 ^{<i>a</i>}	0.86 ^{<i>c</i>} 12	6010.34	4 ⁺			
		5782 ^{<i>a</i>}	1.5 ^{<i>c</i>} 3	5235.16	3 ⁺			
		6779 ^{<i>a</i>}	2.4 ^{<i>c</i>} 4	4238.35	2 ⁺			
		6894 ^{<i>a</i>}	1.0 ^{<i>c</i>} 3	4122.853	4 ⁺			
		9647 ^{<i>a</i>}	100 ^{<i>c</i>} 3	1368.667	2 ⁺			
		11015 ^{<i>a</i>}	14.2 ^{<i>c</i>} 12	0	0 ⁺			
11133		3518	100	7616.41	3 ⁻			E _{γ} : From (α,γ).
11165	3 ⁻	2726 ^{<i>a</i>}	5.8 ^{<i>c</i>} 3	8438.4	1 ⁻			
		3609 ^{<i>a</i>}	6.2 ^{<i>c</i>} 3	7555.3	1 ⁻			
		5154 ^{<i>a</i>}	13.1 ^{<i>c</i>} 3	6010.34	4 ⁺			
		5929 ^{<i>a</i>}	11.3 ^{<i>c</i>} 3	5235.16	3 ⁺			
		7041 ^{<i>a</i>}	1.81 ^{<i>c</i>} 14	4122.853	4 ⁺			
		9794 ^{<i>a</i>}	100 ^{<i>c</i>} 3	1368.667	2 ⁺			
11187.3		9816.5 ^{$\ddagger$}	100	1368.667	2 ⁺			
11207		9836 ^{<i>a</i>}	100	1368.667	2 ⁺			
11216.69	3 ⁺ ,4 ⁺	1700 ^{<i>a</i>}	1.40 ^{<i>c</i>} 12	9516.18	4 ⁺			
		2562 ^{<i>a</i>}	0.81 ^{<i>c</i>} 12	8654.9	2 ⁺			
		3868 ^{<i>a</i>}	0.35 ^{<i>c</i>} 12	7348.60	2 ⁺			
		5981 ^{<i>a</i>}	0.93 ^{<i>c</i>} 12	5235.16	3 ⁺			
		7093 ^{<i>a</i>}	12.8 ^{<i>c</i>} 12	4122.853	4 ⁺			
		9846 ^{<i>a</i>}	100.0 ^{<i>c</i>} 23	1368.667	2 ⁺			
11314.4	(3,4) ⁺	9943.5 ^{$\ddagger$} 15	100	1368.667	2 ⁺			
11330		9959 ^{<i>a</i>}	100	1368.667	2 ⁺			
11391	1 ⁻	1332 ^{<i>a</i>}	1.9 ^{<i>c</i>} 3	10059.1	(1,2) ⁺			
		1426 ^{<i>a</i>}	1.01 ^{<i>c</i>} 14	9965.3	1 ⁺			

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	Mult. ^d	α^e	Comments	
11391	1^-	2953 ^a	1.01 ^c 14	8438.4	1^-				
		3643 ^a	1.45 ^c 14	7747.7	1^+				
		4958 ^a	1.16 ^c 14	6432.2	0^+				
		7152 ^a	2.2 ^c 3	4238.35	2^+				
		10020 ^a	100 ^c 3	1368.667	2^+				
11452.8	2^+	11388 ^a	36.2 ^c 14	0	0^+				
		721.7 ^a	3.4 ^c 5	10731.1	2^+				
		1393.7 ^a	1.14 ^c 23	10059.1	(1,2) ⁺				
		1487.5 ^a	12.7 ^c 7	9965.3	1^+				
		3704.8 ^a	3.2 ^c 5	7747.7	1^+				
		3836.0 ^a	0.9 ^c 5	7616.41	3^-				
		4103.4 ^a	1.36 ^c 23	7348.60	2^+				
		6216.7 ^a	4.1 ^c 5	5235.16	3^+				
		7213.3 ^a	47.7 ^c 23	4238.35	2^+				
		7328.7 ^a	1.82 ^c 23	4122.853	4^+				
		10081.8 ^a	100.0 ^c 23	1368.667	2^+				
		11449.8 ^a	50.0 ^c 23	0	0^+				
		791 ^a	1.59 16	10731.1	2^+				
		1463 ^a	2.1 3	10059.1	(1,2) ⁺				
		1557 ^a	1.11 16	9965.3	1^+				
11522	2^+	3164 ^a	0.32 16	8358.1	3^-				
		3774 ^a	1.11 16	7747.7	1^+				
		3905 ^a	1.43 16	7616.41	3^-				
		5089 ^a	12.2 5	6432.2	0^+				
		7282 ^a	8.1 3	4238.35	2^+				
		7398 ^a	7.0 3	4122.853	4^+				
		10151 ^a	23.8 16	1368.667	2^+				
		11519 ^a	100 3	0	0^+				
		2084 ^a	21.8 ^c 14	9516.18	4^+	[E1]	7.05×10^{-4}	B(E1)(W.u.)=0.00057 +21-13 $\alpha(\text{K})=2.53 \times 10^{-6}$ 4; $\alpha(\text{L})=1.622 \times 10^{-7}$ 23; $\alpha(\text{M})=6.01 \times 10^{-9}$ 9 $\alpha(\text{IPF})=0.000702$ 10 B(E1)(W.u.)=0.0015 +5-3	
		2299 ^a	75 ^c 5	9301.07	(4 ⁺)	[E1]		B(E1)(W.u.)=2.4 $\times 10^{-4}$ +9-6	
11600	3^-	2300 ^a	5.9 ^c 14	9299.8					
		2315 ^a	12.5 ^c 11	9284.4	$2^+, 4^+$	[E1]			
		3242 ^a	8.2 ^c 7	8358.1	3^-				
		3983 ^a	100 ^c 5	7616.41	3^-				
		7476 ^a	3.9 ^c 5	4122.853	4^+	[E1]		B(E1)(W.u.)=2.2 $\times 10^{-6}$ +9-6	
		686 ^a	1.82 ^c 23	11012	$3, 5^+$				
		2397 ^a	100 ^c 5	9301.07	(4 ⁺)				
		2398 ^a	1.1 ^c 5	9299.8					
11698.2	4^+								

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π
11698.2	4 ⁺	3043 ^a	2.5 ^c 5	8654.9	2 ⁺	11988.5	2 ⁺	2703.9 ^a	2.0 11	9284.4	2 ⁺ , 4 ⁺
		3259 ^a	3.6 ^c 5	8439.29	4 ⁺			2984.8 ^a	1.3 7	9003.5	2 ⁺
		3885 ^a	1.4 ^c 5	7812.4	(4 ⁻ , 5 ⁺)			3122.8 ^a	11 5	8864.5	2 ⁻
		4349 ^a	5.9 ^c 5	7348.60	2 ⁺			3549.8 ^a	6.3 4	8438.4	1 ⁻
		5687 ^a	5.0 ^c 5	6010.34	4 ⁺			4240.4 ^a	11 5	7747.7	1 ⁺
		6462 ^a	6.8 ^c 5	5235.16	3 ⁺			4432.8 ^a	3.3 17	7555.3	1 ⁻
		7459 ^a	19.8 ^c 9	4238.35	2 ⁺			6752.3 ^a	17 9	5235.16	3 ⁺
		7574 ^a	15.7 ^c 9	4122.853	4 ⁺			7748.8 ^a	100 5	4238.35	2 ⁺
		10327 ^a	64 ^c 5	1368.667	2 ⁺			10617.3 ^a	61 2	1368.667	2 ⁺
11730	0 ⁺	1765 ^a	3.48 ^c 22	9965.3	1 ⁺			11985.3 ^a	1.7 9	0	0 ⁺
		4174 ^a	1.63 ^c 11	7555.3	1 ⁻	12003		991 ^a	19 ^c 3	11012	3, 5 ⁺
		7490 ^a	3.59 ^c 22	4238.35	2 ⁺			3563 ^a	9.5 ^c 16	8439.29	4 ⁺
		10359 ^a	100.0 ^c 22	1368.667	2 ⁺			5992 ^a	30 ^c 3	6010.34	4 ⁺
11860	(8 ⁺)	3747.0 [‡]	100	8113.2	6 ⁺			7879 ^a	100 ^c 3	4122.853	4 ⁺
11862.8	1 ⁻	4306 ^a	4.4 ^c 4	7555.3	1 ⁻	12051.3	4 ⁺	6040 ^a	6.9 ^c 7	6010.34	4 ⁺
		4513 ^a	1.75 ^c 18	7348.60	2 ⁺			6815 ^a	30.6 ^c 14	5235.16	3 ⁺
		7622 ^a	4.4 ^c 4	4238.35	2 ⁺			7927 ^a	100 ^c 3	4122.853	4 ⁺
		10491 ^a	65 ^c 4	1368.667	2 ⁺			10680 ^a	1.4 ^c 3	1368.667	2 ⁺
		11859 ^a	100 ^c 4	0	0 ⁺	12119.0	4 ⁺	2603 ^a	100 ^c 8	9516.18	4 ⁺
11932.9	(3 ⁺)	2631.9 ^a	0.19 7	9301.07	(4 ⁺)			6108 ^a	27 ^c 5	6010.34	4 ⁺
		3068.4 ^a	0.34 7	8864.5	2 ⁻			7879 ^a	92 ^c 5	4238.35	2 ⁺
		4120.5 ^a	1.41 16	7812.4	(4 ⁻ , 5 ⁺)			7995 ^a	38 ^c 5	4122.853	4 ⁺
		4583.6 ^a	1.62 19	7348.60	2 ⁺			10748 ^a	14 ^c 3	1368.667	2 ⁺
		5922.0 ^a	4.3 5	6010.34	4 ⁺	12128		4315 ^a	100	7812.4	(4 ⁻ , 5 ⁺)
		6696.9 ^a	1.27 21	5235.16	3 ⁺	12162	4 ⁺	2646 ^a	17.6 ^c 20	9516.18	4 ⁺
		7693.4 ^a	0.51 19	4238.35	2 ⁺			3158 ^a	3.9 ^c 10	9003.5	2 ⁺
		7808.9 ^a	24.4 24	4122.853	4 ⁺			6926 ^a	5.9 ^c 20	5235.16	3 ⁺
		10561.9 ^a	100 10	1368.667	2 ⁺			7922 ^a	11.8 ^c 20	4238.35	2 ⁺
11966.6	2 ⁺	760 ^a	0.9 ^c 3	11207				8038 ^a	100 ^c 6	4122.853	4 ⁺
		1236 ^a	3.7 ^c 6	10731.1	2 ⁺			10791 ^a	57 ^c 6	1368.667	2 ⁺
		1908 ^a	12.0 ^c 6	10059.1	(1, 2) ⁺	12183.3		966.6 ^a	2.1 11	11216.69	3 ⁺ , 4 ⁺
		2001 ^a	4.9 ^c 6	9965.3	1 ⁺			1452.2 ^a	2.0 10	10731.1	2 ⁺
		5534 ^a	9.4 ^c 6	6432.2	0 ⁺			1822.5 ^a	5.0 25	10360.7	2 ⁺
		6731 ^a	60 ^c 3	5235.16	3 ⁺			2217.9 ^a	1.4 7	9965.3	1 ⁺
		7727 ^a	46 ^c 3	4238.35	2 ⁺			3528.1 ^a	4.8 24	8654.9	2 ⁺
		7842 ^a	3.4 ^c 3	4122.853	4 ⁺			4435.2 ^a	3.7 18	7747.7	1 ⁺
		10596 ^a	100 ^c 6	1368.667	2 ⁺			5750.4 ^a	1.8 10	6432.2	0 ⁺
		11964 ^a	46 ^c 3	0	0 ⁺			7943.5 ^a	12.8 7	4238.35	2 ⁺
11988.5	2 ⁺	1257.4 ^a	0.9 4	10731.1	2 ⁺			10812.0 ^a	100 6	1368.667	2 ⁺
		1929.3 ^a	1.5 9	10059.1	(1, 2) ⁺			12180.0 ^a	7 4	0	0 ⁺

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π
12259.3	2 ⁻	1042.6 ^a	3.3 18	11216.69	3 ⁺ , 4 ⁺	12404.9	2 ⁺	7168.6 ^a	1.9 10	5235.16	3 ⁺
		2293.9 ^a	1.1 7	9965.3	1 ⁺			8165.1 ^a	100 5	4238.35	2 ⁺
		2431.0 ^a	2.2 11	9828.0	1 ⁺			8280.5 ^a	1.4 8	4122.853	4 ⁺
		3255.6 ^a	4.4 22	9003.5	2 ⁺			11033.5 ^a	3.3 17	1368.667	2 ⁺
		3394.5 ^a	9 4	8864.5	2 ⁻			12401.5 ^a	3.0 15	0	0 ⁺
		3819.7 ^a	5.6 28	8439.29	4 ⁺	12443	6 ⁺ , 7 ⁻	2415 ^a	100	10027.97	5 ⁻
		4910.2 ^a	9 4	7348.60	2 ⁺	12507	4 ⁺	5158 ^a	5.8 ^c 10	7348.60	2 ⁺
		7023.0 ^a	24.4 22	5235.16	3 ⁺			7271 ^a	15.4 ^c 19	5235.16	3 ⁺
		8019.5 ^a	100 5	4238.35	2 ⁺			8267 ^a	46 ^c 4	4238.35	2 ⁺
		8135.0 ^a	1.1 7	4122.853	4 ⁺			8382 ^a	25 ^c 4	4122.853	4 ⁺
		10888.0 ^a	60 2	1368.667	2 ⁺			11136 ^a	100 ^c 6	1368.667	2 ⁺
		12255.9 ^a	2.2 11	0	0 ⁺	12527.6	1 ⁺	1796.4 ^a	1.9 10	10731.1	2 ⁺
12340.2	3 ⁺	1680.3 ^a	1.1 7	10659.8	(1,2 ⁺)			2468.4 ^a	6 3	10059.1	(1,2) ⁺
		3336.5 ^a	5.1 27	9003.5	2 ⁺			2699.2 ^a	2.6 13	9828.0	1 ⁺
		3685.0 ^a	2.4 13	8654.9	2 ⁺			3662.8 ^a	7 3	8864.5	2 ⁻
		4723.3 ^a	9 4	7616.41	3 ⁻			3872.4 ^a	13 6	8654.9	2 ⁺
		4991.0 ^a	29 2	7348.60	2 ⁺			4088.8 ^a	7 4	8438.4	1 ⁻
		7103.9 ^a	47 2	5235.16	3 ⁺			4779.4 ^a	16 8	7747.7	1 ⁺
		8100.4 ^a	100 5	4238.35	2 ⁺			6094.6 ^a	33 2	6432.2	0 ⁺
		8215.8 ^a	4.9 24	4122.853	4 ⁺			8287.7 ^a	36 2	4238.35	2 ⁺
		10968.8 ^a	24 1	1368.667	2 ⁺			11156.2 ^a	15 8	1368.667	2 ⁺
12342		4529 ^a	100	7812.4	(4 ⁻ , 5 ⁺)			12524.1 ^a	100 5	0	0 ⁺
12400.3	3 ⁺	2341.1 ^a	3.9	10059.1	(1,2) ⁺	12638.7	4 ⁺	3180.7 ^a	0.9 5	9457.81	(3) ⁺
		2883.9 ^a	18	9516.18	4 ⁺			4825.8 ^a	3.6 18	7812.4	(4 ⁻ , 5 ⁺)
		2942.3 ^a	2.8	9457.81	(3) ⁺			6627.4 ^a	15.8 8	6010.34	4 ⁺
		3396.5 ^a	4.9	9003.5	2 ⁺			7402.3 ^a	8.7 43	5235.16	3 ⁺
		4783.4 ^a	10	7616.41	3 ⁻			8398.8 ^a	0.7 4	4238.35	2 ⁺
		5051.1 ^a	31	7348.60	2 ⁺			8514.2 ^a	100 5	4122.853	4 ⁺
		7164.0 ^a	44	5235.16	3 ⁺			11267.2 ^a	2.0 11	1368.667	2 ⁺
		8160.5 ^a	100	4238.35	2 ⁺	12660.8	3 ⁻	1930 ^a	5 ^c 3	10731.1	2 ⁺
		8275.9 ^a	6	4122.853	4 ⁺			2602 ^a	16 ^c 3	10059.1	(1,2) ⁺
		11028.9 ^a	36	1368.667	2 ⁺			3144 ^a	22 ^c 3	9516.18	4 ⁺
12404.9	2 ⁺	3103.6 ^a	2.4 12	9299.8				3796 ^a	27 ^c 5	8864.5	2 ⁻
		3401.1 ^a	4.4 22	9003.5	2 ⁺			4913 ^a	5 ^c 3	7747.7	1 ⁺
		3540.1 ^a	2.5 13	8864.5	2 ⁻			5312 ^a	19 ^c 3	7348.60	2 ⁺
		3749.7 ^a	19 1	8654.9	2 ⁺			7424 ^a	8 ^c 3	5235.16	3 ⁺
		3966.1 ^a	4.1 21	8438.4	1 ⁻			8421 ^a	100 ^c 11	4238.35	2 ⁺
		4046.4 ^a	1.6 8	8358.1	3 ⁻			8536 ^a	16 ^c 3	4122.853	4 ⁺
		4788.0 ^a	12 6	7616.41	3 ⁻			11289 ^a	51 ^c 5	1368.667	2 ⁺
		5055.7 ^a	3.0 15	7348.60	2 ⁺	12670.0	2 ⁻	682.5 ^a	0.36 2	11988.5	2 ⁺

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	Mult. ^d	Comments
12670.0	2 ⁻	1217.1 ^a	0.17 2	11452.8	2 ⁺		
		1462.9 ^a	0.20 3	11207			
		1482.6 ^a	0.19 2	11187.3			
		1752.7 ^a	0.11 1	10917.2	2 ⁺		
		1849.1 ^a	0.07 1	10820.8	3 ⁺ , 4 ⁺		
		1938.8 ^a	0.81 3	10731.1	2 ⁺		
		1957.7 ^a	0.42 2	10712.2	1 ⁺		
		2010.1 ^a	0.17 2	10659.8	(1, 2 ⁺)		
		2309.1 ^a	0.04 2	10360.7	2 ⁺		
		2336.4 ^a	0.28 2	10333.6	3 ⁻		
		2610.7 ^a	0.25 3	10059.1	(1, 2) ⁺		
		2704.5 ^a	0.29 2	9965.3	1 ⁺		
		2841.6 ^a	1.02 5	9828.0	1 ⁺		
		3137.1 ^a	2.03 8	9532.7	(2, 3) ⁺		
		3385.3 ^a	1.12 5	9284.4	2 ⁺ , 4 ⁺		
		3523.5 ^a	0.45 3	9146.2	1 ⁻		
		3666.2 ^a	0.67 5	9003.5	2 ⁺		
		3805.2 ^a	24.0 8	8864.5	2 ⁻	D	Mult.: From (p, γ), $\Delta J=0$.
		4014.7 ^a	0.47 3	8654.9	2 ⁺		
		4231.1 ^a	5.0 5	8438.4	1 ⁻		
		4311.5 ^a	2.35 8	8358.1	3 ⁻		
		4921.8 ^a	6.88 22	7747.7	1 ⁺		
		5053.0 ^a	0.05 2	7616.41	3 ⁻		
		5114.1 ^a	2.53 10	7555.3	1 ⁻		
		5320.8 ^a	0.07 2	7348.60	2 ⁺		
		7433.6 ^a	0.10 3	5235.16	3 ⁺		
		8430.1 ^a	100.0 13	4238.35	2 ⁺	D	Mult.: From (p, γ), $\Delta J=0$.
		11298.5 ^a	17.3 7	1368.667	2 ⁺		
		12666.4 ^a	0.42 5	0	0 ⁺		
12807.8	2 ⁺	6374.7 ^a	1.5 8	6432.2	0 ⁺		
		7571.4 ^a	3.0 15	5235.16	3 ⁺		
		8567.8 ^a	7.6 38	4238.35	2 ⁺		
		11436.2 ^a	39 2	1368.667	2 ⁺		
		12802.1 ^a	100 5	0	0 ⁺		
12818.1	1 ⁺	2457.3 ^a	2.6 13	10360.7	2 ⁺		
		2989.7 ^a	3.9 19	9828.0	1 ⁺		
		3953.3 ^a	6 3	8864.5	2 ⁻		
		4162.8 ^a	17 8	8654.9	2 ⁺		
		4379.3 ^a	9 5	8438.4	1 ⁻		
		5069.8 ^a	18 9	7747.7	1 ⁺		

Adopted Levels, Gammas (continued) $\gamma(^{24}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π
12818.1	1^+	6385.0 ^a	18 9	6432.2	0^+
		7581.6 ^a	2.6 13	5235.16	3^+
		8578.1 ^a	54 3	4238.35	2^+
		11446.5 ^a	26 13	1368.667	2^+
		12814.4 ^a	100 5	0	0^+
12846.9	$(3^-, 4^+)$	6835.5 ^a	6.1 31	6010.34	4^+
		7610.4 ^a	4.1 20	5235.16	3^+
		8606.9 ^a	100 5	4238.35	2^+
		8722.3 ^a	73 4	4122.853	4^+
		11475.3 ^a	20 10	1368.667	2^+
12854	$(1^+, 2^+, 3^+)$	7618 ^a	52 3	5235.16	3^+
		8614 ^a	100 5	4238.35	2^+
		11482 ^a	18 9	1368.667	2^+
		12850 ^a	9 5	0	0^+
12861	$2^+, 3^-$	3560 ^a	52 ^c 4	9301.07	(4^+)
		4422 ^a	40 ^c 4	8438.4	1^-
		6850 ^a	100 ^c 4	6010.34	4^+
		8736 ^a	19 ^c 4	4122.853	4^+
12895.1	1^+	4239.8 ^a	4.2 21	8654.9	2^+
		5146.8 ^{a,f}	6.9 35	7747.7	1^+
		7658.6 ^a	16.7 8	5235.16	3^+
		8655.1 ^a	11 6	4238.35	2^+
		11523.4 ^a	100 6	1368.667	2^+
12921.6	$(2^+, 3^-, 4^+)$	3636.9 ^a	24 12	9284.4	$2^+, 4^+$
		4266.3 ^a	14 7	8654.9	2^+
		4563.0 ^a	59 3	8358.1	3^-
		7685.1 ^a	100 5	5235.16	3^+
		8681.6 ^a	72 4	4238.35	2^+
		8797.0 ^a	52 3	4122.853	4^+
		11549.9 ^a	24 12	1368.667	2^+
12955.5	1^+	1502.6 ^a	0.06 1	11452.8	2^+
		2243.2 ^a	0.016 5	10712.2	1^+
		2275.7 ^a	0.021 4	10679.7	0^+
		2594.6 ^a	1.43 5	10360.7	2^+
		2844.4 ^a	0.123 6	10110.9	(0^+)
		2896.2 ^a	0.157 7	10059.1	$(1, 2)^+$
		2990.0 ^a	0.029 4	9965.3	1^+
		3127.1 ^a	0.89 2	9828.0	1^+
		3649.8 ^a	0.81 2	9305.39	0^+
		3809.0 ^a	0.65 2	9146.2	1^-

Adopted Levels, Gammas (continued) $\gamma(^{24}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	Mult. ^d	Comments
12955.5	1^+	3951.6 ^a	0.030 2	9003.5	2^+		
		4090.6 ^a	0.31 1	8864.5	2^-		
		4300.2 ^a	0.20 1	8654.9	2^+		
		4516.6 ^a	0.064 5	8438.4	1^-		
		5206.6 ^a	0.014 2	7747.7	1^+		
		5605.1 ^a	0.16 6	7348.60	2^+		
		6521.4 ^a	1.17 4	6432.2	0^+		
		8714.8 ^a	1.12 4	4238.35	2^+		
		11583.2 ^a	100.0 5	1368.667	2^+		
		12951.1 ^a	9.6 4	0	0^+		
12963.9	2^-	2904.6 ^a	4.1	10059.1	$(1,2)^+$		
		7727.4 ^a	21	5235.16	3^+		
		8723.8 ^a	4.1	4238.35	2^+		
		11592.2 ^a	100	1368.667	2^+		
		12960.1 ^a	8.2	0	0^+		
13029.8	$2^+, 3^-$	2668.9 ^a	1.0	10360.7	2^+		
		3571.7 ^a	4.1	9457.81	$(3)^+$		
		3729.7 ^a	3.1	9299.8			
		4025.9 ^a	8	9003.5	2^+		
		4374.5 ^a	4.1	8654.9	2^+		
		4590.9 ^a	3.1	8438.4	1^-		
		5412.7 ^a	22	7616.41	3^-		
		7793.3 ^a	100	5235.16	3^+		
		8789.7 ^a	49	4238.35	2^+		
		8905.2 ^a	6.1	4122.853	4^+		
13048	0^+	11658.1 ^a	3.5	1368.667	2^+		
		3082 ^a	70 ^c 7	9965.3	1^+		
		3220 ^a	100 ^c 7	9828.0	1^+	D	Mult.: From $\gamma\gamma(\theta)$ (1978Fi08 – (α, γ)).
		4609 ^a	30 ^c 5	8438.4	1^-		
		5300 ^a	23 ^c 5	7747.7	1^+		
		5492 ^a	14 ^c 5	7555.3	1^-		
13050.0	4^+	922.0 ^a	0.040 4	12128			
		1719.0 ^a	0.021 7	11330			
		1833.2 ^a	0.32 1	11216.69	$3^+, 4^+$		
		2229.1 ^a	0.052 5	10820.8	$3^+, 4^+$		
		2389.7 ^a	0.30 1	10660.17	$(3^+, 4^+)$		
		2468.6 ^a	2.28 7	10581.26	$(2^+, 3^+, 4^+)$		
		3021.8 ^a	0.52 2	10027.97	5^-		
		3591.9 ^a	2.52 8	9457.81	$(3)^+$		
		3748.6 ^a	0.09 3	9301.07	(4^+)		

Adopted Levels, Gammas (continued) $\gamma(^{24}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π
13050.0	4^+	3749.9 ^a	0.35 3	9299.8	
		3765.3 ^a	0.139 6	9284.4	$2^+, 4^+$
		5237.0 ^a	0.20 1	7812.4	$(4^-, 5^+)$
		5432.9 ^a	0.013 4	7616.41	3^-
		7038.6 ^a	1.83 6	6010.34	4^+
		7813.5 ^a	1.58 6	5235.16	3^+
		8925.4 ^a	100.0 2	4122.853	4^+
		11678.3 ^a	0.09 1	1368.667	2^+
13057	5^-	2723 ^a	16 ^c 3	10333.6	3^-
		4698 ^a	15 ^c 3	8358.1	3^-
		5440 ^a	16 ^c 3	7616.41	3^-
		8932 ^a	100 ^c 5	4122.853	4^+
13088.8	2^+	3804.1 ^a	27	9284.4	$2^+, 4^+$
		4433.5 ^a	6	8654.9	2^+
		4730.2 ^a	67	8358.1	3^-
		7077.3 ^a	10	6010.34	4^+
		7852.3 ^a	100	5235.16	3^+
		8848.7 ^a	40	4238.35	2^+
		8964.2 ^a	63	4122.853	4^+
		11717.1 ^a	20	1368.667	2^+
		13085.0 ^a	0.7	0	0^+
13212.8		5099.0 [‡]	100	8113.2	6^+
13345.7	3^-	1824 ^a	1.9	11522	2^+
		2685.7 ^a	19	10659.8	$(1, 2^+)$
		3887.6 ^a	19	9457.81	$(3)^+$
		4045.5 ^a	28	9299.8	
		4341.8 ^a	2.8	9003.5	2^+
		4905.9 ^a	100	8439.29	4^+
		5728.6 ^a	33	7616.41	3^-
		5996.3 ^a	6	7348.60	2^+
		8109.1 ^a	2.8	5235.16	3^+
		9105.5 ^a	25	4238.35	2^+
		9220.9 ^a	31	4122.853	4^+
		11973.8 ^a	8	1368.667	2^+
		13341.7 ^a	0.8	0	0^+
13366.9	(2)	2785 ^a	100	10581.26	$(2^+, 3^+, 4^+)$
		5554 ^a	35	7812.4	$(4^-, 5^+)$
		11995 ^a	9	1368.667	2^+
		13363 ^a	9	0	0^+
13446.8	(1,2)	2056 ^a	65 3	11391	1^-

Adopted Levels, Gammas (continued)

$\gamma(^{24}\text{Mg})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ^b	E_f	J_f^π	Comments
13446.8	(1,2)	5008 ^a	21 10	8438.4	1 ⁻	
		9323 ^a		4122.853	4 ⁺	
		12075 ^a	100 4	1368.667	2 ⁺	
		13443 ^a	23 1	0	0 ⁺	
13474.9	2 ⁺ ,3,4 ⁺	7463 ^a	60 3	6010.34	4 ⁺	
		8238 ^a	100 5	5235.16	3 ⁺	
		9350 ^a	15 7	4122.853	4 ⁺	
		12103 ^a	7 4	1368.667	2 ⁺	
13771	5 ⁻	5412 ^a	100 ^c 10	8358.1	3 ⁻	
		9646 ^a	72 ^c 10	4122.853	4 ⁺	
14081	1 ⁺	3069 ^a	40 ^c 4	11012	3,5 ⁺	
		4779 ^a	2.2 ^c 9	9301.07	(4 ⁺)	
		8069 ^a	80 ^c 7	6010.34	4 ⁺	
		9956 ^a	100 ^c 7	4122.853	4 ⁺	
14150	8 ⁺	4620 [#] 25	100 [#] 4	9527.6	(6 ⁺)	
		6040 [#] 25	33 [#] 4	8113.2	6 ⁺	
16904		5043 ^a	100	11860	(8 ⁺)	
19110	(10 ⁺)	5856 ^{a,f}	100	13212.8		E_γ : Tentatively placed in 2001Wi18 ((¹⁶ O, α),(¹⁶ O, $\alpha\gamma$)) with a measured energy 5927 keV 5.

[†] From ²⁴Al ε decay (2.053 s).

[‡] From (²⁴Mg, ¹²C γ).

[#] From (¹⁶O, α),(¹⁶O, $\alpha\gamma$).

[@] From (¹²C, γ).

[&] From ²⁴Al ε decay (130.7 ms).

^a From level energy difference, recoil energy subtracted. Not considered in the least-squares fit.

^b From (p, γ), except where otherwise noted.

^c From (α , γ).

^d From ²⁴Na β^- decay (14.956 h), except where otherwise noted.

^e [Additional information 1](#).

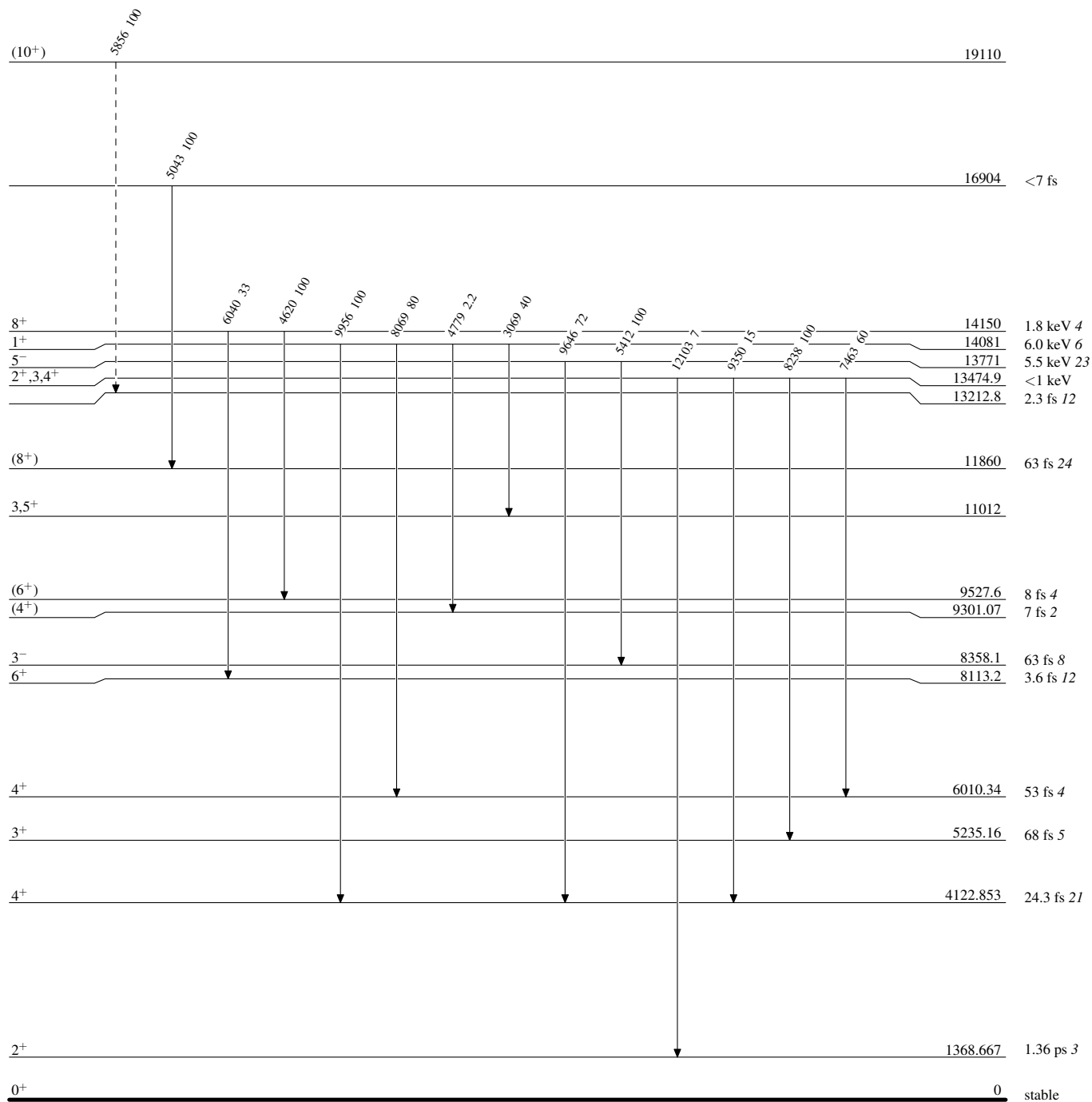
^f Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

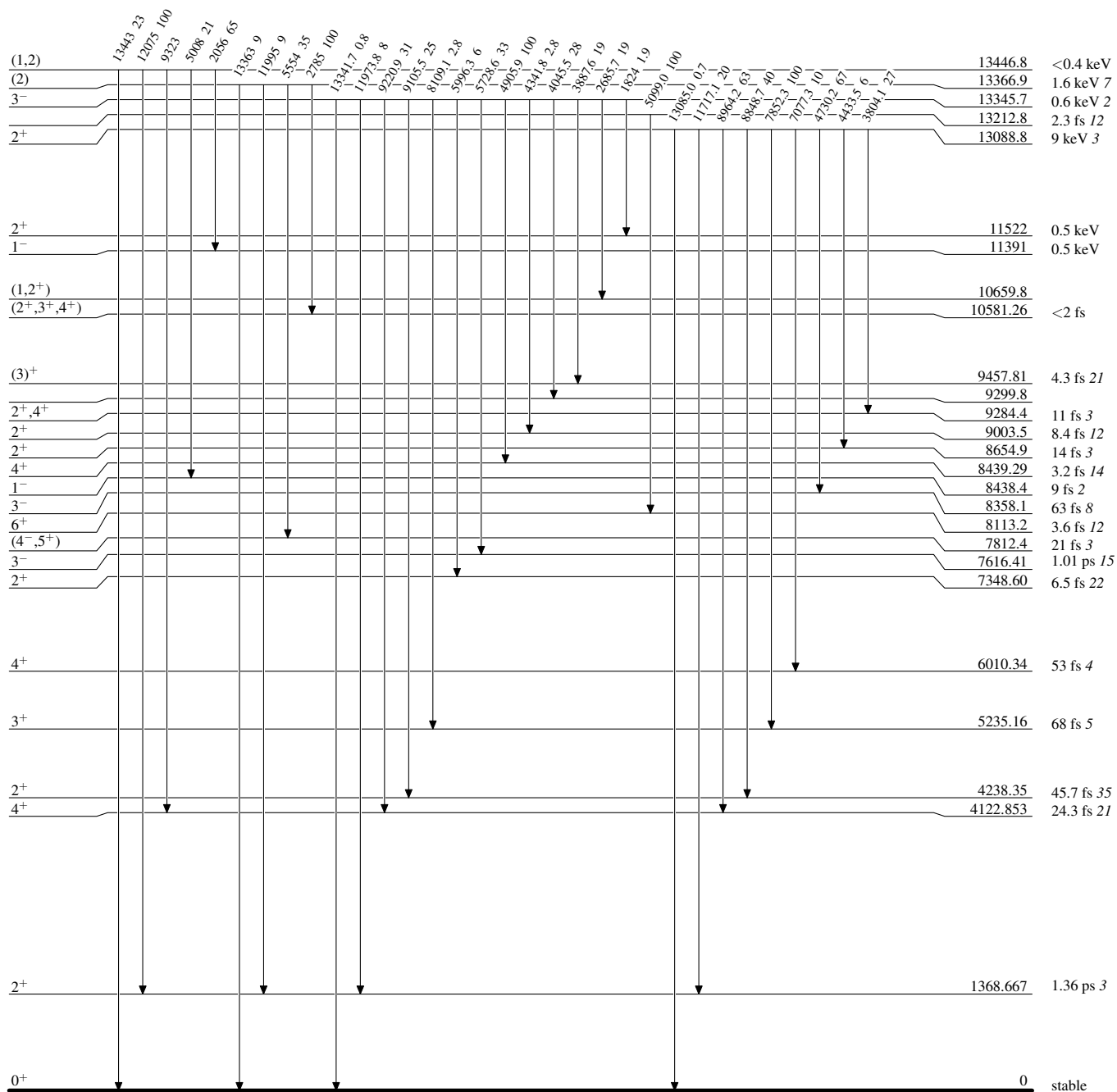
Level Scheme

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

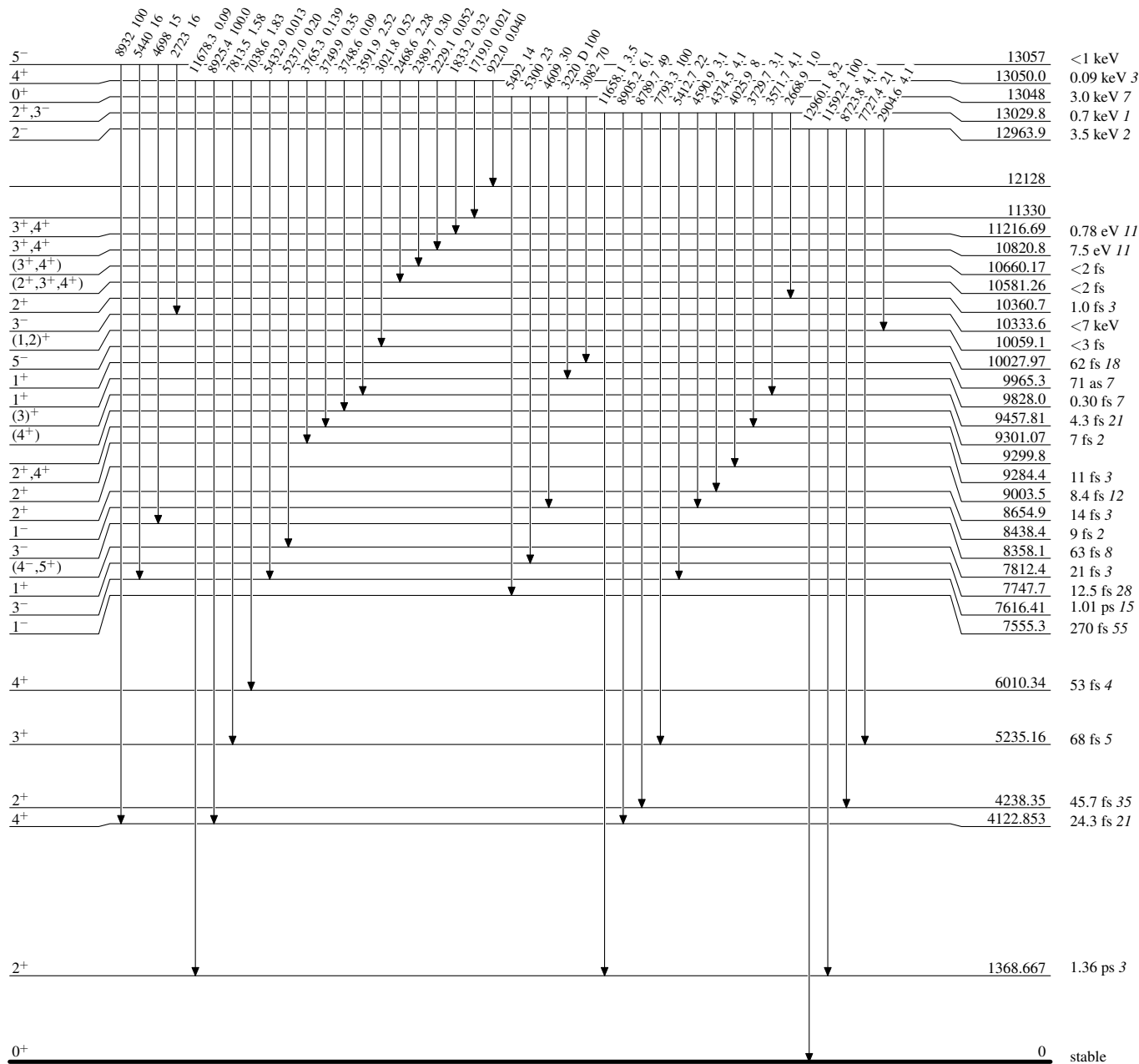
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



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

Intensities: Relative photon branching from each level

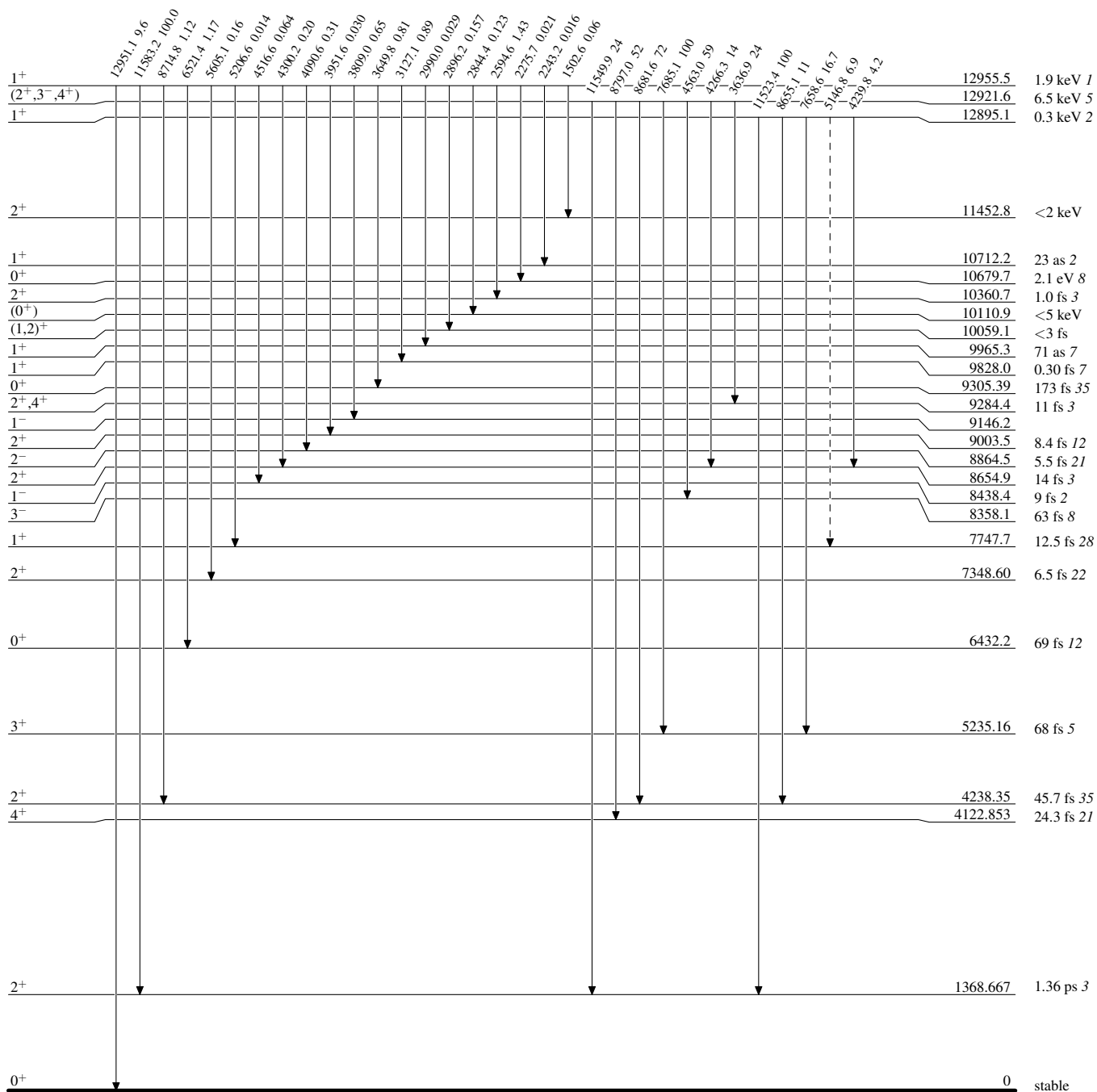


Adopted Levels, Gammas

Legend

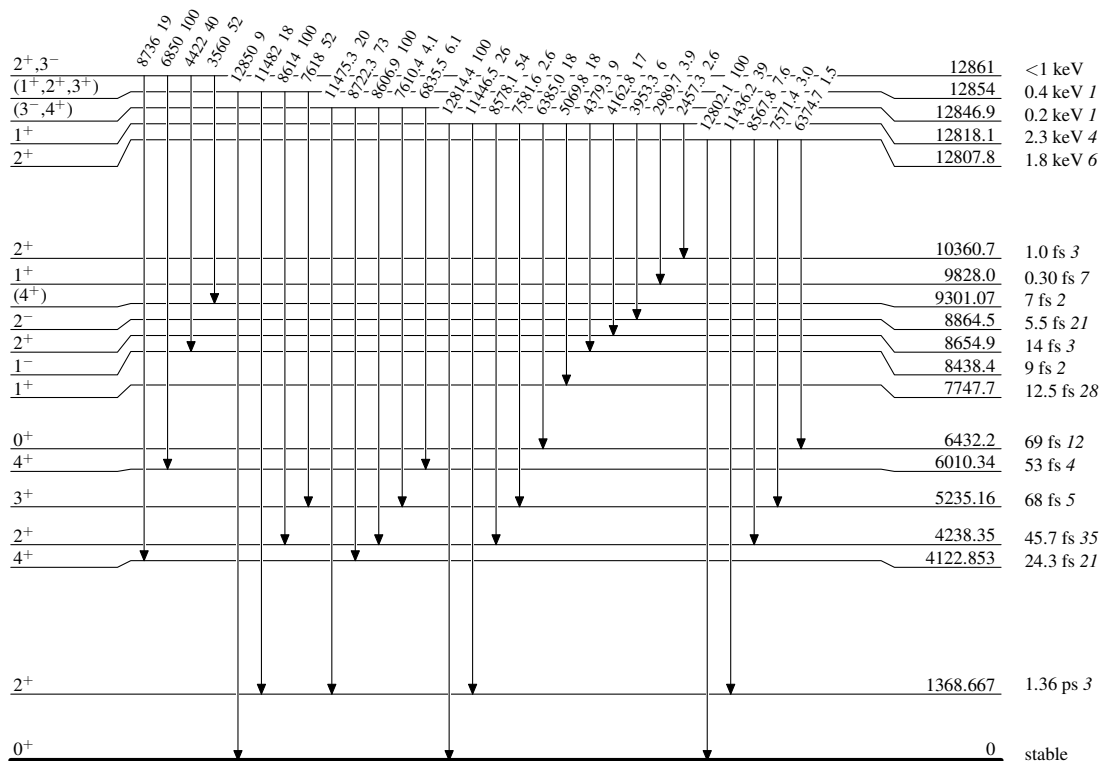
Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

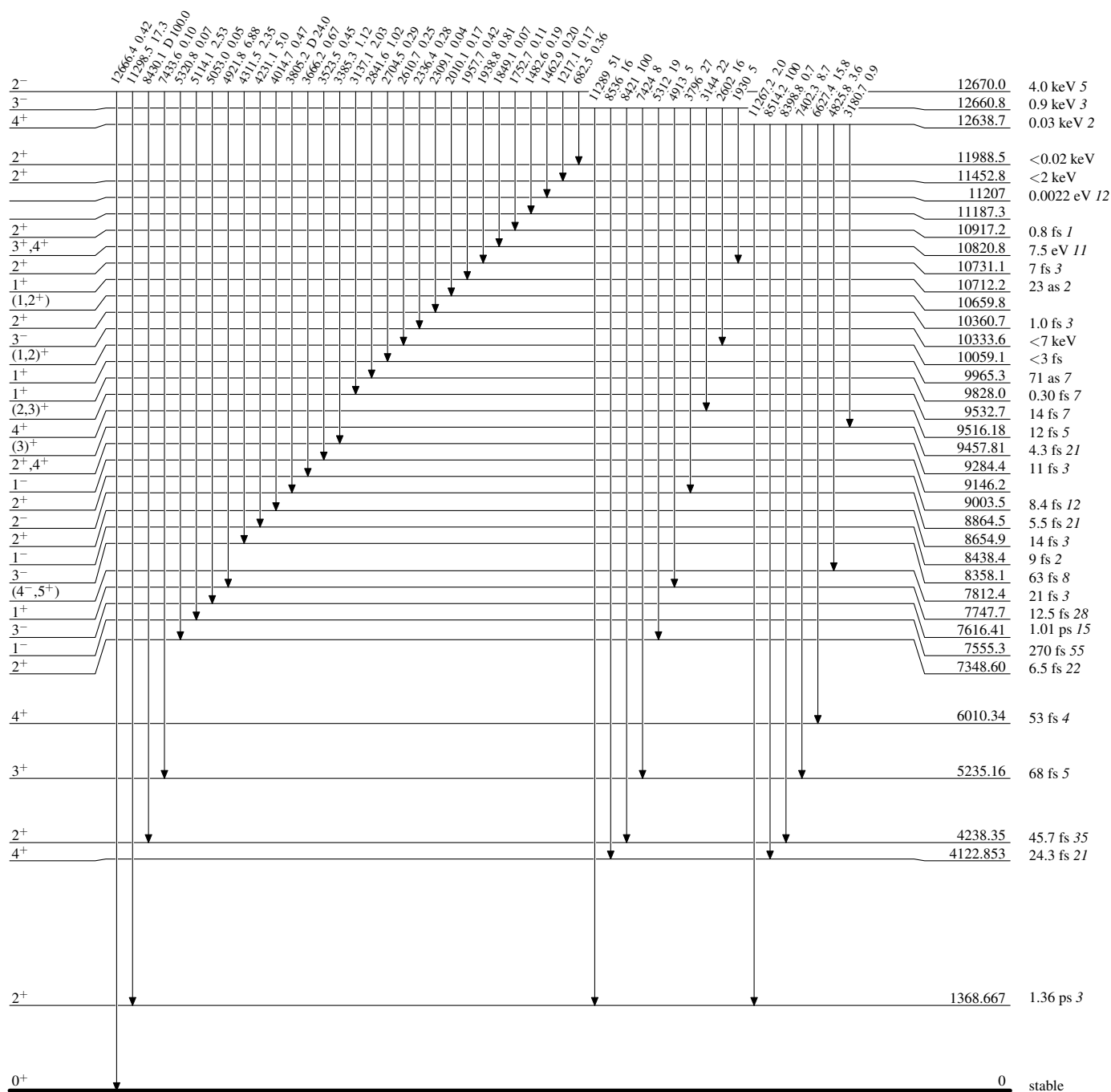
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level

 $^{24}_{12}\text{Mg}_{12}$

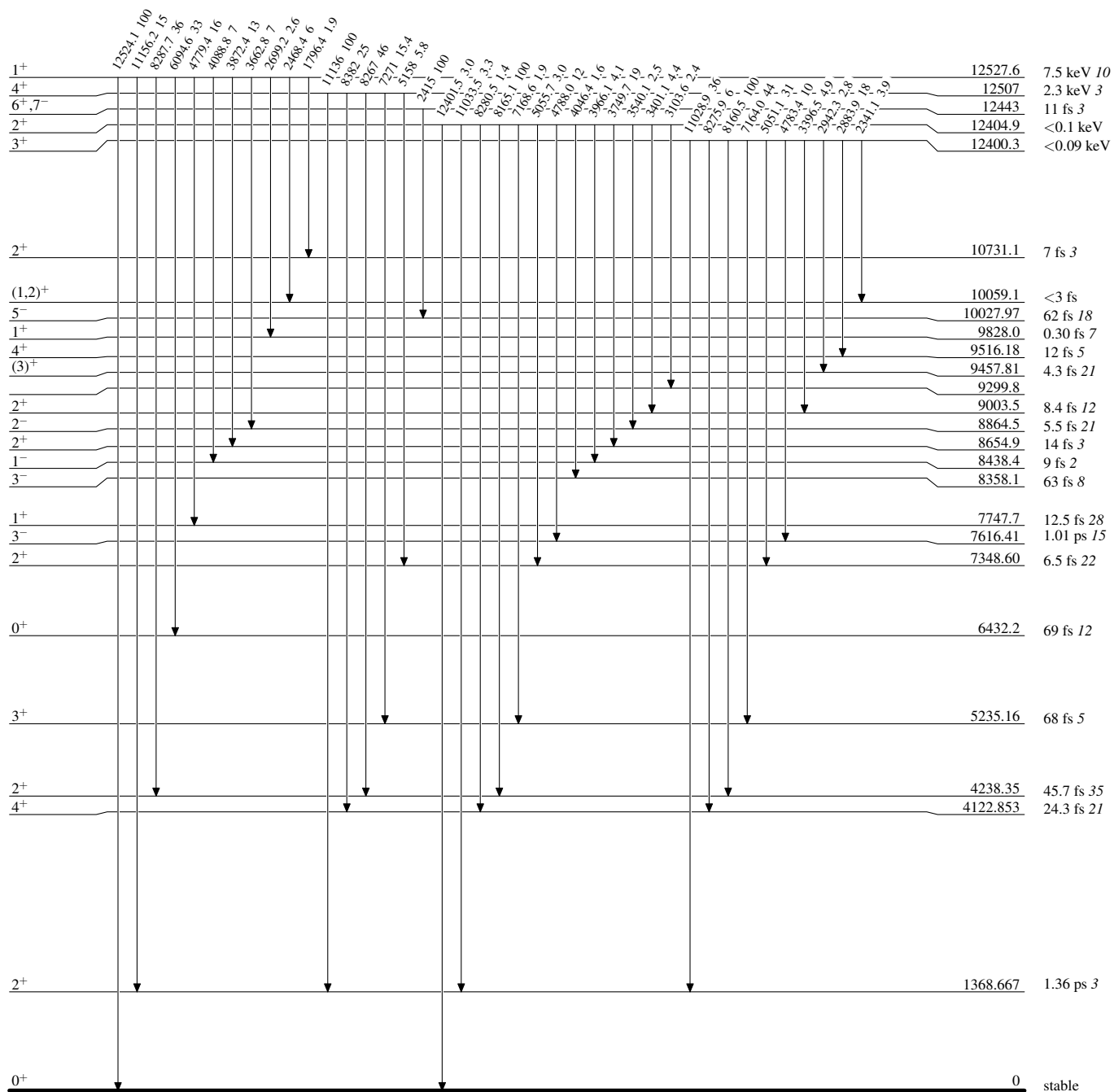
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



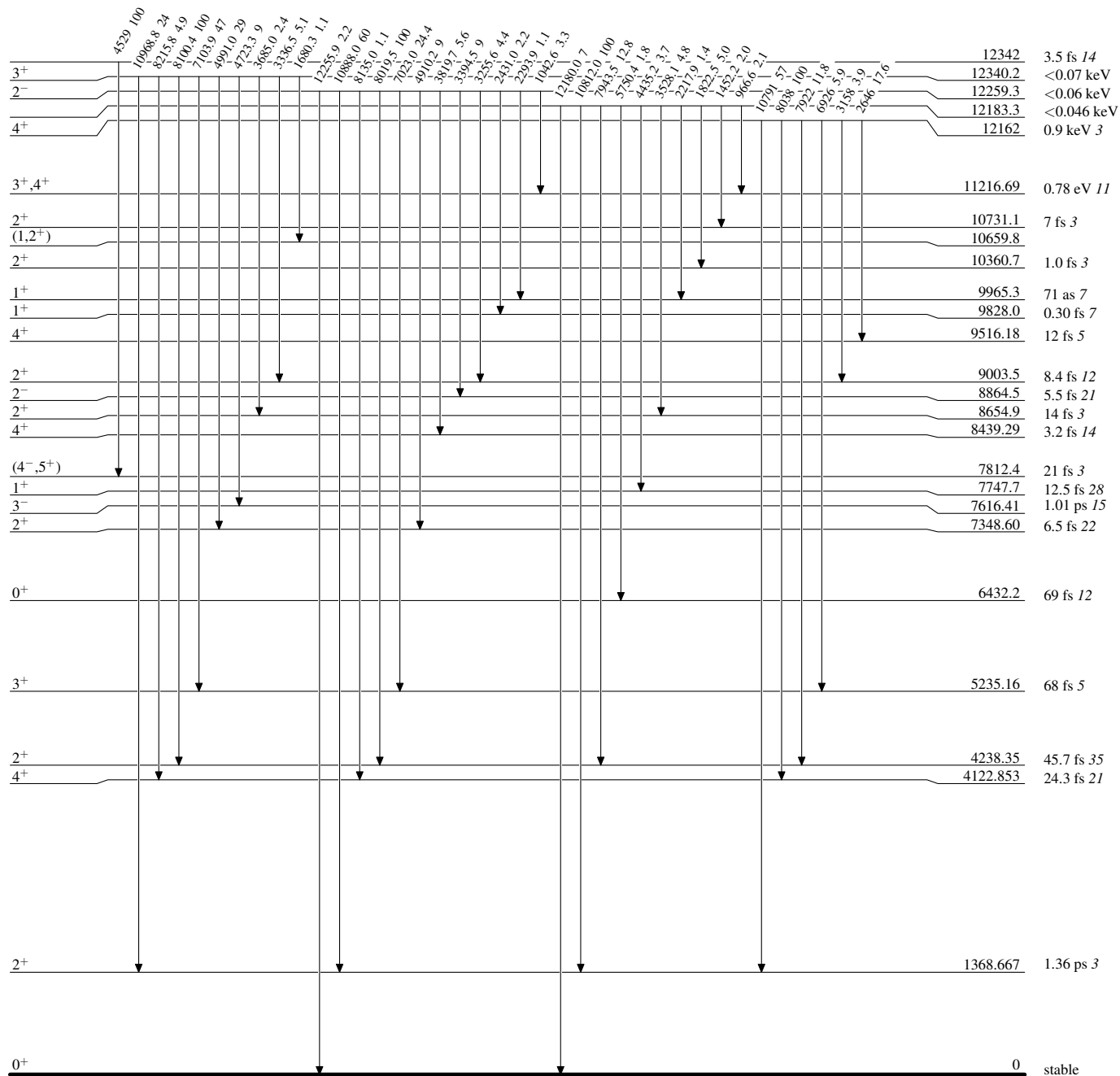
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



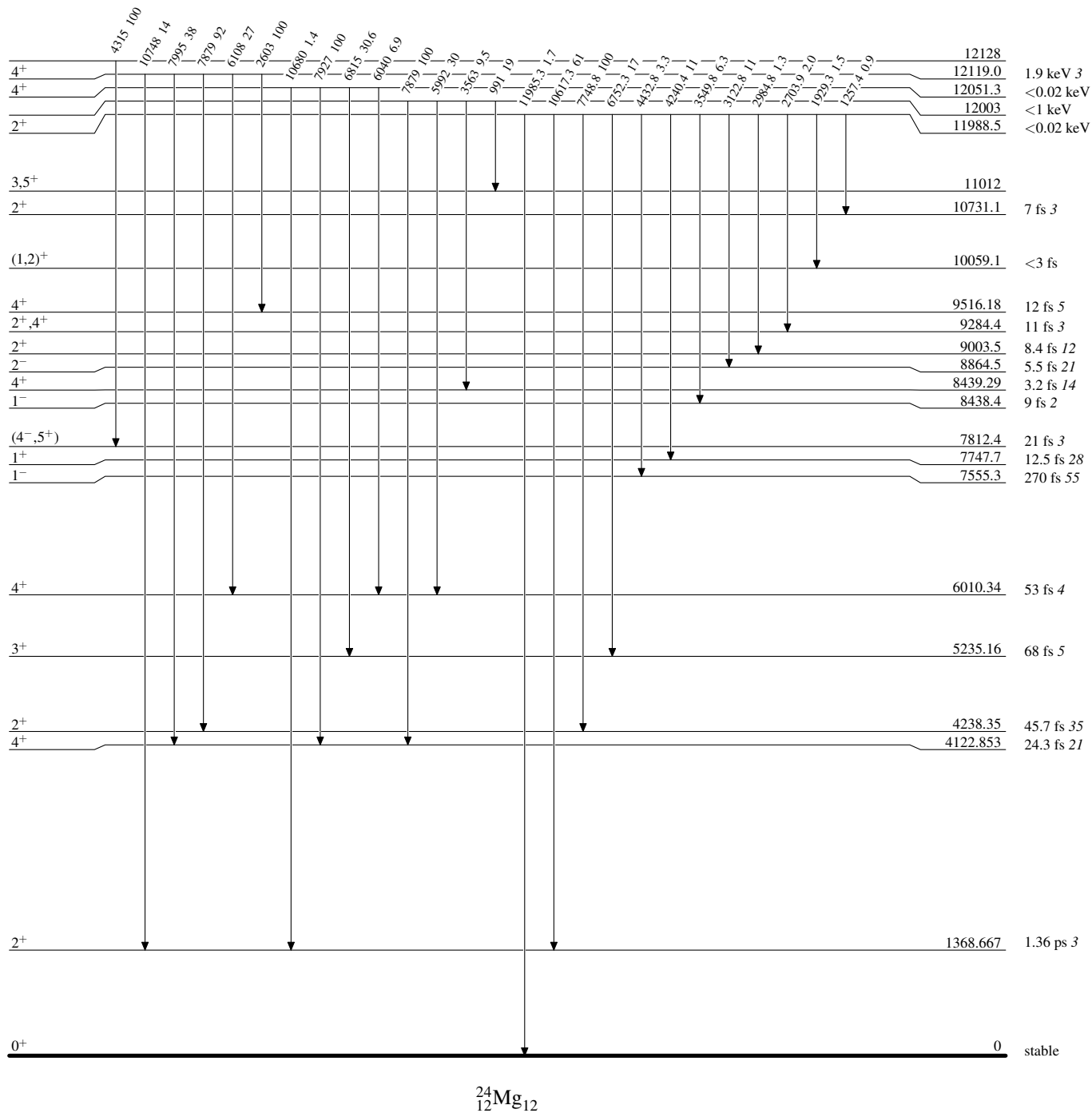
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



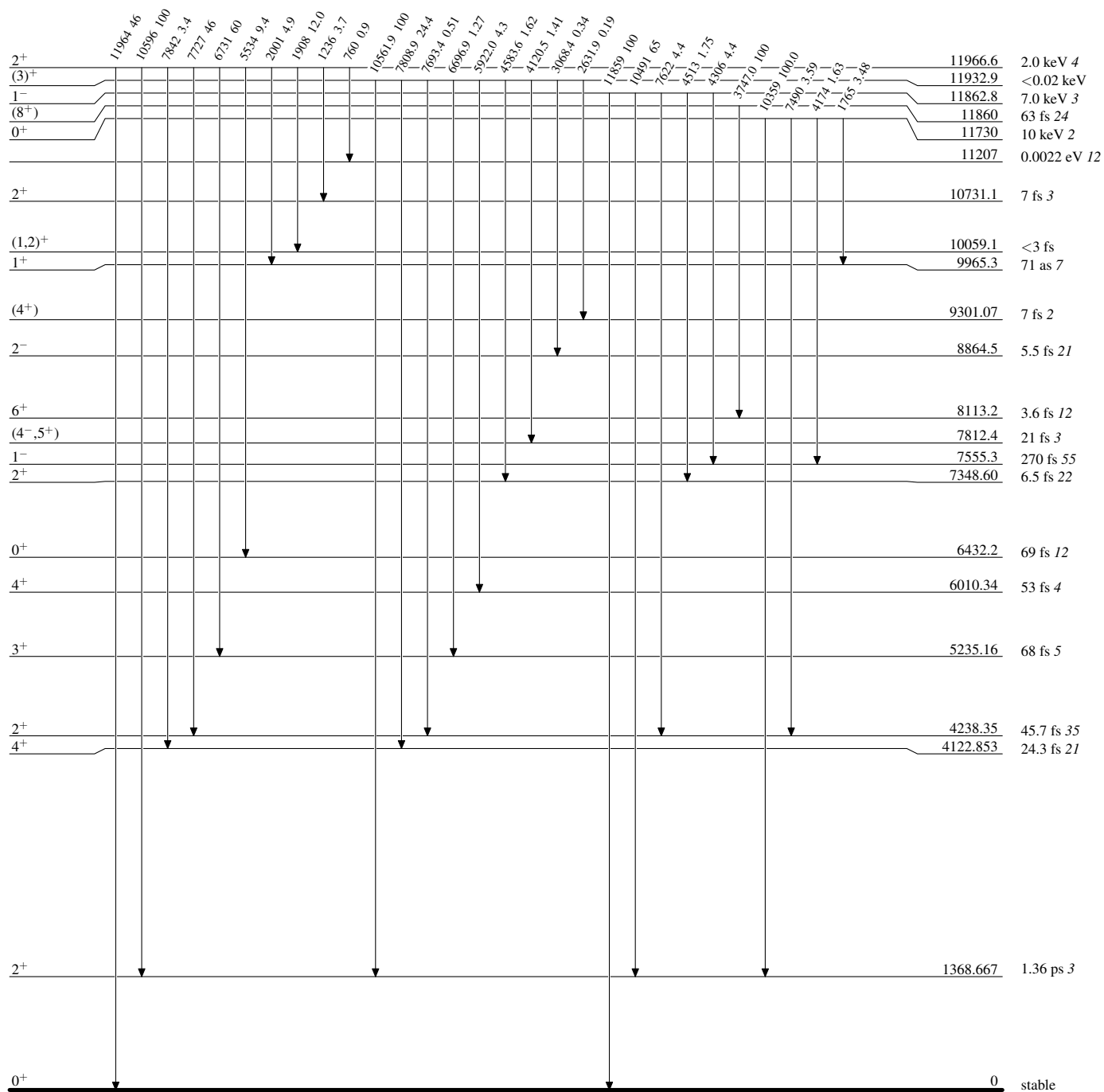
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



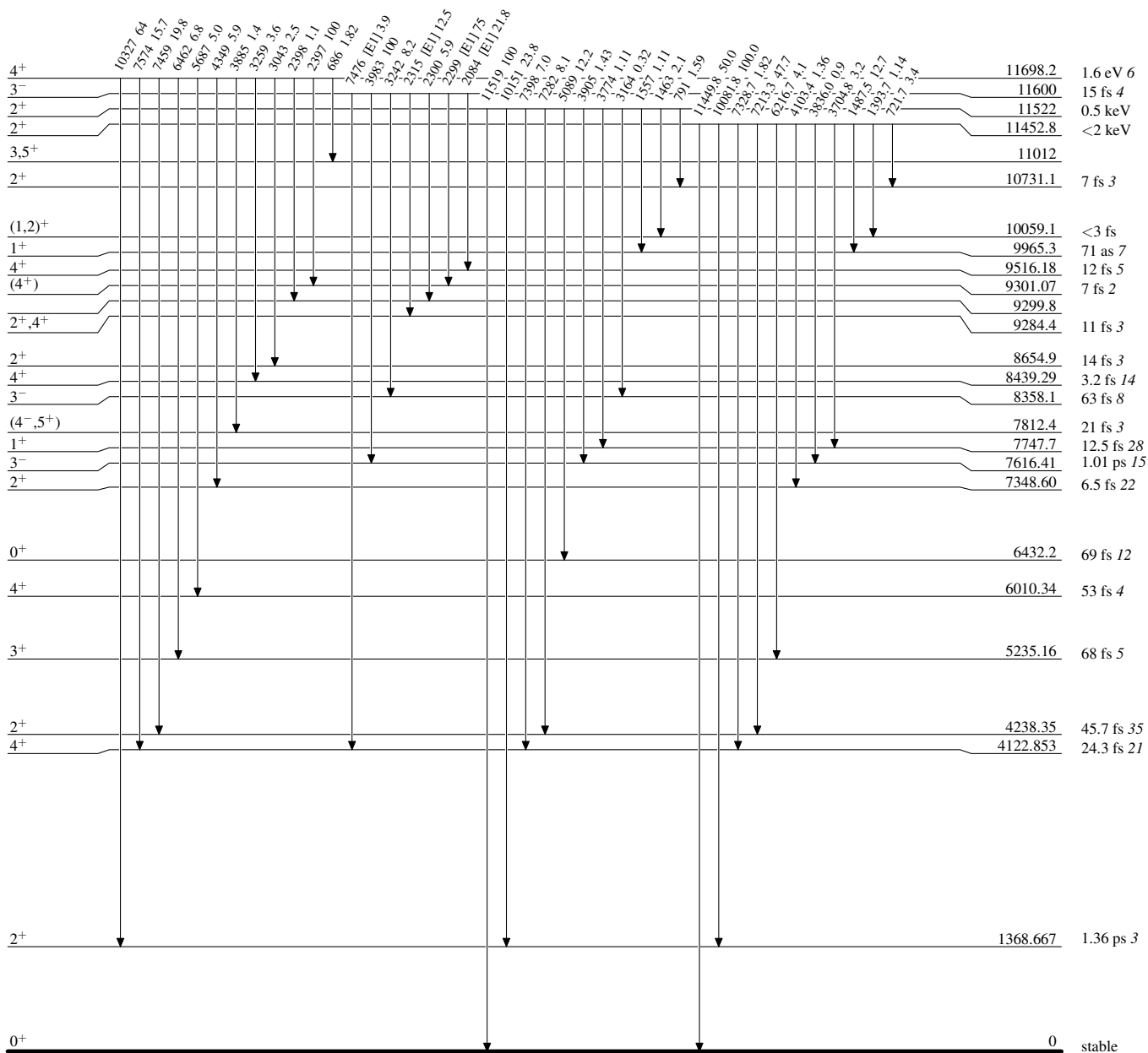
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



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

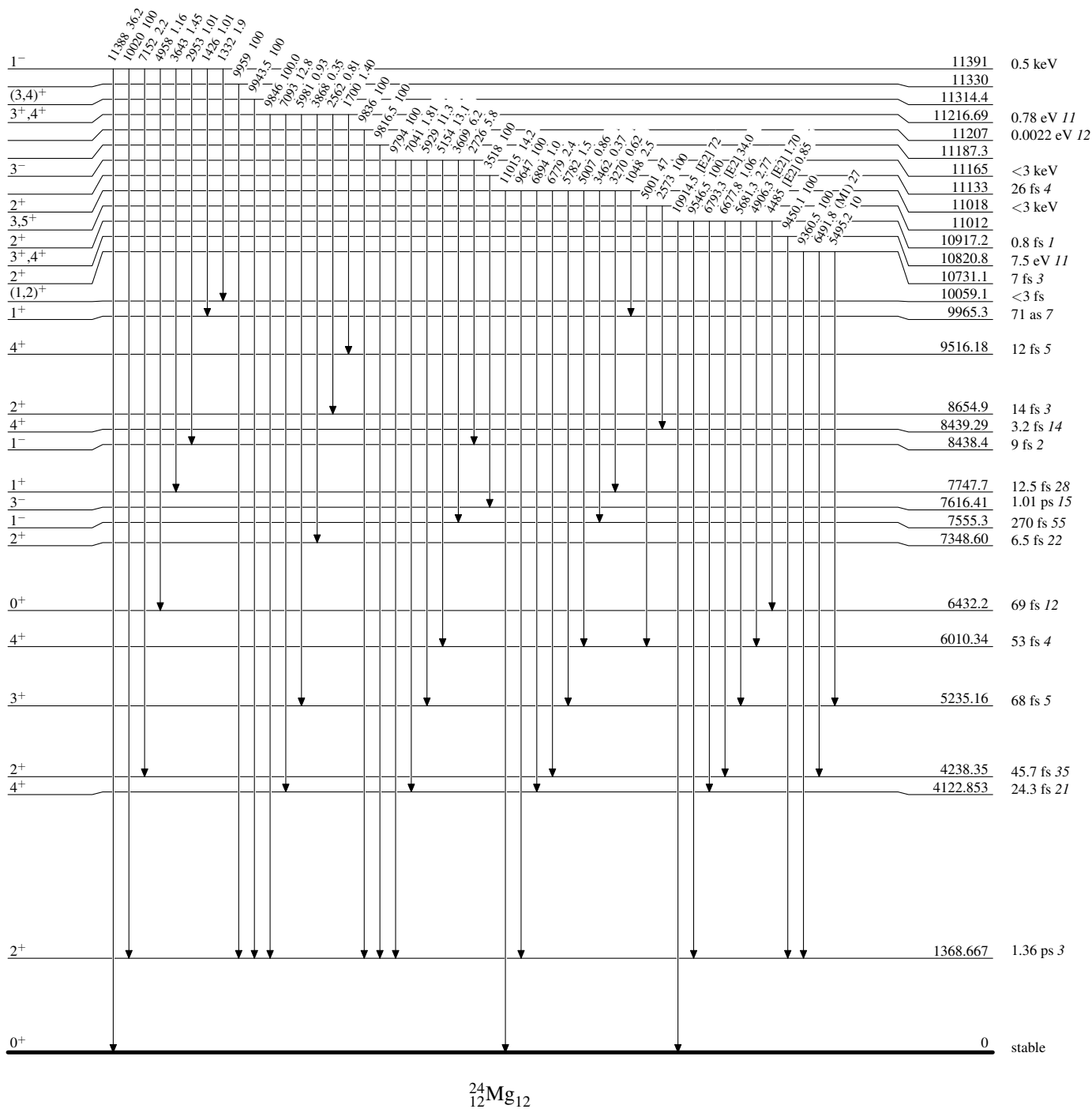
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

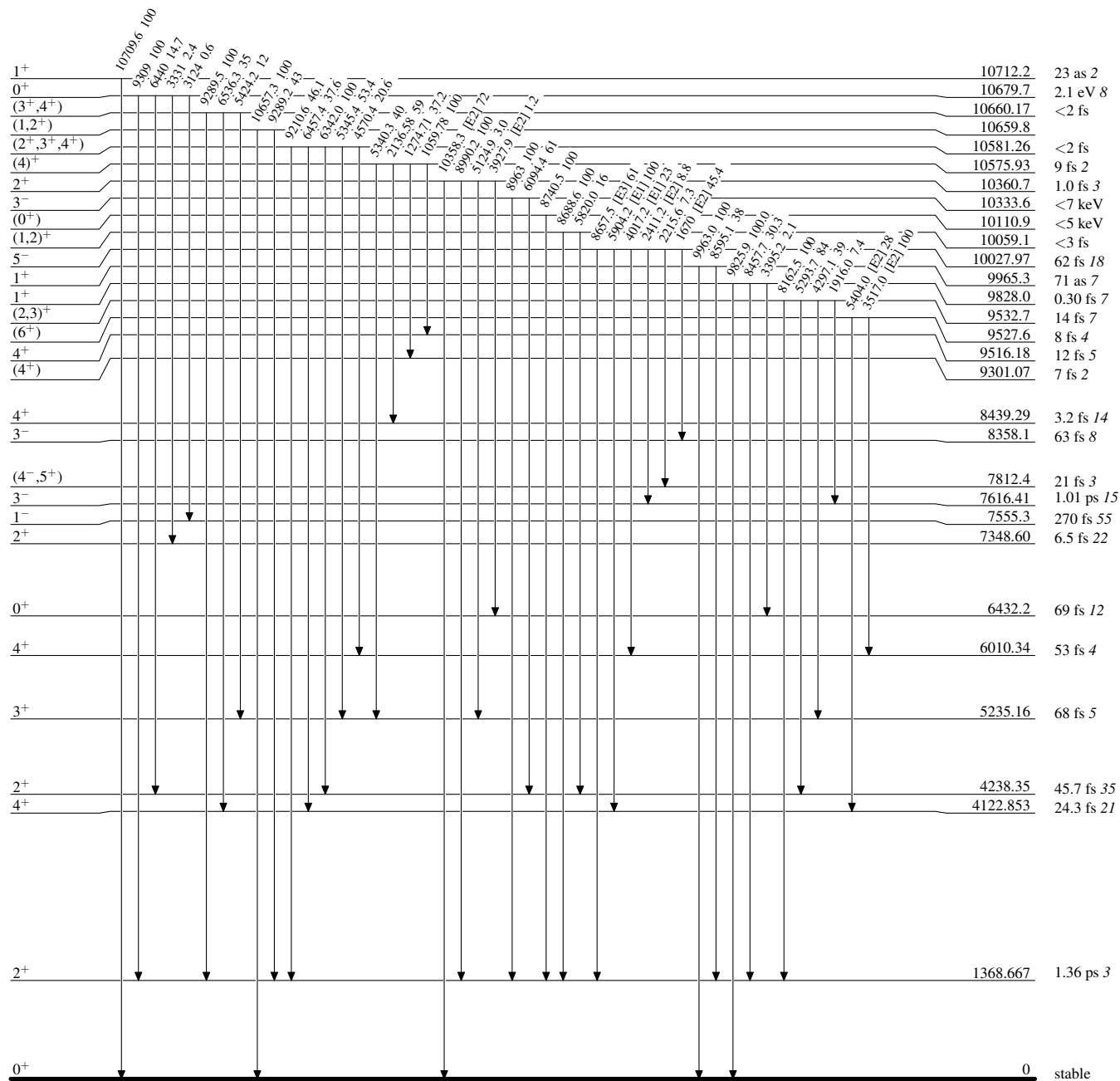
Level Scheme (continued)

Intensities: Relative photon branching from each level



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

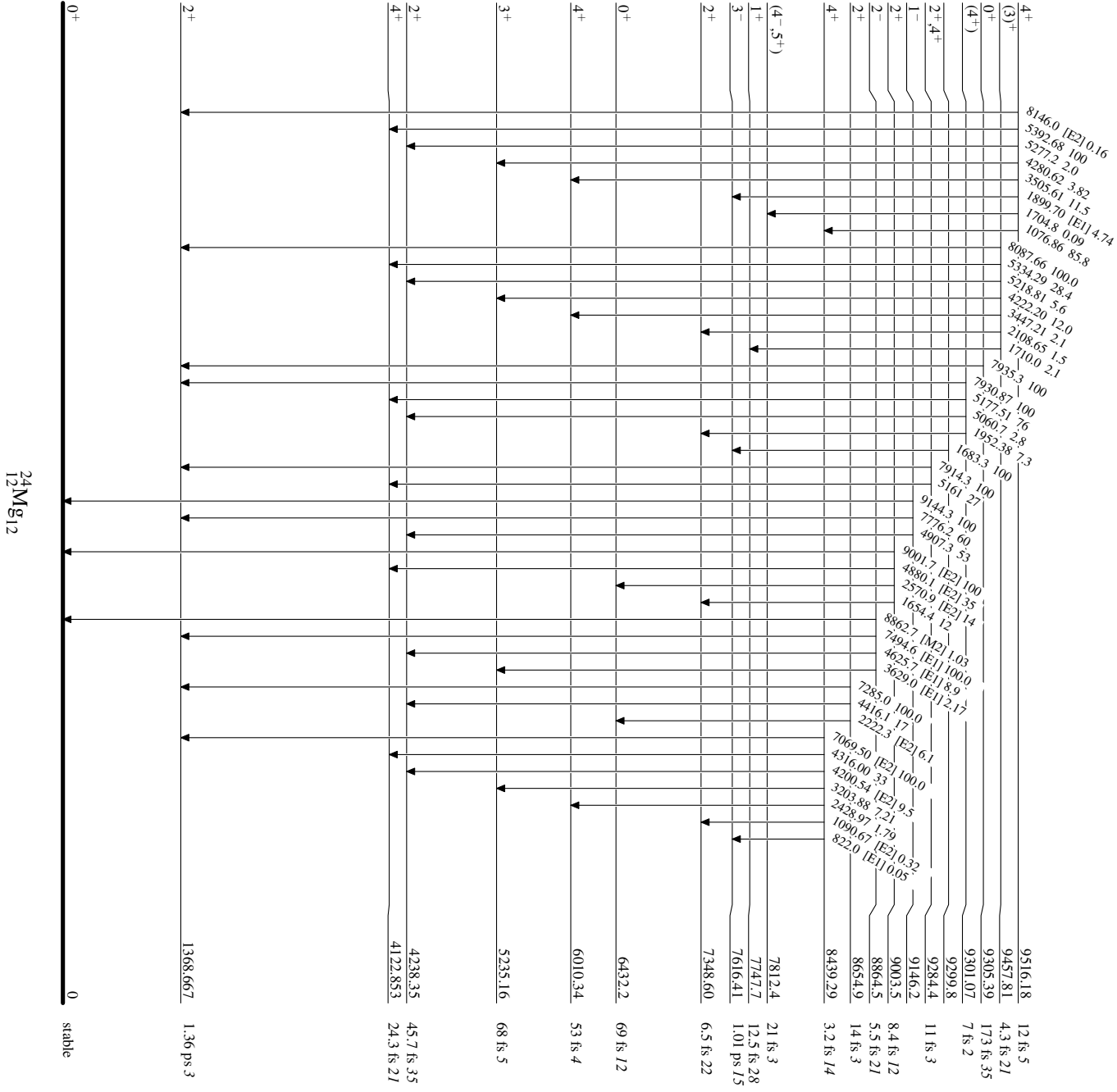
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

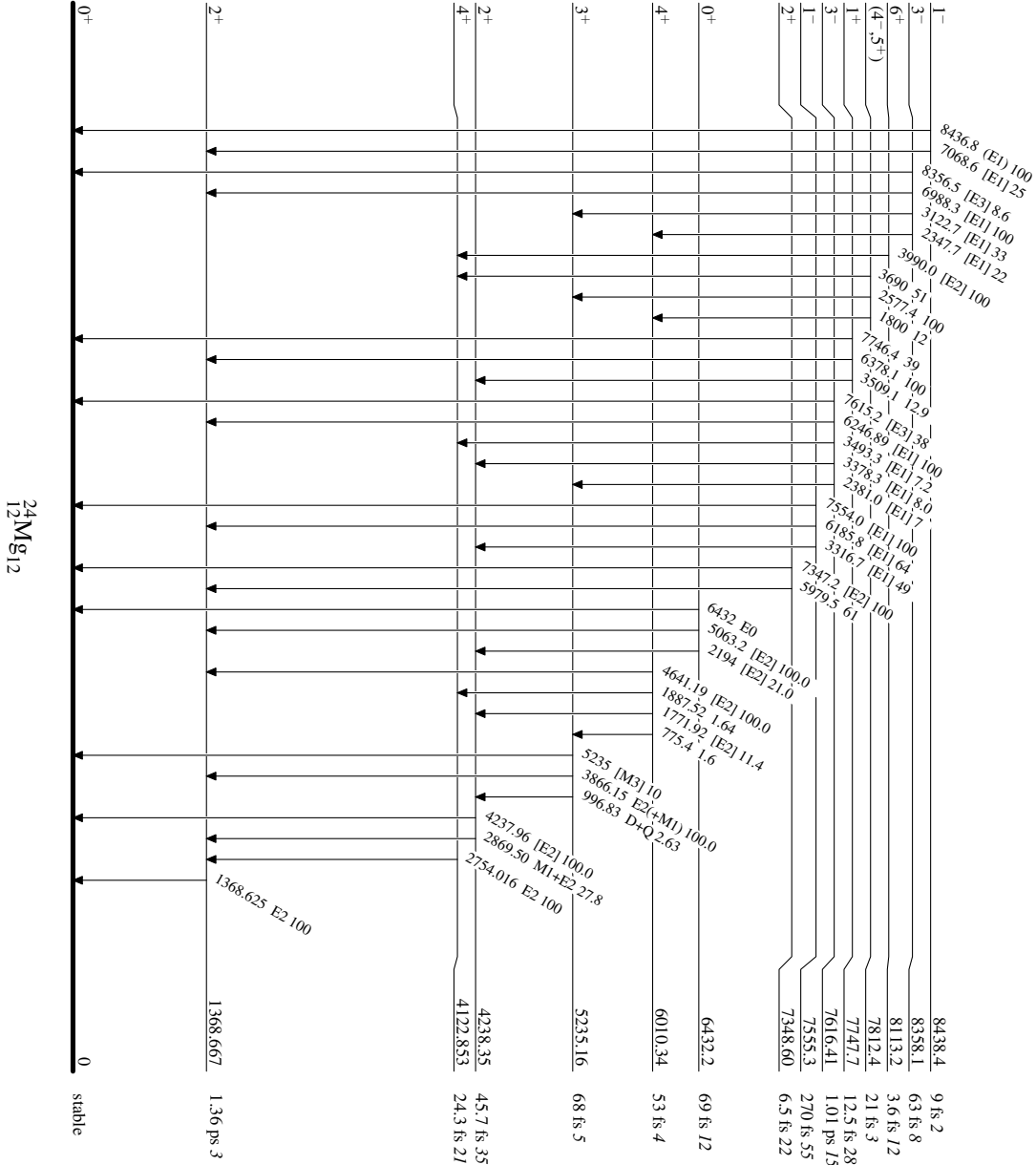
Intensities: Relative photon branching from each level



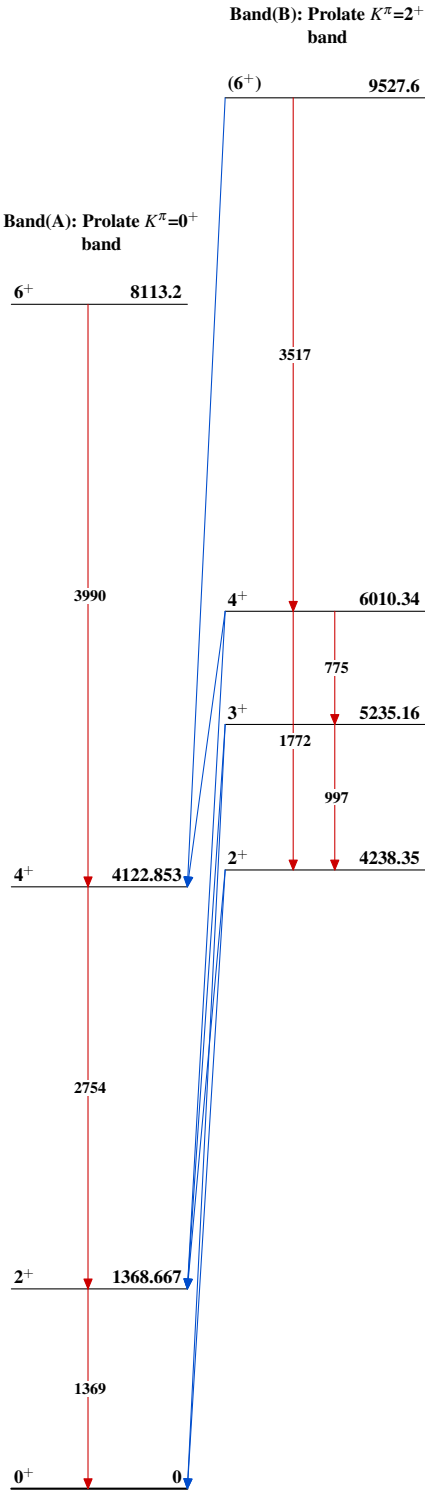
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



Adopted Levels, Gammas



$^{24}_{12}\text{Mg}_{12}$