

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 108, 923 (2007)	20-Feb-2007

Q(β⁻)=-7445 7; S(n)=13002.52 11; S(p)=5167.78 7; Q(α)=-8242.6 19 [2012Wa38](#)

Note: Current evaluation has used the following Q record.

Q(β⁻)=-7444 14; S(n)=13000.4 6; S(p)=5167.60 7; Q(α)=-8239.0 20 [2003Au03](#)

⁴⁷V Levels

Resonance parameters: see references cited in the (p,γ) data sets.

All information is from (p,γ) E=0.4-1.8 MeV, except as noted. See this table and the references cited in the (p,γ) data data sets for additional resonances.

Bands: nomenclature of [2001Br32](#) In ²⁸Si(²⁸Si,2αpγ) E=110, 115 MeV ADOPTED.

Cross Reference (XREF) Flags

A	⁴⁷ Cr β ⁺ decay	F	²⁸ Si(²⁸ Si,2αpγ) E=125 MeV	K	⁴⁷ Ti(³ He,t) IAS
B	⁴⁸ Mn εp decay: partial	G	⁴⁶ Ti(p,γ) E=0.4-1.8 MeV res	L	⁵⁰ Cr(p,α)
C	¹⁰ B(⁴⁰ Ca,n2pγ), ²⁴ Mg(³² S,2αpγ),	H	⁴⁶ Ti(d,n),(³ He,d)	M	⁴⁶ Ti(p,γ) E=0.72-4 MeV
D	²⁴ Mg(²⁸ Si,αpγ) E=87 MeV	I	⁴⁶ Ti(¹⁶ O, ¹⁵ N)	N	⁴⁶ Ti(p,γ),(p,p),(p,p'),(p,p'γ)
E	²⁸ Si(²⁸ Si,2αpγ) E=110, 115 MeV	J	⁴⁷ Ti(p,n),(p,nγ)		

E _x	TVSummary of J ^π arguments for bound states from (p,γ) E=0.4-1.8 MeV (1991Ki11 , 1986De13).				E _x	TVSummary of J ^π arguments for bound states from (p,γ) E=0.4-1.8 MeV (1991Ki11 , 1986De13).			
	γ(θ)	Feeding RUL	Decay RUL	Other		γ(θ)	Feeding RUL	Decay RUL	Other
660.	x	x	x		3953.	x	x	x	
1139.	x		x		3959.	x		x	
1271.	x		x	a	3985.	x	x		
1747.	x	x	x		4081.	x	x	x	
1969.	x	x	x		4099.		x	x	
2083.	x	x	x	b	4100.		x	x	b
2176.	x	x	x		4118.		x	x	
2212.	x		x	b	4150.		x	x	d
2440.	x		x	b	4197.		x	x	
2723.	x	x	x		4207.		x		
2747.	x		x		4222.	x			
2767				b,c	4271.6	x	x		c
2810.	x		x		4271.8		x		
2984.	x		x		4345.		x		c
3005.	x	x	x	b	4393.		x	x	
3054.	x	x			4403.			x	
3248.	x	x	x		4454.	x		x	
3304.	x				4509.5	x	x		
3355.	x	x	x		4510.0	x	x		
3363.		x			4514.		x		
3370.52		x			4543.		x		
3370.56	x	x			4569.	x	x	x	
3517.	x		x		4694.	x	x	x	
3525.	x		x		4719.		x		
3590.	x		x		4734.	x	x	x	
3660.	x	x	x		4793.		x		
3694.	x	x	x		4797.		x		
3718.	x	x			4810.		x	x	
3721.	x	x	x		4852.		x	x	
3763.		x			4908.	x	x	x	
3773.		x		c	4955.		x		
3823.		x			4999.	x	x		

3869.			x	5016.			x
3875.8		x	x	5109.			x
3876.0	x	x	x	5124.	x	x	x
3890.		x		5142.			x
3892.		x	x	5223.	x	x	
				5240.	x	x	

- a. TV $\gamma(\theta)$ (1184 γ) in (p,n γ).
- b. TVL_{p=1} in (³He,d).
- c. Average-spin method (1991Ki11).
- d. TVIAS(⁴⁷Ti g.s.).

TVSummary of J^π arguments for resonance states from (p, γ) E=0.4-1.8 MeV (1993Ca12, 1991Ki11, 1986De13).

E _x	E _p	Decay	$\gamma(\theta)$	Wigner Limit	δ , RUL	Other	E _x	E _p	Decay	$\gamma(\theta)$	δ , RUL	Other
5636	479	x	x			6190	1045	x		c, d		
5738	583	x	x			6229	1085	x	x	x		
5853	701	x	x		a	6240	1096	x	x	a		
5885	733	x	x			6271	1127	x		a, c, d		
5887	735	x	x		a	6296	1154	x	x	x		
5894	743	x	x			6351	1209			c, d		
5962	811	x	x			6374	1232	x		c, d		
5994	845	x	x			6387	1246	x		b, d		
6023	875	x	x			6393	1253	x	x	x		
6087	940	x	x	x	b	6426	1286	x	x	a		
6122	975	x	x		b	6427	1287	x				
6132	986	x	x			6475	1336	x	x	b		
6157	1011	x			b, c, d	6679	1545	x	x	a		
6166	1020	x			a	6693	1559	x	x			
						6953	1825	x	x	x		

- a. TVL _{$\gamma \approx 90\%$} decay to $\pi=-$ states indicates a negative resonance parity.
- b. TVL _{$\gamma \approx 80\%$} decay to $\pi=+$ states indicates a positive resonance parity.
- c. TVAverage-spin method (1991Ki11).
- d. TVNonmetric multi-dimensional scaling method (1993Ca12).

TVSee (p, γ) E=0.4-1.8 MeV for summary of isobaric analog states of ⁴⁷Ti and ⁴⁷V.

E(level) [†]	J^π [‡]	T _{1/2} [#]	XREF	Comments
0.0 [@]	3/2 ⁻	32.6 min 3	ABCDEFGHIJKL	% ϵ +% β^+ =100 J ^π : 3/2 from AB (1978Re03). $\pi=-$ from L(p)=1 In (³ He,d). T _{1/2} : from 1973Fi02 (γ 's. 10 min intervals). Others: see 1995Bu05.
87.525 ^{&a} 9	5/2 ⁻	0.68 ^b ns 4	ABCDEFGHIJ J L	J ^π : M1+E2 to 3/2 ⁻ and D from 7/2 ⁻ .
145.821 ^{@&} 15	7/2 ⁻	0.51 ^b ns 6	BCDEFGHIJ L	J ^π : L(p)=3 in (³ He,d). \neq 5/2 from $\gamma(\theta)$ (1149 γ) in (p,n γ). L(¹⁶ O, ¹⁵ N)=4 discrepant.
259.486 ^{&c} 4	3/2 ⁺	58 ^b ps 6	BC EFGH J L	J ^π : L(p)=2 in (³ He,d). Primary γ 's from 1/2 res's exclude J=5/2.
660.358 ^{&d} 9	5/2 ⁺	1.6 ^e ps 12	BC EFGH J L	
1138.55 ^{&c} 3	7/2 ⁺	1.59 ^f ps 35	C EFG J L	T _{1/2} : other: 1.7 ps 14 from RDM In ²⁴ Mg(³² S,2 α p γ), 0.7 ps +12-3 from DSAM In (p,n γ) and >208 fs from DSAM In (p, γ) E=0.4-1.8 MeV.
1271.80 ^{&a} 5	9/2 ⁻	0.25 ps 8	CDEFG J L	
1294.96 ^{@&} 6	11/2 ⁻	1.59 ps 44	C EFG J L	J ^π : from $\gamma(\theta)$ In (³² S,2 α p γ) and stretched E2 γ to 7/2 ⁻ . T _{1/2} : weighted average of $\tau=2.0$ ps +10-8 from RDM In (⁴⁰ Ca,n2p γ) and $\tau=2.5$ ps 8 from DSAM or NGTB In ²⁸ Si(²⁸ Si,2 α p γ) E=110, 115 MeV. Other: >0.31 ps from DSAM In (p, γ) E=0.4-1.8 MeV.
1660.62 ^{&} 12	1/2 ^{+g}	0.37 ps 16	GH J L	
1746.96 ^{&d} 4	9/2 ⁺	0.56 ^f ps 8	C EFG J L	T _{1/2} : other: 624 fs +90-24 from DSAM In (p, γ) E=0.4-1.8 MeV.
1968.92 ^{&} 3	3/2 ⁺	0.44 ps 12	G L	
2082.72 ^{&} 2	3/2 ⁻	14.6 fs 35	GHI L	

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Adopted Levels, Gammas (continued) ${}^{47}\text{V}$ Levels (continued)

E(level) [†]	$J^{\pi\ddagger}$	$T_{1/2}^{\#}$	XREF	Comments
2175.86 ^{&} 4	5/2 ⁻	15 fs 5	G L	
2211.75 ^{&} 3	1/2 ⁻	83 fs 21	GH L	J^{π} : 3/2 from comparison of (${}^3\text{He},d$) S(+)(L=1) for ${}^{47}\text{V}$ and other V isotopes states (1989Bo18) discrepant.
2415.0 ^c 4	11/2 ⁺	0.39 ^f ps 4	C EF	J^{π} : J→J-2 E2 γ to 7/2 ⁺ . $T_{1/2}$: other: 1.0 ps 4 from DSAM In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha p\gamma)$ E=125 MeV.
2439.54 ^{&} 4	5/2 ⁺	65 fs 14	G	
2546.8	5/2 ⁻ , 7/2 ⁻⁸		HI	E(level): from (${}^3\text{He},d$).
2558.8 ^a 5	13/2 ⁻	0.42 ^f ps 14	C EF	J^{π} : M1 γ from 15/2 ⁻ and J→J D or J→J-2 E2 γ to 9/2 ⁻ .
2615.0 [@] 5	15/2 ^{-h}	0.679 ps 49	C EF	J^{π} : J→J-2 E2 γ to 11/2 ⁻ . $T_{1/2}$: weighted average of $\tau(2615)=0.99$ ps 10 and 0.97 ps 10 from DSAM or NGTB In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha p\gamma)$ E=110, 115 MeV. Other: <1.4 ps from comparison of DSA(1320 γ) with that for the 1149 γ from 1295-keV state in (${}^{10}\text{B},n2p\gamma$). >1.7 ps from DSAM In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha p\gamma)$ E=125 MeV discrepant.
2722.63 ^{&} 7	5/2 ⁻	36 fs 10	GH	
2747.12 ^{&} 16	9/2 ⁻	25 fs 10	G	
2767.32 ^{&} 6	(1/2) ⁻	10.4 fs 28	GH	
2810.04 ^{&} 12	7/2 ⁺	0.11 ps 3	G	
2984.29 ^{&} 11	7/2 ⁻	5 fs 2	G	
3005.45 ^{&} 3	3/2 ⁻	6 fs 2	GH	
3054.22 ^{&} 15	5/2 ⁻	5 fs 2	G	
3247.73 ^{&} 8	7/2 ⁻	76 fs 21	GH	J^{π} : other: L(P)=2,3 In (d,n),(${}^3\text{He},d$).
3270.3 ^d 5	13/2 ⁺	0.173 ^f ps 28	C EF	J^{π} : J→J-2 E2 γ to 9/2 ⁺ . $T_{1/2}$: >2 ps from DSAM In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha p\gamma)$ E=125 MeV discrepant.
3303.53 ^{&} 4	3/2	32 fs 7	G	
3355.49 ^{&} 13	5/2 ⁺	5 fs 2	G	
3362.65 ^{&} 9	1/2 ⁱ	2.8 fs 14	Gh	
3370.52 ^{&} 4	1/2,3/2,5/2 ⁺ⁱ	11.8 fs 21	Gh	
3370.56 ^{&} 8	3/2 ⁱ	<5 fs	Gh	
3517.08 ^{&} 15	5/2	<6.9 fs	GH	
3524.60 ^{&} 12	7/2 ⁺	9.7 fs 28	G	
3590.35 ^{&} 6	5/2	6 fs 2	GH	
3659.71 ^{&} 14	(7/2)	14 fs 4	G	Possible doublet.
3694.4 ^{&} 3	5/2,3/2 ⁺	6 fs 3	G	
3718.0 ^{&} 3	7/2,5/2,9/2 ⁺		G	
3721.29 ^{&} 13	7/2 ⁺	15 fs 6	G	J^{π} : J=7/2 from 1253 res primary $\gamma(\theta)$ and 1545 res primary RUL. $\pi=+$ from D,E2 γ to 3/2 ⁺ , 259.
3762.7 ^{&} 3	1/2 to 5/2		G	
3773.4 ^{&} 2	(1/2)	<11 fs	G	
3822.6 ^{&} 2	1/2,3/2	19 fs 9	G	
3869.0 ^{&} 3	5/2	9.7 ps 35	Gh	
3875.8 ^{&} 3	5/2,3/2 ⁻	<8 fs	Gh	
3876.0 ^{&} 2	7/2 ⁻	<11 fs	Gh	
3890.1 ^{&} 2	1/2,3/2,5/2 ⁺	<3.5 ps	Gh	

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Adopted Levels, Gammas (continued)

^{47}V Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2} [#]	XREF	Comments
3892.26 ^{& 11}	3/2,5/2 ⁺	24 fs 18	Gh	
3952.6 ^{& 4}	7/2	37 fs 14	G	J ^π : 7/2,5/2 ⁻ from arguments summarized above. ≠ 5/2 ⁻ from D,E2 γ from 9/2 ⁺ res.
3954.3 ^{c 6}	15/2 ⁺	0.166 ^f ps 28	C EF	J ^π : J→J-2 E2 γ to 11/2 ⁺ . T _{1/2} : 0.37 ps 6 from DSAM In $^{28}\text{Si}(^{28}\text{Si},2\alpha p\gamma)$ E=125 MeV discrepant.
3958.7 ^{& 3}	3/2 ⁺	9.0 fs 28	G	
3984.97 ^{& 17}	7/2,3/2 ⁺ ,5/2 ⁺	24 fs 9	GH	
4080.60 ^{& 12}	3/2 ⁺	15 fs 4	G	
4099.06 ^{& 14}	5/2 ⁻ ,3/2 ⁻ⁱ	<8.3 fs	Gh	
4100.31 ^{& 10}	3/2 ⁻ⁱ	5.5 fs 21	Gh	
4118.12 ^{& 14}	3/2,1/2,5/2 ⁱ	13 fs 4	Gh	
4133.0 ^{@ 7}	19/2 ^{-h}	0.417 ps 28	CDEF	J ^π : J→J-2 E2 γ to 15/2 ⁻ . T _{1/2} : weighted average τ=0.60 ps 6 and 0.57 ps 6 from DSAM or NGTB In $^{28}\text{Si}(^{28}\text{Si},2\alpha p\gamma)$ E=110, 115 MeV and τ=0.70 ps 11 from DSAM In $^{28}\text{Si}(^{28}\text{Si},2\alpha p\gamma)$ E=125 MeV.
4150.35 ^{& 11}	5/2 ⁽⁻⁾	<7 fs	GH K	T=3/2 IAS(^{47}Ti ,g.s.).
4197.3 ^{& 3}	5/2	<11 fs	GH	
4207.10 ^{& 14}	3/2,1/2,5/2		G	
4222.48 ^{& 6}	5/2	<11 fs	G K	
4271.60 ^{& 20}	7/2,3/2 ⁺ ,5/2 ⁺ ^j		Gh k	
4271.75 ^{& 12}	(1/2) ^j	<11 fs	Gh k	
4296 12	(7/2) ⁻		H K	E(level): from (^3He ,d). J ^π : L(^3He ,d)=3. IAS of ^{47}Ti 159, 7/2 ⁻ , state.
4345.19 ^{& 10}	(1/2 ⁺)	<9 fs	G	
4346.8? 12			E	
4392.80 ^{& 20}	1/2 ⁻ ,3/2 ^{-g}	<24 fs	GH	
4402.6 ^{& 3}	7/2,5/2,9/2	<28 fs	G	
4406.4 ^{& 4}			G	
4453.7 ^{& 2}	7/2	11 fs 6	G	
4509.52 ^{& 14}	7/2,3/2,5/2 ⁺ ⁱ		Gh	
4510.01 ^{& 14}	5/2,3/2 ⁻ⁱ	<8.3 fs	Gh	
4514.5 ^{& 3}	3/2,1/2,5/2 ⁻ⁱ		Gh	
4543.02 2	03/2,1/2,5/2 ⁺		Gh	
4568.68 ^{& 20}	5/2	<9 fs	G	
4613 20			H	
4694.33 ^{& 11}	5/2 ⁺ ,3/2 ⁺	<8.3 fs	G	
4719.2 ^{& 3}	3/2,1/2,5/2 ⁻		G	
4733.8 ^{& 3}	9/2	<15 fs	G	
4792.9 ^{& 3}	1/2,3/2 ⁱ		Gh	
4796.8 ^{& 3}	3/2,1/2 ⁻ ,5/2 ⁻ⁱ		Gh	
4807.30 ^{& 14}	5/2	15 fs 9	G	
4852.5 ^{& 3}	5/2,1/2 ⁻ ,3/2 ⁻		G	
4907.6 ^{& 2}	5/2,3/2 ⁺ ,7/2 ⁺	<13 fs	G	
4955.12 ^{& 13}	1/2,3/2,5/2 ⁺		G	

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Adopted Levels, Gammas (continued)

^{47}V Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2} [#]	XREF	Comments
4976.5 ^{& 3}			G	
4998.7 ^{& 3}	5/2,7/2		G	
4999.3 ^{d 7}	17/2 ⁺	0.104 ^f ps 35	C EF	J ^π : J→J-2 E2 γ to 13/2 ⁺ .
5016.0 ^{& 3}	3/2,5/2 ⁺	<15 fs	Gh	
5108.65 ^{& 13}	1/2,3/2,5/2 ⁺		Gh	
5123.86 ^{& 14}	7/2,5/2 ⁺		G	
5142.16 ^{& 9}	3/2,1/2 ⁻ ,5/2 ⁻	<11 fs	G	
5222.71 ^{& 20}	3/2,5/2 ⁺		G	
5240.0 ^{& 3}	5/2,3/2 ⁺ ,7/2 ⁺	<5 fs	G	
5244 20	1/2 ⁻ ,3/2 ^{-g}		H	E(level): from (³ He,d).
5387 20			H	
5474 20			H	
5538 20			H	
5585 12	1/2 ⁻ ,3/2 ^{-g}		H	
5635.9 ^{& 3}	3/2 ⁻	<19 ^k fs	G	T=3/2 IAS(⁴⁷ Ti,1550)? possibly fragmented. May correspond to the 5738 resonance.
5711? 20			H	
5728.3 ^{c 11}	(19/2 ⁺)	0.080 ^f ps 17	EF	J ^π : J→J-2 (E2) γ to 15/2 ⁺ . T _{1/2} : 0.23 ps 4 from DSAM In ²⁸ Si(²⁸ Si,2αpγ) E=125 MeV discrepant.
5738 ^{& 3}	1/2,3/2	<7 ^k fs	G	
5748? 20			H	May correspond to the preceding resonance.
5853.41 ^{& 12}	1/2	<8 ^k fs	G	
5885.20 ^{& 21}	3/2	<7 ^k fs	Gh	
5887.33 ^{& 12}	1/2	<2 fs	Gh	Fragment of IAS(⁴⁷ Ti,1794)?
5894.60 ^{& 13}	1/2	<5 fs	Gh	
5903.0 ^{@ 9}	(23/2 ⁻)	0.254 ps 18	CDEF	J ^π : 19/2 or 23/2 ⁻ from J→J or J→J-2 E2 γ to 19/2 ⁻ . ≠ 19/2 from membership In band. T _{1/2} : weighted average of τ=0.50 ps 7 from DSAM In ²⁸ Si(²⁸ Si,2αpγ) E=125 MeV and τ=0.35 ps 3 and 0.37 ps 5 from DSAM or NGTB In ²⁸ Si(²⁸ Si,2αpγ) E=110, 115 MeV. T _{1/2} =0.254 ps 18 is the arithmetic mean of τ=0.372 ps 24 (NRM) and 0.360 ps 26 (RT); τ=0.373 ps 34 (LWM).
5928? 20			H	
5961.2 ^{& 4}	1/2	<8.3 fs	G	
5994.3 ^{& 4}	3/2	<6 ^k fs	G	
6024.00 ^{& 10}	1/2 ⁻	<1.4 fs	G	Fragment of IAS(⁴⁷ Ti,1794)?
6036.7 13	1/2 ^{+g}		H	
6036.8 ^{a 10}	(21/2 ⁻)	<0.14 ^f ps	DE	J ^π : 15/2 ⁻ to 23/2 ⁻ from D,E2 γ to 19/2 ⁻ . 21/2 ⁻ from membership In band. T _{1/2} : other: 0.24 ps 3 from ²⁸ Si(²⁸ Si,2αpγ) E=125 MeV if 1362γ-1904γ sequence is reversed.
6087.43 ^{& 10}	5/2	<5 ^k fs	G	
6122.07 ^{& 10}	1/2	<3 fs	G	
6132.60 ^{& 9}	1/2 ⁺	<1.4 fs	Gh	J ^π : 3/2 from nonmetric multidimensional scaling method (1993Ca12) discrepant.
6157.52 ^{& 10}	(5/2)	<17 fs	Gh	
6165.97 ^{& 9}	3/2 ⁽⁻⁾	<1.4 fs	Gh	

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Adopted Levels, Gammas (continued)

^{47}V Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2} [#]	XREF	Comments
6190.59 ^{& 10}	(3/2)	<2 fs	Gh	
6229.55 ^{& 10}	5/2 ⁺	<3 fs	G	
6239.95 ^{& 10}	3/2	<0.7 fs	G	
6270.93 ^{& 10}	(3/2)	<0.4 fs	Gh	
6296.60 ^{& 10}	3/2 ⁻	<1.4 fs	Gh	
6350.98 ^{& 10}	(3/2)		G	
6373.82 ^{& 10}	(1/2)	<2 fs	G	
6387.28 ^{& 10}	(5/2 ⁺)	<3 fs	G	Fragment of IAS(^{47}Ti ,2260)?
6392.5 ^{? 24}			C	
6393.95 ^{& 10}	5/2 ⁺	<1.4 fs	Gh	Fragment of IAS(^{47}Ti ,2260)?
6425.87 ¹³	3/2	<1.4 fs	Gh	
6427.39 ^{& 13}	5/2	<1.4 fs	Gh	
6475.30 ^{& 10}	5/2 ⁺	<1.4 fs	G	
6570 ²⁰			H	
6679.73 ^{& 21}	7/2 ⁽⁻⁾	<1.4 fs	G	
6683.16 ^{& 12}	l		G	Fragment of IAS(^{47}Ti ,2549)? (1973Sc29).
6693.23 ^{& 21}	1/2 ⁺	<0.9 fs	G	
6700 ^{&}	l		GH	Fragment of IAS(^{47}Ti ,2549)? (1973Sc29).
6749 ²⁰			H	
6869.0 ^{d 9}	21/2 ⁺	<0.21 ^f ps	C EF	J ^π : J→J-2 E2 γ to 17/2 ⁺ .
6895 ²⁰			H	
6953.8 ^{& 3}	9/2 ⁺	<7 ^k fs	GH	
7008 ²⁰			H	
7398.9 ^{a 10}	(25/2 ⁻)	0.090 ^f ps 14	CDEF	J ^π : J→J-1 γ to (23/2 ⁻) and D,E2 γ to 21/2 ⁻ . Additional information 1. T _{1/2} : other: 0.05 ps 3 from DSAM In $^{28}\text{Si}(^{28}\text{Si},2\alpha\gamma)$ E=125 MeV if 1362γ-1904γ sequence is reversed.
7725.9 ^{c 14}	(23/2 ⁺)	0.069 ^f ps 21	EF	J ^π : D,E2 γ to (19/2 ⁺). Membership In band. T _{1/2} : other: <0.07 ps from DSAM In $^{28}\text{Si}(^{28}\text{Si},2\alpha\gamma)$ E=125 MeV.
7883.4 ^{@ 10}	(27/2 ⁻) ^h	0.107 ps 12	CDEF	T _{1/2} : weighted average of τ=0.14 ps 3 from DSAM In $^{28}\text{Si}(^{28}\text{Si},2\alpha\gamma)$ E=125 MeV and τ=0.16 ps 2 from DSAM or NGTB In $^{28}\text{Si}(^{28}\text{Si},2\alpha\gamma)$ E=110, 115 MeV.
8781.7 ^{d 13}	(25/2 ⁺)		E	J ^π : membership In band.
9610.5 ^{c 17}	(27/2 ⁺)	0.0984 ps 30	EF	J ^π : J→J-2 E2 γ to (23/2 ⁺). T _{1/2} : weighted average of τ=0.12 ps 5 from DSAM In $^{28}\text{Si}(^{28}\text{Si},2\alpha\gamma)$ E=125 MeV and τ=0.20 ps 8 from DSAM or NGTB In $^{28}\text{Si}(^{28}\text{Si},2\alpha\gamma)$ E=110, 115 MeV.
10004.6 ^{@ 12}	(31/2 ⁻) ^h	0.249 ps 17	CDEF	J ^π : J→J-2 E2 γ to (27/2 ⁻). Additional information 2. T _{1/2} : weighted average of τ=0.34 ps 4 from DSAM In $^{28}\text{Si}(^{28}\text{Si},2\alpha\gamma)$ E=125 MeV and τ=0.37 ps 3 from DSAM or NGTB In $^{28}\text{Si}(^{28}\text{Si},2\alpha\gamma)$ E=110, 115 MeV.
10768.7 ^{a 11}	(29/2 ⁻)	<0.055 ^f ps	DEF	J ^π : J→J-1 γ to (72/2 ⁻) and D,E2 γ to (25/2 ⁻). Additional information 3. T _{1/2} : other: <0.10 ps from DSAM In $^{28}\text{Si}(^{28}\text{Si},2\alpha\gamma)$ E=125 MeV.
11094.5 ^{d 17}	(29/2 ⁺)		E	J ^π : membership In band.
11949.0 ^{c 20}	(31/2 ⁺)	0.083 ^f ps 14	EF	J ^π : D,E2 γ to (27/2 ⁺). Membership In band.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ${}^{47}\text{V}$ Levels (continued)

<u>E(level)[†]</u>	<u>J^π[‡]</u>	<u>T_{1/2}[#]</u>	<u>XREF</u>	<u>Comments</u>
14036.8 [@] 24	(35/2 ⁻)	<0.08 ps	F	T _{1/2} : other: <0.12 ps In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=125 MeV. J ^π : J→J-2 E2 γ to (31/2 ⁻). T _{1/2} : from DSAM In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=125 MeV.
14489.1 ^d 21	(33/2 ⁺)	<0.069 ^f ps	E	J ^π : D,E2 γ to (31/2 ⁺). Membership In band.
15258.2 ^c 21	(35/2 ⁺)	<0.069 ^f ps	E	J ^π : D γ to (33/2 ⁺) and D,E2 γ to (31/2 ⁺). Membership In band.

[†] From (p,γ) E=0.4-1.8 MeV res, except as noted in the comments, footnotes, or cross-reference column.

[‡] See tables above for summary of arguments by 1986De13 and arguments by 1991Ki11 and 1993Ca12 based on further analysis of the data of 1986De13 using the average-spin method and nonmetric multi-dimensional scaling method, respectively. Additional details are given in the (p,γ) E=0.4-1.8 MeV data set, as are additional restrictions based on “weak” arguments.

[#] Except As noted, bound-state T_{1/2}'s are from DSAM and resonance-state T_{1/2}'s are based on the resonance strength In (p,γ) E=0.4-1.8 MeV.

[@] Band(A): g.s. band, α=-1/2 (1994Ca04,1998Be69,1998Ca26,2001Br32). Yrast band proposed by 1994Ca04 In ${}^{10}\text{B}({}^{40}\text{Ca},n2p\gamma)$ up through 31/2⁻. Confirmed by 1998Be69 In ${}^{24}\text{Mg}({}^{28}\text{Si},\alpha p\gamma)$, 1998Ca26 In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=125 MeV, and 2001Br32 In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=110, 115 MeV and extended by 1998Ca26 through 35/2⁻ for α=-1/2.

& Level energy held fixed In least-squares adjustment.

^a Band(B): g.s. band, α=+1/2 (1994Ca04,2001Br32). Yrast band proposed by 1994Ca04 In ${}^{10}\text{B}({}^{40}\text{Ca},n2p\gamma)$ up through 31/2⁻. Confirmed and extended through 29/2⁻ for α=+1/2 by 1998Ca26 In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=125 MeV and 2001Br32 In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=110, 115 MeV. 2001Br32 and 1998Be69 In ${}^{24}\text{Mg}({}^{28}\text{Si},\alpha p\gamma)$ report a 1362γ-1904γ sequence instead of the 1900γ-1367γ sequence reported by 1998Ca26 resulting In the assignment of the 21/2⁻ state to 6037 keV instead of 5500 keV.

^b Weighted average of T_{1/2}(88)=0.85 ns 11 and 0.66 ns 4, T_{1/2}(146)=0.44 ns 9 and 0.54 ns 7, and T_{1/2}(259)=62 ps 9 and 54 ps 8 from RDM In ${}^{32}\text{S},2\alpha\gamma)$ and γ(t) In (p,nγ), respectively.

^c Band(C): band based on 3/2⁺, α=-1/2 (1994Ca04,1998Ca26,2001Br32). Positive parity side-band proposed by 1994Ca04 In ${}^{10}\text{B}({}^{40}\text{Ca},n2p\gamma)$ up through 21/2⁺. With the exception of the 19/2⁺ state (At 5728 keV instead of 5886) confirmed by 1998Ca26 In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=125 MeV and 2001Br32 In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=110, 115 MeV and extended through 31/2⁺ by 1998Ca26 and 35/2⁺ by 2001Br32 for α=-1/2.

^d Band(D): band based on 3/2⁺, α=+1/2 (1994Ca04,1998Ca26,2001Br32). Positive parity side-band proposed by 1994Ca04 In ${}^{10}\text{B}({}^{40}\text{Ca},n2p\gamma)$ up through 21/2⁺. Confirmed by 1998Ca26 In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=125 MeV and 2001Br32 In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=110, 115 MeV and extended through 33/2⁺ by 2001Br32 for α=+1/2.

^e Unweighted average of T_{1/2}(660)=2.8 ps 19 and 0.47 ps +97-24 from RDM In ${}^{32}\text{S},2\alpha\gamma)$ and DSAM In (p,nγ). Other: T_{1/2}(660)>2.8 ps from DSAM or NGTB In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=110, 115 MeV.

^f From DSAM or NGTB In ${}^{28}\text{Si}({}^{28}\text{Si},2\alpha\gamma)$ E=110, 115 MeV.

^g From angular momentum transfer in (${}^3\text{He},d$).

^h From J→J or J→J-2 γ cascade to 11/2⁻ and membership in band.

ⁱ L(P)=1 for multiplet In (d,n),(${}^3\text{He},d$).

^j L(P)=3 for multiplet In (d,n),(${}^3\text{He},d$).

^k Based on the Doppler-shift of primary γ's deexciting the resonance.

^l See (p,γ) for proposed assignment by 1973Sc29 (not adopted by evaluator).

Adopted Levels, Gammas (continued) $\gamma(^{47}\text{V})$

All data and multipolarity arguments are from (p, γ) E=0.4-1.8 MeV res, except as noted. Several authors have looked for, but not observed, other bound-state transitions; see (p, γ) E=0.4-1.8 MeV res for upper limits on the intensities. Weak primary γ 's have been omitted from this table; see (p, γ) E=0.4-1.8 MeV res for the total intensities of these omitted transitions.

See $^{28}\text{Si}(^{28}\text{Si},2\alpha p\gamma)$ E=110, 115 MeV for three unplaced gammas which appear to enter into the level scheme At the $23/2^-$ state.

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. [#]	$\delta^\#$	α^f	Comments
87.525	5/2 ⁻	87.5 1	100	0.0	3/2 ⁻	M1+E2	+0.125 21	0.041 4	B(M1)(W.u.)=0.046 3; B(E2)(W.u.)=2.4×10 ² 8 $\alpha(\text{K})=0.037$ 3; $\alpha(\text{L})=0.0035$ 3; $\alpha(\text{M})=0.00046$ 4; $\alpha(\text{N+..})=2.27\times 10^{-5}$ 18 $\alpha(\text{N})=2.27\times 10^{-5}$ 18 E_γ, I_γ : from β^+ decay. Mult.: from $\alpha(\text{K})\text{exp}$ in (p,n γ), $\gamma(\theta)$ in (p, γ), and comparison to RUL. δ : value from $\alpha(\text{K})\text{exp}$ in (p,n γ); sign from $\gamma(\theta)$ in (p, γ). Note that 1978Kr19 recommended +0.10 6 from $\gamma(\theta)$.
145.821	7/2 ⁻	58.2 ^a 1	99.13 ^b 25	87.525	5/2 ⁻	(M1+(E2)) [@]	&	0.100 6	$\delta\leq 0.0449$ 27; B(M1)(W.u.)=0.198 24 $\alpha(\text{K})=0.090$ 5; $\alpha(\text{L})=0.0086$ 5; $\alpha(\text{M})=0.00113$ 7; $\alpha(\text{N+..})=5.6\times 10^{-5}$ 3 $\alpha(\text{N})=5.6\times 10^{-5}$ 3
		145.8 4	0.87 ^b 25	0.0	3/2 ⁻	(E2) ^c		0.0873 16	$\alpha(\text{K})=0.0787$ 14; $\alpha(\text{L})=0.00751$ 14; $\alpha(\text{M})=0.000974$ 18; $\alpha(\text{N+..})=4.69\times 10^{-5}$ 9 $\alpha(\text{N})=4.68\times 10^{-5}$ 9 B(E2)(W.u.)=13 5 E_γ : from $^{28}\text{Si}(^{28}\text{Si},2\alpha p\gamma)$ E=110, 115 MeV.
259.486	3/2 ⁺	172.2 ^d 6	11.3 ^e 12	87.525	5/2 ⁻	(E1+(M2))	&	0.00591 11	$\delta\leq 0.0059$ 6; B(E1)(W.u.)=0.00019 4 $\alpha=0.00591$ 11; $\alpha(\text{K})=0.00535$ 10; $\alpha(\text{L})=0.000488$ 9; $\alpha(\text{M})=6.37\times 10^{-5}$ 12; $\alpha(\text{N+..})=3.26\times 10^{-6}$ 6 $\alpha(\text{N})=3.26\times 10^{-6}$ 6 Mult.: D from comparison to RUL. $\Delta\pi$ =yes from level scheme.
		259.4 ^d 5	88.7 ^e 12	0.0	3/2 ⁻	(E1+(M2))	&	0.00173 3	$\delta\leq 0.0057$ 4; B(E1)(W.u.)=0.00046 5 $\alpha=0.00173$ 3; $\alpha(\text{K})=0.001564$ 24; $\alpha(\text{L})=0.0001425$ 22; $\alpha(\text{M})=1.86\times 10^{-5}$ 3; $\alpha(\text{N+..})=9.58\times 10^{-7}$ 15 $\alpha(\text{N})=9.58\times 10^{-7}$ 15 Mult.: stretched D from angular anisotropy in ($^{40}\text{Ca},n2p\gamma$).
660.358	5/2 ⁺	400.8 ^d 5	29.9 2	259.486	3/2 ⁺	M1 ^f		0.000732 11	B(M1)(W.u.)=0.06 5 $\alpha=0.000732$ 11; $\alpha(\text{K})=0.000663$ 10; $\alpha(\text{L})=6.08\times 10^{-5}$ 9;

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>									
<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ^\dagger</u>	<u>I_γ^\ddagger</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.#</u>	<u>$\delta^\#$</u>	<u>α^f</u>	<u>Comments</u>
660.358	5/2 ⁺	514.5	18.1 2	145.821	7/2 ⁻	(E1+(M2)) ^g	&	0.000262 4	$\alpha(\text{M})=7.97\times 10^{-6}$ 12; $\alpha(\text{N}+..)=4.14\times 10^{-7}$ 6 $\alpha(\text{N})=4.14\times 10^{-7}$ 6 Mult.: from $\alpha(\text{exp})$ in (p,n γ) and $\gamma(\theta)$ in (p, γ). $\delta\leq 0.012$ 6; B(E1)(W.u.)=0.0004 4 $\alpha=0.000262$ 4; $\alpha(\text{K})=0.000238$ 4; $\alpha(\text{L})=2.16\times 10^{-5}$ 3; $\alpha(\text{M})=2.83\times 10^{-6}$ 4; $\alpha(\text{N}+..)=1.470\times 10^{-7}$ 21 $\alpha(\text{N})=1.470\times 10^{-7}$ 21
		572.5 ^d 5	14.1 3	87.525	5/2 ⁻	(E1+(M2))	&	0.000202 3	$\delta\leq 0.018$ 9; B(E1)(W.u.)=0.00024 19 $\alpha=0.000202$ 3; $\alpha(\text{K})=0.000183$ 3; $\alpha(\text{L})=1.663\times 10^{-5}$ 24; $\alpha(\text{M})=2.18\times 10^{-6}$ 3; $\alpha(\text{N}+..)=1.131\times 10^{-7}$ 17 $\alpha(\text{N})=1.131\times 10^{-7}$ 17 Mult.: J \rightarrow J or J \rightarrow J-2 from angular anisotropy In (⁴⁰ Ca,n2p γ). \neq M2 from comparison to RUL. $\Delta\pi$ =yes from level scheme.
		660.1 ^a 3	38.0 3	0.0	3/2 ⁻	(E1+(M2))	&	0.0001440 21	$\delta\leq 0.014$ 6; B(E1)(W.u.)=0.0004 4 $\alpha=0.0001440$ 21; $\alpha(\text{K})=0.0001306$ 19; $\alpha(\text{L})=1.187\times 10^{-5}$ 17; $\alpha(\text{M})=1.554\times 10^{-6}$ 22 $\alpha(\text{N}+..)=8.09\times 10^{-8}$ 12 $\alpha(\text{N})=8.09\times 10^{-8}$ 12 Mult.: stretched D from angular anisotropy In (⁴⁰ Ca,n2p γ). $\Delta\pi$ =yes from level scheme.
1138.55	7/2 ⁺	478.0 ^d 5	25.0 5	660.358	5/2 ⁺	(M1+E2) ^f		0.0008 4	$\alpha=0.0008$ 4; $\alpha(\text{K})=0.0007$ 3; $\alpha(\text{L})=7.E-5$ 3; $\alpha(\text{M})=9.E-6$ 4; $\alpha(\text{N}+..)=4.5\times 10^{-7}$ 18 $\alpha(\text{N})=4.5\times 10^{-7}$ 18 Mult.: from $\gamma(\theta)$ In (p,n γ). $\Delta\pi$ =No from level scheme. δ : -0.2 +1-2 or -2.4 +7-11 from $\gamma(\theta)$ in (p,n γ). $\alpha=0.000190$ 3; $\alpha(\text{K})=0.0001723$ 25; $\alpha(\text{L})=1.573\times 10^{-5}$ 22; $\alpha(\text{M})=2.06\times 10^{-6}$ 3 $\alpha(\text{N}+..)=1.069\times 10^{-7}$ 15 $\alpha(\text{N})=1.069\times 10^{-7}$ 15 B(E2)(W.u.)=22 5 δ : -0.03 5 from $\gamma(\theta)$ in (p, γ). $\leq 6.2\times 10^{-5}$ 13 from comparison to RUL.
		878.7 ^a 3	32.5 4	259.486	3/2 ⁺	E2		0.000190 3	$\delta\leq 0.105$ 23; B(E1)(W.u.)=1.9 $\times 10^{-5}$ 9 $\alpha=6.22\times 10^{-5}$ 17; $\alpha(\text{K})=5.64\times 10^{-5}$ 16; $\alpha(\text{L})=5.11\times 10^{-6}$ 14; $\alpha(\text{M})=6.70\times 10^{-7}$ 19; $\alpha(\text{N}+..)=3.50\times 10^{-8}$ 10 $\alpha(\text{N})=3.50\times 10^{-8}$ 10
		992.7	4.4 2	145.821	7/2 ⁻	(E1+(M2)) ^g	&	6.22 $\times 10^{-5}$ 17	$\alpha=5.49\times 10^{-5}$ 12; $\alpha(\text{K})=4.98\times 10^{-5}$ 11; $\alpha(\text{L})=4.52\times 10^{-6}$ 10; $\alpha(\text{M})=5.92\times 10^{-7}$ 13; $\alpha(\text{N}+..)=3.09\times 10^{-8}$ 7 $\alpha(\text{N})=3.09\times 10^{-8}$ 7 B(E1)(W.u.)=0.000107 24; B(M2)(W.u.)=1.1 +18-11
1050.0 ^d 7		38.0 4	87.525	5/2 ⁻	(E1+(M2)) ^{fh}		+0.05 4	5.49 $\times 10^{-5}$ 12	

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. [#]	$\delta^\#$	α^f	Comments
1138.55	7/2 ⁺	1138 ^a	4 ^a 3	0.0	3/2 ⁻				
1271.80	9/2 ⁻	1125.7 ^a 5	81.8 1	145.821	7/2 ⁻	M1+E2 ^{fi}	-0.43 6	8.85×10 ⁻⁵ 15	$\alpha=8.85\times 10^{-5}$ 15; $\alpha(\text{K})=7.89\times 10^{-5}$ 13; $\alpha(\text{L})=7.17\times 10^{-6}$ 12; $\alpha(\text{M})=9.40\times 10^{-7}$ 16; $\alpha(\text{N}+..)=1.43\times 10^{-6}$ 4 $\alpha(\text{N})=4.91\times 10^{-8}$ 8; $\alpha(\text{IPF})=1.38\times 10^{-6}$ 4 B(M1)(W.u.)=0.043 14; B(E2)(W.u.)=16 7 δ : -0.43 6 or -4.3 9 from $\gamma(\theta)$ in (p,n γ). \neq -4.3 9 from comparison to RUL.
		1184.5 ^a 3	18.2 1	87.525	5/2 ⁻	E2 ⁱ		9.95×10 ⁻⁵ 14	B(E2)(W.u.)=18 6 $\alpha=9.95\times 10^{-5}$ 14; $\alpha(\text{K})=8.38\times 10^{-5}$ 12; $\alpha(\text{L})=7.63\times 10^{-6}$ 11; $\alpha(\text{M})=9.99\times 10^{-7}$ 14; $\alpha(\text{N}+..)=7.06\times 10^{-6}$ 11 $\alpha(\text{N})=5.21\times 10^{-8}$ 8; $\alpha(\text{IPF})=7.00\times 10^{-6}$ 11
1294.96	11/2 ⁻	1149.17 29	100	145.821	7/2 ⁻	E2		0.0001030 15	$\alpha=0.0001030$ 15; $\alpha(\text{K})=8.98\times 10^{-5}$ 13; $\alpha(\text{L})=8.17\times 10^{-6}$ 12; $\alpha(\text{M})=1.071\times 10^{-6}$ 15 $\alpha(\text{N}+..)=3.46\times 10^{-6}$ 6 $\alpha(\text{N})=5.58\times 10^{-8}$ 8; $\alpha(\text{IPF})=3.40\times 10^{-6}$ 6 B(E2)(W.u.)=18 5 E_γ : weighted average from (p,n γ), ²⁸ Si(²⁸ Si,2 α p γ) E=125 MeV, ¹⁰ B(⁴⁰ Ca,n2p γ), ²⁴ Mg(³² S,2 α p γ),..., and ²⁸ Si(²⁸ Si,2 α p γ) E=110, 115 MeV. Mult.: approximately stretched Q In (³² S,2 α p γ). J→J or J→J-2 from angular anisotropy In (⁴⁰ Ca,n2p γ). B(E2)(W.u.)=2.0 9 $\alpha=0.0001380$ 20; $\alpha(\text{K})=0.0001247$ 18; $\alpha(\text{L})=1.136\times 10^{-5}$ 16; $\alpha(\text{M})=1.488\times 10^{-6}$ 21 $\alpha(\text{N}+..)=7.74\times 10^{-8}$ 11 $\alpha(\text{N})=7.74\times 10^{-8}$ 11
1660.62	1/2 ⁺	1000	1.3 1	660.358	5/2 ⁺	(E2)		0.0001380 20	
		1401	73.4 4	259.486	3/2 ⁺	D,E2 ^{&}			
		1661	25.3 3	0.0	3/2 ⁻	(E1(+M2)) ^g	&	0.000412 6	$\delta\leq 0.088$ 20; B(E1)(W.u.)=8.E-5 4 $\alpha=0.000412$ 6; $\alpha(\text{K})=2.27\times 10^{-5}$ 4; $\alpha(\text{L})=2.06\times 10^{-6}$ 4; $\alpha(\text{M})=2.69\times 10^{-7}$ 5; $\alpha(\text{N}+..)=0.000387$ 6 $\alpha(\text{N})=1.409\times 10^{-8}$ 25; $\alpha(\text{IPF})=0.000387$ 6
1746.96	9/2 ⁺	608.8 ^j 5	17 ^j 1	1138.55	7/2 ⁺	M1+E2		0.00041 12	$\alpha=0.00041$ 12; $\alpha(\text{K})=0.00037$ 11; $\alpha(\text{L})=3.4\times 10^{-5}$ 10; $\alpha(\text{M})=4.5\times 10^{-6}$ 13; $\alpha(\text{N}+..)=2.3\times 10^{-7}$ 7 $\alpha(\text{N})=2.3\times 10^{-7}$ 7 δ : -0.19 4 or -2.0 1.
		1086.8 ^j 7	46 ^j 1	660.358	5/2 ⁺	E2(+M3)	-0.00 3	0.0001130 16	$\alpha=0.0001130$ 16; $\alpha(\text{K})=0.0001022$ 15; $\alpha(\text{L})=9.31\times 10^{-6}$ 14; $\alpha(\text{M})=1.219\times 10^{-6}$ 18 $\alpha(\text{N}+..)=6.35\times 10^{-8}$ 9

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^f	Comments
1746.96	9/2 ⁺	1602 ^j 1	36 2	145.821	7/2 ⁻	(E1(+M2)) ^{fh}	+0.00 1	0.000369 6	$\alpha(\text{N})=6.35\times 10^{-8}$ 9 B(E2)(W.u.)=30 5 $\alpha=0.000369$ 6; $\alpha(\text{K})=2.38\times 10^{-5}$ 4; $\alpha(\text{L})=2.15\times 10^{-6}$ 3; $\alpha(\text{M})=2.82\times 10^{-7}$ 4; $\alpha(\text{N}+..)=0.000343$ 5 $\alpha(\text{N})=1.477\times 10^{-8}$ 21; $\alpha(\text{IPF})=0.000343$ 5 B(E1)(W.u.)=8.1 $\times 10^{-5}$ 13
1968.92	3/2 ⁺	308	1.4 4	1660.62	1/2 ⁺	(M1(+E2)) [@]	&	1.35 $\times 10^{-3}$ 2	$\delta\leq 0.041$ 10; B(M1)(W.u.)=0.024 10 $\alpha=1.35\times 10^{-3}$ 2; $\alpha(\text{K})=0.001221$ 18; $\alpha(\text{L})=0.0001124$ 17; $\alpha(\text{M})=1.472\times 10^{-5}$ 22 $\alpha(\text{N}+..)=7.63\times 10^{-7}$ 11 $\alpha(\text{N})=7.63\times 10^{-7}$ 11
		830	0.9 2	1138.55	7/2 ⁺	(E2)		0.000221 4	B(E2)(W.u.)=2.9 11 $\alpha=0.000221$ 4; $\alpha(\text{K})=0.000200$ 3; $\alpha(\text{L})=1.83\times 10^{-5}$ 3; $\alpha(\text{M})=2.39\times 10^{-6}$ 4; $\alpha(\text{N}+..)=1.240\times 10^{-7}$ 18 $\alpha(\text{N})=1.240\times 10^{-7}$ 18 Mult.: D,E2 from comparison to RUL. $\Delta\pi=^2$ Nofrom level scheme.
		1309	32 1	660.358	5/2 ⁺	M1+E2		9.5 $\times 10^{-5}$ 10	$\alpha=9.5\times 10^{-5}$ 10; $\alpha(\text{K})=6.2\times 10^{-5}$ 5; $\alpha(\text{L})=5.7\times 10^{-6}$ 5; $\alpha(\text{M})=7.4\times 10^{-7}$ 6; $\alpha(\text{N}+..)=2.6\times 10^{-5}$ 5 $\alpha(\text{N})=3.9\times 10^{-8}$ 4; $\alpha(\text{IPF})=2.6\times 10^{-5}$ 5
		1709	9 1	259.486	3/2 ⁺	M1+E2		1.97 $\times 10^{-4}$ 23	$\delta: -0.50$ 3 or -1.2 1. $\alpha=1.97\times 10^{-4}$ 23; $\alpha(\text{K})=3.72\times 10^{-5}$ 19; $\alpha(\text{L})=3.37\times 10^{-6}$ 18; $\alpha(\text{M})=4.42\times 10^{-7}$ 23; $\alpha(\text{N}+..)=0.000156$ 21 $\alpha(\text{N})=2.31\times 10^{-8}$ 12; $\alpha(\text{IPF})=0.000156$ 21
		1881	54.9 3	87.525	5/2 ⁻	(E1(+M2)) ^h	-0.01 1	0.000574 9	$\delta: -0.36$ 4 or -11 4. $\alpha=0.000574$ 9; $\alpha(\text{K})=1.86\times 10^{-5}$ 3; $\alpha(\text{L})=1.681\times 10^{-6}$ 24; $\alpha(\text{M})=2.20\times 10^{-7}$ 3; $\alpha(\text{N}+..)=0.000554$ 8 $\alpha(\text{N})=1.153\times 10^{-8}$ 17; $\alpha(\text{IPF})=0.000554$ 8 B(E1)(W.u.)=0.00010 3; B(M2)(W.u.)=0.0125 +252-13
		1969	2.9 2	0.0	3/2 ⁻	(E1(+M2)) ^h	-0.02 4	0.000636 9	$\alpha=0.000636$ 9; $\alpha(\text{K})=1.74\times 10^{-5}$ 3; $\alpha(\text{L})=1.571\times 10^{-6}$ 24; $\alpha(\text{M})=2.06\times 10^{-7}$ 3; $\alpha(\text{N}+..)=0.000617$ 9 $\alpha(\text{N})=1.078\times 10^{-8}$ 17; $\alpha(\text{IPF})=0.000617$ 9 B(E1)(W.u.)=4.4 $\times 10^{-6}$ 13; B(M2)(W.u.)=0.00210 +841-21
2082.72	3/2 ⁻	1422	0.3 1	660.358	5/2 ⁺	(E1(+M2)) ^g	&	0.000234 4	$\delta\leq 0.11$ 3; B(E1)(W.u.)=3.6 $\times 10^{-5}$ 16 $\alpha=0.000234$ 4; $\alpha(\text{K})=2.95\times 10^{-5}$ 8; $\alpha(\text{L})=2.67\times 10^{-6}$ 7; $\alpha(\text{M})=3.50\times 10^{-7}$ 9; $\alpha(\text{N}+..)=0.000202$ 4 $\alpha(\text{N})=1.83\times 10^{-8}$ 5; $\alpha(\text{IPF})=0.000201$ 4
		1937	1.7 1	145.821	7/2 ⁻	(E2) ^k		0.000317 5	B(E2)(W.u.)=2.3 7 $\alpha=0.000317$ 5; $\alpha(\text{K})=3.08\times 10^{-5}$ 5; $\alpha(\text{L})=2.79\times 10^{-6}$ 4;

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>									
<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ^\dagger</u>	<u>I_γ^\ddagger</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.#</u>	<u>$\delta^\#$</u>	<u>α^f</u>	<u>Comments</u>
2082.72	3/2 ⁻	1995	69.8 2	87.525	5/2 ⁻	M1+E2		0.00031 4	$\alpha(\text{M})=3.65\times 10^{-7}$ 6; $\alpha(\text{N}+.)=0.000283$ 4 $\alpha(\text{N})=1.91\times 10^{-8}$ 3; $\alpha(\text{IPF})=0.000283$ 4 $\alpha=0.00031$ 4; $\alpha(\text{K})=2.81\times 10^{-5}$ 11; $\alpha(\text{L})=2.55\times 10^{-6}$ 11; $\alpha(\text{M})=3.34\times 10^{-7}$ 14; $\alpha(\text{N}+.)=0.00028$ 4 $\alpha(\text{N})=1.75\times 10^{-8}$ 7; $\alpha(\text{IPF})=0.00028$ 4 δ : +0.08 2 or -7.1 6.
2175.86	5/2 ⁻	2083 1916	28.1 3 0.3 1	0.0 259.486	3/2 ⁻ 3/2 ⁺	D+Q (E1(+M2)) ^g	&	5.81×10 ⁻⁴ 20	δ : -0.05 4 or +4.6 9. $\delta\leq 0.24$ 6; B(E1)(W.u.)=1.4×10 ⁻⁵ 7 $\alpha=5.81\times 10^{-4}$ 20; $\alpha(\text{K})=1.94\times 10^{-5}$ 14; $\alpha(\text{L})=1.75\times 10^{-6}$ 13; $\alpha(\text{M})=2.30\times 10^{-7}$ 16; $\alpha(\text{N}+.)=0.000560$ 21 $\alpha(\text{N})=1.20\times 10^{-8}$ 9; $\alpha(\text{IPF})=0.000560$ 21
		2030 2088	1.6 1 21.5 4	145.821 87.525	7/2 ⁻ 5/2 ⁻	D,E2& M1+E2	+0.56 11	3.33×10 ⁻⁴ 7	B(M1)(W.u.)=0.026 10; B(E2)(W.u.)=4.8 22 $\alpha=3.33\times 10^{-4}$ 7; $\alpha(\text{K})=2.55\times 10^{-5}$ 4; $\alpha(\text{L})=2.31\times 10^{-6}$ 4; $\alpha(\text{M})=3.02\times 10^{-7}$ 5; $\alpha(\text{N}+.)=0.000305$ 7 $\alpha(\text{N})=1.584\times 10^{-8}$ 24; $\alpha(\text{IPF})=0.000305$ 7
		2176	76.5 4	0.0	3/2 ⁻	M1+E2		0.00039 4	$\alpha=0.00039$ 4; $\alpha(\text{K})=2.41\times 10^{-5}$ 9; $\alpha(\text{L})=2.19\times 10^{-6}$ 8; $\alpha(\text{M})=2.87\times 10^{-7}$ 10; $\alpha(\text{N}+.)=0.00036$ 4 $\alpha(\text{N})=1.50\times 10^{-8}$ 6; $\alpha(\text{IPF})=0.00036$ 4 δ : +0.14 1 or -6.7 4.
2211.75	1/2 ⁻	551	0.6 1	1660.62	1/2 ⁺	(E1(+M2)) ^g	&	0.0007 5	$\delta\leq 0.017$ 3; B(E1)(W.u.)=0.00022 7 $\alpha=0.0007$ 5; $\alpha(\text{K})=0.000201$ 3; $\alpha(\text{L})=1.83\times 10^{-5}$ 3; $\alpha(\text{M})=2.39\times 10^{-6}$ 4; $\alpha(\text{N}+.)=1.241\times 10^{-7}$ 18 $\alpha(\text{N})=1.241\times 10^{-7}$ 18
		1952	14.5 2	259.486	3/2 ⁺	(E1(+M2)) ^g	&	0.000623 9	$\delta\leq 0.082$ 11; B(E1)(W.u.)=0.00012 3 $\alpha=0.000623$ 9; $\alpha(\text{K})=1.77\times 10^{-5}$ 3; $\alpha(\text{L})=1.60\times 10^{-6}$ 3; $\alpha(\text{M})=2.10\times 10^{-7}$ 4; $\alpha(\text{N}+.)=0.000603$ 9 $\alpha(\text{N})=1.099\times 10^{-8}$ 18; $\alpha(\text{IPF})=0.000603$ 9
		2124	4.3 1	87.525	5/2 ⁻	(E2) ^k		0.000403 6	B(E2)(W.u.)=0.67 17 $\alpha=0.000403$ 6; $\alpha(\text{K})=2.60\times 10^{-5}$ 4; $\alpha(\text{L})=2.36\times 10^{-6}$ 4; $\alpha(\text{M})=3.09\times 10^{-7}$ 5; $\alpha(\text{N}+.)=0.000374$ 6 $\alpha(\text{N})=1.616\times 10^{-8}$ 23; $\alpha(\text{IPF})=0.000374$ 6
2415.0	11/2 ⁺	2212 667.8 ^j 5	80.7 2 11 ^j 1	0.0 1746.96	3/2 ⁻ 9/2 ⁺	D,E2& (M1) ^f		0.000240 4	$\alpha=0.000240$ 4; $\alpha(\text{K})=0.000217$ 3; $\alpha(\text{L})=1.98\times 10^{-5}$ 3; $\alpha(\text{M})=2.60\times 10^{-6}$ 4; $\alpha(\text{N}+.)=1.355\times 10^{-7}$ 19 $\alpha(\text{N})=1.355\times 10^{-7}$ 19 B(M1)(W.u.)=0.021 3 Mult.: stretched dipole from angular anisotropy in (⁴⁰ Ca,n2p γ). $\Delta\pi$ =No from level scheme.
		1145 ^j 1	3 ^d	1271.80	9/2 ⁻	(E1) ^{&}		7.12×10 ⁻⁵ 11	$\alpha=7.12\times 10^{-5}$ 11; $\alpha(\text{K})=4.21\times 10^{-5}$ 6; $\alpha(\text{L})=3.82\times 10^{-6}$

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>									
<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ^\dagger</u>	<u>I_γ^\ddagger</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.#</u>	<u>$\delta^\#$</u>	<u>α^f</u>	<u>Comments</u>
									6; $\alpha(\text{M})=5.00\times 10^{-7}$ 7; $\alpha(\text{N}+..)=2.48\times 10^{-5}$ 6 $\alpha(\text{N})=2.61\times 10^{-8}$ 4; $\alpha(\text{IPF})=2.48\times 10^{-5}$ 6 $\text{B}(\text{E}1)(\text{W.u.})=2.7\times 10^{-5}$ 3 Mult.: D,E2 from comparison to RUL. $\Delta\pi$ =yes from level scheme.
2415.0	11/2 ⁺	1276.2 ^j 7	86 ^j 1	1138.55	7/2 ⁺	(E2) ^c		0.0001020 15	$\alpha=0.0001020$ 15; $\alpha(\text{K})=7.10\times 10^{-5}$ 10; $\alpha(\text{L})=6.46\times 10^{-6}$ 9; $\alpha(\text{M})=8.46\times 10^{-7}$ 12; $\alpha(\text{N}+..)=2.35\times 10^{-5}$ 4 $\alpha(\text{N})=4.41\times 10^{-8}$ 7; $\alpha(\text{IPF})=2.35\times 10^{-5}$ 4 $\text{B}(\text{E}2)(\text{W.u.})=37$ 4
2439.54	5/2 ⁺	263.7 ^v 470.6	<0.7 11 1	2175.86 1968.92	5/2 ⁻ 3/2 ⁺	M1+E2	+0.08 3	5.15×10 ⁻⁴ 9	$\text{B}(\text{M}1)(\text{W.u.})=0.35$ 9; $\text{B}(\text{E}2)(\text{W.u.})=26$ 21 $\alpha=5.15\times 10^{-4}$ 9; $\alpha(\text{K})=0.000467$ 8; $\alpha(\text{L})=4.27\times 10^{-5}$ 7; $\alpha(\text{M})=5.59\times 10^{-6}$ 9; $\alpha(\text{N}+..)=2.91\times 10^{-7}$ 5 $\alpha(\text{N})=2.91\times 10^{-7}$ 5
		778.9	0.9 3	1660.62	1/2 ⁺	(E2) ^k		0.000262 4	$\text{B}(\text{E}2)(\text{W.u.})=27$ 11 $\alpha=0.000262$ 4; $\alpha(\text{K})=0.000237$ 4; $\alpha(\text{L})=2.17\times 10^{-5}$ 3; $\alpha(\text{M})=2.84\times 10^{-6}$ 4; $\alpha(\text{N}+..)=1.470\times 10^{-7}$ 21 $\alpha(\text{N})=1.470\times 10^{-7}$ 21
		1779	27 1	660.358	5/2 ⁺	M1+E2		0.00022 3	$\alpha=0.00022$ 3; $\alpha(\text{K})=3.45\times 10^{-5}$ 17; $\alpha(\text{L})=3.13\times 10^{-6}$ 15; $\alpha(\text{M})=4.10\times 10^{-7}$ 20; $\alpha(\text{N}+..)=0.000185$ 24 $\alpha(\text{N})=2.15\times 10^{-8}$ 10; $\alpha(\text{IPF})=0.000185$ 24 $\delta: -0.42$ 3 or +6 1.
		2180	36 2	259.486	3/2 ⁺	M1+E2		0.00039 4	$\alpha=0.00039$ 4; $\alpha(\text{K})=2.41\times 10^{-5}$ 9; $\alpha(\text{L})=2.18\times 10^{-6}$ 8; $\alpha(\text{M})=2.86\times 10^{-7}$ 10; $\alpha(\text{N}+..)=0.00036$ 4 $\alpha(\text{N})=1.50\times 10^{-8}$ 6; $\alpha(\text{IPF})=0.00036$ 4 $\delta: -0.40$ 4 or -1.4 1.
		2294	15.4 4	145.821	7/2 ⁻	(E1+M2) ^h	+0.06 3	8.51×10 ⁻⁴ 13	$\text{B}(\text{E}1)(\text{W.u.})=0.000101$ 23; $\text{B}(\text{M}2)(\text{W.u.})=0.3$ 3 $\alpha=8.51\times 10^{-4}$ 13; $\alpha(\text{K})=1.401\times 10^{-5}$ 22; $\alpha(\text{L})=1.267\times 10^{-6}$ 20; $\alpha(\text{M})=1.66\times 10^{-7}$ 3 $\alpha(\text{N}+..)=0.000836$ 12 $\alpha(\text{N})=8.69\times 10^{-9}$ 14; $\alpha(\text{IPF})=0.000835$ 12
		2352	2 1	87.525	5/2 ⁻	(E1(+M2)) ^g	&	0.00084 5	$\delta\leq 0.32$ 10; $\text{B}(\text{E}1)(\text{W.u.})=1.2\times 10^{-5}$ 7 $\alpha=0.00084$ 5; $\alpha(\text{K})=1.49\times 10^{-5}$ 15; $\alpha(\text{L})=1.35\times 10^{-6}$ 14; $\alpha(\text{M})=1.77\times 10^{-7}$ 18; $\alpha(\text{N}+..)=0.00083$ 5 $\alpha(\text{N})=9.3\times 10^{-9}$ 10; $\alpha(\text{IPF})=0.00083$ 5
		2439	8 1	0.0	3/2 ⁻	(E1+M2) ^h	+0.05 4	0.000939 14	$\text{B}(\text{E}1)(\text{W.u.})=4.4\times 10^{-5}$ 11; $\text{B}(\text{M}2)(\text{W.u.})=0.08$ +14-8 $\alpha=0.000939$ 14; $\alpha(\text{K})=1.284\times 10^{-5}$ 21; $\alpha(\text{L})=1.161\times 10^{-6}$ 19; $\alpha(\text{M})=1.521\times 10^{-7}$ 25 $\alpha(\text{N}+..)=0.000925$ 14 $\alpha(\text{N})=7.97\times 10^{-9}$ 13; $\alpha(\text{IPF})=0.000925$ 14

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^f	Comments
2558.8	13/2 ⁻	1263.8 ^j 7 1287.0 ^j 7	38 ^d 62 ^d	1294.96 1271.80	11/2 ⁻ 9/2 ⁻	D,E2& (E2) ^c		0.0001030 15	$\alpha=0.0001030$ 15; $\alpha(\text{K})=6.97\times 10^{-5}$ 10; $\alpha(\text{L})=6.34\times 10^{-6}$ 9; $\alpha(\text{M})=8.31\times 10^{-7}$ 12; $\alpha(\text{N}+..)=2.59\times 10^{-5}$ 4 $\alpha(\text{N})=4.33\times 10^{-8}$ 6; $\alpha(\text{IPF})=2.59\times 10^{-5}$ 4 B(E2)(W.u.)=23 8
2615.0	15/2 ⁻	56.2 ^j 4	0.2 ^j 6	2558.8	13/2 ⁻	M1		0.104 3	B(M1)(W.u.)=0.4 +11-4 $\alpha(\text{K})=0.0940$ 23; $\alpha(\text{L})=0.00898$ 22; $\alpha(\text{M})=0.00117$ 3; $\alpha(\text{N}+..)=5.92\times 10^{-5}$ 15 $\alpha(\text{N})=5.92\times 10^{-5}$ 15 Mult.: from comparison to RUL assuming $I_\gamma\leq 8$.
		1320.0 ^j 7	99.8 ^j 6	1294.96	11/2 ⁻	E2		0.0001060 15	$\alpha=0.0001060$ 15; $\alpha(\text{K})=6.60\times 10^{-5}$ 10; $\alpha(\text{L})=6.00\times 10^{-6}$ 9; $\alpha(\text{M})=7.86\times 10^{-7}$ 11; $\alpha(\text{N}+..)=3.36\times 10^{-5}$ 5 $\alpha(\text{N})=4.10\times 10^{-8}$ 6; $\alpha(\text{IPF})=3.35\times 10^{-5}$ 5 B(E2)(W.u.)=20.3 16 Mult.: \approx stretched quadrupole In ($^{32}\text{S}, 2\alpha\text{py}$). \neq M2 from comparison to RUL.
2722.63	5/2 ⁻	1343 ^{dv} 1451	<3.1 ^d 0.8 1	1271.80 1271.80	9/2 ⁻ 9/2 ⁻	(E2) ^k		0.0001300 19	B(E2)(W.u.)=1.9 6 $\alpha=0.0001300$ 19; $\alpha(\text{K})=5.41\times 10^{-5}$ 8; $\alpha(\text{L})=4.91\times 10^{-6}$ 7; $\alpha(\text{M})=6.44\times 10^{-7}$ 9; $\alpha(\text{N}+..)=7.04\times 10^{-5}$ 10 $\alpha(\text{N})=3.36\times 10^{-8}$ 5; $\alpha(\text{IPF})=7.04\times 10^{-5}$ 10
		1584	5.2 2	1138.55	7/2 ⁺	(E1(+M2)) ^g	&	0.000354 5	$\delta\leq 0.054$ 8; B(E1)(W.u.)=0.00019 6 $\alpha=0.000354$ 5; $\alpha(\text{K})=2.43\times 10^{-5}$ 4; $\alpha(\text{L})=2.20\times 10^{-6}$ 4; $\alpha(\text{M})=2.89\times 10^{-7}$ 5; $\alpha(\text{N}+..)=0.000328$ 5 $\alpha(\text{N})=1.510\times 10^{-8}$ 22; $\alpha(\text{IPF})=0.000328$ 5
		2463	1.2 2	259.486	3/2 ⁺	(E1(+M2)) ^g	&	0.00091 5	$\delta\leq 0.33$ 6; B(E1)(W.u.)=1.1 $\times 10^{-5}$ 4 $\alpha=0.00091$ 5; $\alpha(\text{K})=1.38\times 10^{-5}$ 12; $\alpha(\text{L})=1.25\times 10^{-6}$ 11; $\alpha(\text{M})=1.63\times 10^{-7}$ 14; $\alpha(\text{N}+..)=0.00090$ 5 $\alpha(\text{N})=8.6\times 10^{-9}$ 8; $\alpha(\text{IPF})=0.00090$ 5
		2577 2635	20 1 18.4 5	145.821 87.525	7/2 ⁻ 5/2 ⁻	D,E2& M1+E2	-3.8 10	6.33 $\times 10^{-4}$ 10	B(M1)(W.u.)=0.00040 23; B(E2)(W.u.)=2.1 6 $\alpha=6.33\times 10^{-4}$ 10; $\alpha(\text{K})=1.79\times 10^{-5}$ 3; $\alpha(\text{L})=1.618\times 10^{-6}$ 23; $\alpha(\text{M})=2.12\times 10^{-7}$ 3; $\alpha(\text{N}+..)=0.000613$ 10 $\alpha(\text{N})=1.111\times 10^{-8}$ 16; $\alpha(\text{IPF})=0.000613$ 10
		2723	55 1	0.0	3/2 ⁻	M1+E2	+1.9 1	0.000657 10	B(M1)(W.u.)=0.0036 11; B(E2)(W.u.)=4.5 13 $\alpha=0.000657$ 10; $\alpha(\text{K})=1.682\times 10^{-5}$ 24;

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	$\delta^\#$	α^t	Comments
									$\alpha(\text{L})=1.522\times 10^{-6}$ 22; $\alpha(\text{M})=1.99\times 10^{-7}$ 3 $\alpha(\text{N+..})=0.000638$ 10 $\alpha(\text{N})=1.045\times 10^{-8}$ 15; $\alpha(\text{IPF})=0.000638$ 10
2747.12	9/2 ⁻	1452	1.8 5	1294.96	11/2 ⁻	D,E2&			
		1475	5.3 4	1271.80	9/2 ⁻	D,E2&			
		2601	86 1	145.821	7/2 ⁻	M1+E2	-0.46 2	0.000545 8	B(M1)(W.u.)=0.035 15; B(E2)(W.u.)=2.8 12 $\alpha=0.000545$ 8; $\alpha(\text{K})=1.762\times 10^{-5}$ 25; $\alpha(\text{L})=1.593\times 10^{-6}$ 23; $\alpha(\text{M})=2.09\times 10^{-7}$ 3; $\alpha(\text{N+..})=0.000525$ 8 $\alpha(\text{N})=1.095\times 10^{-8}$ 16; $\alpha(\text{IPF})=0.000525$ 8
		2660	7 1	87.525	5/2 ⁻	(E2)		0.000651 10	$\alpha=0.000651$ 10; $\alpha(\text{K})=1.766\times 10^{-5}$ 25; $\alpha(\text{L})=1.598\times 10^{-6}$ 23; $\alpha(\text{M})=2.09\times 10^{-7}$ 3 $\alpha(\text{N+..})=0.000631$ 9 $\alpha(\text{N})=1.097\times 10^{-8}$ 16; $\alpha(\text{IPF})=0.000631$ 9 B(E2)(W.u.)=1.2 5 Mult.: Q(+O) from $\gamma(\theta)$ in (p, γ). $\Delta\pi$ =no from level scheme. δ : -0.01 8 from $\gamma(\theta)$ in (p, γ). ≤ 0.00091 19 from comparison to RUL.
2767.32	(1/2) ⁻	2767	100	0.0	3/2 ⁻	D,E2&			
2810.04	7/2 ⁺	370	0.8 3	2439.54	5/2 ⁺	(M1(+E2))@	&	0.000881 13	$\delta\leq 0.041$ 10; B(M1)(W.u.)=0.032 15 $\alpha=0.000881$ 13; $\alpha(\text{K})=0.000798$ 12; $\alpha(\text{L})=7.32\times 10^{-5}$ 11; $\alpha(\text{M})=9.59\times 10^{-6}$ 14; $\alpha(\text{N+..})=4.98\times 10^{-7}$ 7 $\alpha(\text{N})=4.98\times 10^{-7}$ 7
		841	3.2 3	1968.92	3/2 ⁺	E2		0.000213 3	$\alpha=0.000213$ 3; $\alpha(\text{K})=0.000193$ 3; $\alpha(\text{L})=1.764\times 10^{-5}$ 25; $\alpha(\text{M})=2.31\times 10^{-6}$ 4; $\alpha(\text{N+..})=1.198\times 10^{-7}$ 17 $\alpha(\text{N})=1.198\times 10^{-7}$ 17 B(E2)(W.u.)=39 12 δ : -0.02 4 from $\gamma(\theta)$ in (p, γ). $\leq 5.1\times 10^{-5}$ 6 from comparison from RUL.
		1063	12.1 4	1746.96	9/2 ⁺	M1+E2	-0.29 3	9.57×10^{-5} 14	B(M1)(W.u.)=0.019 6; B(E2)(W.u.)=3.5 12 $\alpha=9.57\times 10^{-5}$ 14; $\alpha(\text{K})=8.68\times 10^{-5}$ 13; $\alpha(\text{L})=7.88\times 10^{-6}$ 12; $\alpha(\text{M})=1.033\times 10^{-6}$ 15; $\alpha(\text{N+..})=5.40\times 10^{-8}$ 8 $\alpha(\text{N})=5.40\times 10^{-8}$ 8
		1538	10.8 3	1271.80	9/2 ⁻	(E1(+M2)) ^h	+0.02 2	0.000319 5	B(E1)(W.u.)=0.00014 4; B(M2)(W.u.)=0.11 +22-11 $\alpha=0.000319$ 5; $\alpha(\text{K})=2.54\times 10^{-5}$ 4; $\alpha(\text{L})=2.30\times 10^{-6}$ 4; $\alpha(\text{M})=3.02\times 10^{-7}$ 5; $\alpha(\text{N+..})=0.000291$ 4 $\alpha(\text{N})=1.578\times 10^{-8}$ 23; $\alpha(\text{IPF})=0.000291$ 4
		1671	2.7 4	1138.55	7/2 ⁺	D,E2&			
		2149	23.4 3	660.358	5/2 ⁺	M1+E2	-0.29 3	0.000346 5	B(M1)(W.u.)=0.0044 12; B(E2)(W.u.)=0.20 7 $\alpha=0.000346$ 5; $\alpha(\text{K})=2.40\times 10^{-5}$ 4; $\alpha(\text{L})=2.17\times 10^{-6}$ 3;

Adopted Levels, Gammas (continued)

									$\gamma(^{47}\text{V})$ (continued)	
$E_i(\text{level})$	J_i^π	E_γ †	I_γ ‡	E_f	J_f^π	Mult.#	$\delta^\#$	α^f	Comments	
2810.04	7/2 ⁺	2550	2.8 4	259.486	3/2 ⁺	(E2(+M3)) ^k	&	0.000601 9	$\alpha(\text{M})=2.85\times 10^{-7}$ 4; $\alpha(\text{N}+.)=0.000320$ 5 $\alpha(\text{N})=1.493\times 10^{-8}$ 21; $\alpha(\text{IPF})=0.000320$ 5 $\delta\leq 0.0027$ 5; B(E2)(W.u.)=0.13 5 $\alpha=0.000601$ 9; $\alpha(\text{K})=1.90\times 10^{-5}$ 3; $\alpha(\text{L})=1.716\times 10^{-6}$ 24; $\alpha(\text{M})=2.25\times 10^{-7}$ 4; $\alpha(\text{N}+.)=0.000580$ 9 $\alpha(\text{N})=1.178\times 10^{-8}$ 17; $\alpha(\text{IPF})=0.000580$ 9	
		2664	0.8 4	145.821	7/2 ⁻	(E1(+M2)) ^h	+0.01 1	0.001110 16	B(E1)(W.u.)=0.00010 3; B(M2)(W.u.)=0.006 +13-6 $\alpha=0.001110$ 16; $\alpha(\text{K})=1.103\times 10^{-5}$ 16; $\alpha(\text{L})=9.96\times 10^{-7}$ 14; $\alpha(\text{M})=1.305\times 10^{-7}$ 19 $\alpha(\text{N}+.)=0.001093$ 16 $\alpha(\text{N})=6.84\times 10^{-9}$ 10; $\alpha(\text{IPF})=0.001093$ 16	
		2722	43 1	87.525	5/2 ⁻				B(M1)(W.u.)=0.25 10; B(E2)(W.u.)=4.9 21 $\alpha=0.0001760$ 25; $\alpha(\text{K})=3.53\times 10^{-5}$ 5; $\alpha(\text{L})=3.20\times 10^{-6}$ 5; $\alpha(\text{M})=4.20\times 10^{-7}$ 6; $\alpha(\text{N}+.)=0.0001375$ 20 $\alpha(\text{N})=2.20\times 10^{-8}$ 3; $\alpha(\text{IPF})=0.0001375$ 20	
2984.29	7/2 ⁻	1712	29.0 5	1271.80	9/2 ⁻	M1+E2	+0.15 1	0.0001760 25	B(M1)(W.u.)=0.11 5; B(E2)(W.u.)=0.8 5 $\alpha=0.000627$ 9; $\alpha(\text{K})=1.522\times 10^{-5}$ 22; $\alpha(\text{L})=1.376\times 10^{-6}$ 20; $\alpha(\text{M})=1.80\times 10^{-7}$ 3; $\alpha(\text{N}+.)=0.000610$ 9 $\alpha(\text{N})=9.46\times 10^{-9}$ 14; $\alpha(\text{IPF})=0.000610$ 9	
		2838	58 1	145.821	7/2 ⁻	M1+E2	+0.15 3	0.000627 9	$\alpha=0.00070$ 6; $\alpha(\text{K})=1.50\times 10^{-5}$ 4; $\alpha(\text{L})=1.36\times 10^{-6}$ 4; $\alpha(\text{M})=1.78\times 10^{-7}$ 5; $\alpha(\text{N}+.)=0.00068$ 6 $\alpha(\text{N})=9.35\times 10^{-9}$ 24; $\alpha(\text{IPF})=0.00068$ 6 $\delta: -0.36$ 3 or -1.5 1.	
		2896	12 1	87.525	5/2 ⁻	M1+E2		0.00070 6	$\delta\leq 0.0014$ 5; B(E2)(W.u.)=0.6 4 $\alpha=0.000793$ 12; $\alpha(\text{K})=1.464\times 10^{-5}$ 21; $\alpha(\text{L})=1.324\times 10^{-6}$ 19; $\alpha(\text{M})=1.735\times 10^{-7}$ 25 $\alpha(\text{N}+.)=0.000776$ 11 $\alpha(\text{N})=9.10\times 10^{-9}$ 13; $\alpha(\text{IPF})=0.000776$ 11	
		2984	1.3 5	0.0	3/2 ⁻	(E2(+M3)) ^k	&	0.000793 12	$\delta: -0.03$ 6 or -4.1 10. $\delta: -0.01$ 8 or $+4.1$ 13.	
3005.45	3/2 ⁻	2918	64.5 3	87.525	5/2 ⁻	D+Q				
		3005	35.5 3	0.0	3/2 ⁻	D+Q				
3054.22	5/2 ⁻	1307 ^v	<14	1746.96	9/2 ⁺					
		2908	57 1	145.821	7/2 ⁻	D,E2&				
3247.73	7/2 ⁻	2966	43 1	87.525	5/2 ⁻	D,E2&				
		1072	23 1	2175.86	5/2 ⁻	M1+E2	+0.39 3	9.55×10^{-5} 14	B(M1)(W.u.)=0.047 14; B(E2)(W.u.)=16 5 $\alpha=9.55\times 10^{-5}$ 14; $\alpha(\text{K})=8.65\times 10^{-5}$ 13; $\alpha(\text{L})=7.86\times 10^{-6}$ 12; $\alpha(\text{M})=1.030\times 10^{-6}$ 16; $\alpha(\text{N}+.)=5.39\times 10^{-8}$ 8 $\alpha(\text{N})=5.39\times 10^{-8}$ 8 B(E2)(W.u.)=3.1 11	
		1953	12 2	1294.96	11/2 ⁻	E2		0.000324 5		

Adopted Levels, Gammas (continued) $\gamma(^{47}\text{V})$ (continued)

<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ^\dagger</u>	<u>I_γ^\ddagger</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.#</u>	<u>$\delta^\#$</u>	<u>α^t</u>	<u>Comments</u>
									$\alpha=0.000324$ 5; $\alpha(\text{K})=3.03\times 10^{-5}$ 5; $\alpha(\text{L})=2.75\times 10^{-6}$ 4; $\alpha(\text{M})=3.60\times 10^{-7}$ 5; $\alpha(\text{N}+..)=0.000290$ 4 $\alpha(\text{N})=1.88\times 10^{-8}$ 3; $\alpha(\text{IPF})=0.000290$ 4 $\delta: +0.07$ 8 from $\gamma(\theta)$ in (p, γ). ≤ 0.00042 7 from comparison to RUL.
3247.73	7/2 ⁻	1976 2109 ^v 3102 3160 3248	10 1 <5 18 2 19 2 18 2	1271.80 1138.55 145.821 87.525 0.0	9/2 ⁻ 7/2 ⁺ 7/2 ⁻ 5/2 ⁻ 3/2 ⁻	D,E2& D,E2& D,E2 E2(+M3)	+0.15 9	8.91×10 ⁻⁴ 20	$\alpha=8.91\times 10^{-4}$ 20; $\alpha(\text{K})=1.31\times 10^{-5}$ 5; $\alpha(\text{L})=1.18\times 10^{-6}$ 4; $\alpha(\text{M})=1.55\times 10^{-7}$ 6; $\alpha(\text{N}+..)=0.000877$ 20 $\alpha(\text{N})=8.1\times 10^{-9}$ 3; $\alpha(\text{IPF})=0.000877$ 20 B(E2)(W.u.)=0.36 11; B(M3)(W.u.)=5.E+3 +7-5 δ : not consistent with ≤ 0.0020 4 from comparison to RUL.
3270.3	13/2 ⁺	855.5 ^j 6 1522.5 ^j 8 1976 ^j 1	15 ^j 2 79 ^j 2 6 ^d	2415.0 1746.96 1294.96	11/2 ⁺ 9/2 ⁺ 11/2 ⁻	D,E2& E2 ^l (E1)		0.0001510 22 0.000641 9	$\alpha=0.0001510$ 22; $\alpha(\text{K})=4.90\times 10^{-5}$ 7; $\alpha(\text{L})=4.45\times 10^{-6}$ 7; $\alpha(\text{M})=5.83\times 10^{-7}$ 9; $\alpha(\text{N}+..)=9.65\times 10^{-5}$ 14 $\alpha(\text{N})=3.05\times 10^{-8}$ 5; $\alpha(\text{IPF})=9.65\times 10^{-5}$ 14 B(E2)(W.u.)=31 6 $\alpha=0.000641$ 9; $\alpha(\text{K})=1.727\times 10^{-5}$ 25; $\alpha(\text{L})=1.562\times 10^{-6}$ 22; $\alpha(\text{M})=2.05\times 10^{-7}$ 3; $\alpha(\text{N}+..)=0.000622$ 9 $\alpha(\text{N})=1.072\times 10^{-8}$ 15; $\alpha(\text{IPF})=0.000622$ 9 B(E1)(W.u.)=2.3×10 ⁻⁵ 4 Mult.: D,E2 from comparison to RUL. $\Delta\pi$ =yes from level scheme. $\delta: +0.03$ 4 or +3.4 5.
3303.53	3/2	1221 1335 2643 3044 3216	4.5 5 7 1 9 3 7.5 4 71 2	2082.72 1968.92 660.358 259.486 87.525	3/2 ⁻ 3/2 ⁺ 5/2 ⁺ 3/2 ⁺ 5/2 ⁻	D+Q D,E2& D,E2& D+Q D+Q			$\delta: -0.11$ 4 or +7 2. $\delta: -0.05$ 2 or -3.7 3.
3355.49	5/2 ⁺	2695 3096 3355	18 1 78 1 4.1 4	660.358 259.486 0.0	5/2 ⁺ 3/2 ⁺ 3/2 ⁻	(M1+(E2)) [@] D+Q (E1+(M2)) ^h	+0.09 10	5.68×10 ⁻⁴ 9 1.42×10 ⁻³ 2	$\alpha=5.68\times 10^{-4}$ 9; $\alpha(\text{K})=1.651\times 10^{-5}$ 24; $\alpha(\text{L})=1.493\times 10^{-6}$ 21; $\alpha(\text{M})=1.96\times 10^{-7}$ 3; $\alpha(\text{N}+..)=0.000549$ 9 $\alpha(\text{N})=1.026\times 10^{-8}$ 15; $\alpha(\text{IPF})=0.000549$ 9 B(M1)(W.u.)=0.040 17; B(E2)(W.u.)=0.114 +256-12 $\delta: +0.08$ 2 or -5.3 5. $\alpha=1.42\times 10^{-3}$ 2; $\alpha(\text{K})=8.43\times 10^{-6}$ 18;

Adopted Levels, Gammas (continued) $\gamma(^{47}\text{V})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	$\delta^\#$	α^f	Comments
									$\alpha(\text{L})=7.61\times 10^{-7}$ 17; $\alpha(\text{M})=9.97\times 10^{-8}$ 22; $\alpha(\text{N}+..)=0.001408$ 24 $\alpha(\text{N})=5.23\times 10^{-9}$ 12; $\alpha(\text{IPF})=0.001408$ 24 $\text{B}(\text{E}1)(\text{W.u.})=0.00011$ 5; $\text{B}(\text{M}2)(\text{W.u.})=0.165$ +443-17
3362.65	1/2	1280	2.0 3	2082.72	3/2 ⁻	D,E2&			
		3363	98.1 3	0.0	3/2 ⁻	D,E2&			
3370.52	1/2,3/2,5/2 ⁺	1288	2.9 5	2082.72	3/2 ⁻	D,E2&			
		1401	5 1	1968.92	3/2 ⁺	D,E2&			
		3111	28 1	259.486	3/2 ⁺	D,E2&			
		3283 ^v	<8	87.525	5/2 ⁻				
		3370	64 1	0.0	3/2 ⁻	D,E2			
3370.56	3/2	3283	65 2	87.525	5/2 ⁻	D+Q			δ : +0.2 1 or <-2.0.
		3370	35 2	0.0	3/2 ⁻	D+Q			δ : 0.0 1 or <-0.3.
3517.08	5/2	3371	33 3	145.821	7/2 ⁻	D+Q			δ : +0.09 6 or <-25.
		3429	50 3	87.525	5/2 ⁻	D,E2&			
		3517	9 2	0.0	3/2 ⁻	D,E2&			
3524.60	7/2 ⁺	2386	31.8 4	1138.55	7/2 ⁺	(M1(+E2)) [@]	-0.02 2	0.000438 7	$\text{B}(\text{M}1)(\text{W.u.})=0.053$ 16; $\text{B}(\text{E}2)(\text{W.u.})=0.010$ +20-10 $\alpha=0.000438$ 7; $\alpha(\text{K})=2.01\times 10^{-5}$ 3; $\alpha(\text{L})=1.82\times 10^{-6}$ 3; $\alpha(\text{M})=2.38\times 10^{-7}$ 4; $\alpha(\text{N}+..)=0.000416$ 6 $\alpha(\text{N})=1.249\times 10^{-8}$ 18; $\alpha(\text{IPF})=0.000416$ 6
		2864	66.7 4	660.358	5/2 ⁺	(M1(+E2)) [@]	-0.01 2	0.000635 9	$\alpha=0.000635$ 9; $\alpha(\text{K})=1.499\times 10^{-5}$ 21; $\alpha(\text{L})=1.355\times 10^{-6}$ 19; $\alpha(\text{M})=1.776\times 10^{-7}$ 25 $\alpha(\text{N}+..)=0.000618$ 9 $\alpha(\text{N})=9.32\times 10^{-9}$ 13; $\alpha(\text{IPF})=0.000618$ 9 $\text{B}(\text{M}1)(\text{W.u.})=0.064$ 19; $\text{B}(\text{E}2)(\text{W.u.})=0.00200$ +803-20 $\text{B}(\text{E}2)(\text{W.u.})=0.25$ 9
		3265	1.6 3	259.486	3/2 ⁺	E2		0.000908 13	$\alpha=0.000908$ 13; $\alpha(\text{K})=1.269\times 10^{-5}$ 18; $\alpha(\text{L})=1.148\times 10^{-6}$ 16; $\alpha(\text{M})=1.504\times 10^{-7}$ 21 $\alpha(\text{N}+..)=0.000894$ 13 $\alpha(\text{N})=7.89\times 10^{-9}$ 11; $\alpha(\text{IPF})=0.000894$ 13 δ : +0.10 6 from $\gamma(\theta)$ in (p, γ) discrepant with ≤ 0.0035 from comparison to RUL.
3590.35	5/2	3444	18 2	145.821	7/2 ⁻	D,E2&			
		3503	3 2	87.525	5/2 ⁻	D,E2&			
		3590	73 4	0.0	3/2 ⁻	D+Q			δ : +0.06 4 or -3.3 7.
3659.71	(7/2)	2388	35 3	1271.80	9/2 ⁻	D,E2&			
		2999	22 2	660.358	5/2 ⁺	D,E2&			
		3400 ^v	<5	259.486	3/2 ⁺				
		3572	23 1	87.525	5/2 ⁻	D,E2&			

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^f	Comments
3694.4	5/2,3/2 ⁺	3034	16 1	660.358	5/2 ⁺	D,E2&			
		3435	72 2	259.486	3/2 ⁺	D+Q			δ : +0.11 7 or -8 2 if $J_i=5/2$.
		3607	13 2	87.525	5/2 ⁻	D,E2&			
3718.0	7/2,5/2,9/2 ⁺	3572	100	145.821	7/2 ⁻	D+Q			δ : -0.4 2 or +2.2 8.
		3630 ^v	<20	87.525	5/2 ⁻				
		3718 ^v	<14	0.0	3/2 ⁻				
3721.29	7/2 ⁺	2583	19 1	1138.55	7/2 ⁺	D,E2&			
		3061	74 1	660.358	5/2 ⁺	M1(+E2)	+0.02 2	0.000713 10	$\alpha=0.000713$ 10; $\alpha(\text{K})=1.351\times 10^{-5}$ 19; $\alpha(\text{L})=1.222\times 10^{-6}$ 18; $\alpha(\text{M})=1.601\times 10^{-7}$ 23 $\alpha(\text{N+..})=0.000698$ 10 $\alpha(\text{N})=8.40\times 10^{-9}$ 12; $\alpha(\text{IPF})=0.000698$ 10 B(M1)(W.u.)=0.038 16; B(E2)(W.u.)=0.004 +9-4
		3462	1.5 4	259.486	3/2 ⁺	(E2)		0.000987 14	$\alpha=0.000987$ 14; $\alpha(\text{K})=1.159\times 10^{-5}$ 17; $\alpha(\text{L})=1.048\times 10^{-6}$ 15; $\alpha(\text{M})=1.373\times 10^{-7}$ 20 $\alpha(\text{N+..})=0.000974$ 14 $\alpha(\text{N})=7.20\times 10^{-9}$ 10; $\alpha(\text{IPF})=0.000974$ 14 B(E2)(W.u.)=0.11 6 Mult.: D,E2 from comparison to RUL. $\Delta J=2$ from level scheme.
		3634	5.1 5	87.525	5/2 ⁻	(E1)		0.001540 22	$\alpha=0.001540$ 22; $\alpha(\text{K})=7.59\times 10^{-6}$ 11; $\alpha(\text{L})=6.85\times 10^{-7}$ 10; $\alpha(\text{M})=8.98\times 10^{-8}$ 13 $\alpha(\text{N+..})=0.001531$ 22 $\alpha(\text{N})=4.71\times 10^{-9}$ 7; $\alpha(\text{IPF})=0.001531$ 22 B(E1)(W.u.)=3.7 $\times 10^{-5}$ 16 Mult.: D,E2 from comparison to RUL. $\Delta\pi$ =yes from level scheme.
3762.7	1/2 to 5/2	3102	17 4	660.358	5/2 ⁺				
		3675	29 4	87.525	5/2 ⁻				
		3763	13 7	0.0	3/2 ⁻				
3773.4	(1/2)	3686 ^v	<20	87.525	5/2 ⁻				
		3773	100	0.0	3/2 ⁻	D,E2&			
3822.6	1/2,3/2	1740	3 1	2082.72	3/2 ⁻	D,E2&			
		2162	6 1	1660.62	1/2 ⁺	D,E2&			
		3563	18 2	259.486	3/2 ⁺				
3869.0	5/2	3822	70 3	0.0	3/2 ⁻	D,E2&			
		3209 ^v	<12	660.358	5/2 ⁺				
		3609	11 1	259.486	3/2 ⁺				
		3723	86 1	145.821	7/2 ⁻	D(+Q)	-0.01 5		
		3781	3 1	87.525	5/2 ⁻				
3875.8	5/2,3/2 ⁻	1793	27 2	2082.72	3/2 ⁻	D,E2&			
		3729	38 3	145.821	7/2 ⁻	D+Q			δ : -0.1 2 or <-2 if $J_i=5/2$.

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^f	Comments
3875.8	5/2,3/2 ⁻	3875	35 3	0.0	3/2 ⁻	D+Q			δ : -0.27 12 or <-0.6 if $J_i=5/2$.
3876.0	7/2 ⁻	1793 ^v	<11	2082.72	3/2 ⁻				
		2581	73 3	1294.96	11/2 ⁻	(E2) ^k		0.000615 9	$\alpha=0.000615$ 9; $\alpha(\text{K})=1.86\times 10^{-5}$ 3; $\alpha(\text{L})=1.680\times 10^{-6}$ 24; $\alpha(\text{M})=2.20\times 10^{-7}$ 3; $\alpha(\text{N+..})=0.000595$ 9 $\alpha(\text{N})=1.154\times 10^{-8}$ 17; $\alpha(\text{IPF})=0.000595$ 9 B(E2)(W.u.)>32
		3788	27 3	87.525	5/2 ⁻	M1+E2		0.00105 7	$\alpha=0.00105$ 7; $\alpha(\text{K})=9.95\times 10^{-6}$ 21; $\alpha(\text{L})=8.99\times 10^{-7}$ 19; $\alpha(\text{M})=1.179\times 10^{-7}$ 25; $\alpha(\text{N+..})=0.00103$ 7 $\alpha(\text{N})=6.18\times 10^{-9}$ 13; $\alpha(\text{IPF})=0.00103$ 7 δ : +0.23 6 or <-25.
3890.1	1/2,3/2,5/2 ⁺	2229	12 3	1660.62	1/2 ⁺	D,E2 ^{&}			
		3230 ^v	<6	660.358	5/2 ⁺				
		3630	57 6	259.486	3/2 ⁺				
		3744 ^v	<6	145.821	7/2 ⁻				
		3802 ^v	<6	87.525	5/2 ⁻				
		3890 ^v	<7	0.0	3/2 ⁻				
3892.26	3/2,5/2 ⁺	1716	9 1	2175.86	5/2 ⁻	D,E2 ^{&}			
		1810	2 1	2082.72	3/2 ⁻	D,E2 ^{&}			
		3633	66 2	259.486	3/2 ⁺	D,E2 ^{&}			
3952.6	7/2	2292 ^v	<16	1660.62	1/2 ⁺				
		2681	13 3	1271.80	9/2 ⁻	D+Q			δ : -0.34 35 or -2.3 11 if $J_i=7/2$.
		2814	24 5	1138.55	7/2 ⁺	D+Q			δ : -0.02 25 or -0.9 4.
		3292	37 6	660.358	5/2 ⁺	D+Q			δ : +0.01 10 or -4.1 15.
		3693 ^v	<5	259.486	3/2 ⁺				
		3865 ^v	<5	87.525	5/2 ⁻				
		3952 ^v	<6	0.0	3/2 ⁻				
3954.3	15/2 ⁺	684.0 ^j 5	8 ^j 2	3270.3	13/2 ⁺	D,E2 ^{&}			
		1539.4 ^j 8	92 ^j 2	2415.0	11/2 ⁺	E2 ^l		0.0001560 22	$\alpha=0.0001560$ 22; $\alpha(\text{K})=4.79\times 10^{-5}$ 7; $\alpha(\text{L})=4.35\times 10^{-6}$ 7; $\alpha(\text{M})=5.70\times 10^{-7}$ 8; $\alpha(\text{N+..})=0.0001033$ 15 $\alpha(\text{N})=2.98\times 10^{-8}$ 5; $\alpha(\text{IPF})=0.0001032$ 15 B(E2)(W.u.)=36 7
3958.7	3/2 ⁺	1876	4.3 4	2082.72	3/2 ⁻	(E1(+M2)) ^g	&	0.000570 8	$\delta\leq 0.045$ 8; B(E1)(W.u.)=0.00038 13 $\alpha=0.000570$ 8; $\alpha(\text{K})=1.87\times 10^{-5}$ 3; $\alpha(\text{L})=1.692\times 10^{-6}$ 24; $\alpha(\text{M})=2.22\times 10^{-7}$ 4; $\alpha(\text{N+..})=0.000550$ 8 $\alpha(\text{N})=1.160\times 10^{-8}$ 17; $\alpha(\text{IPF})=0.000550$ 8
		1990	2 1	1968.92	3/2 ⁺	D,E2 ^{&}			
		3298	24 2	660.358	5/2 ⁺	D,E2 ^{&}			
		3699	29 2	259.486	3/2 ⁺	M1+E2	-1.3 5	0.00103 4	$\alpha=0.00103$ 4; $\alpha(\text{K})=1.036\times 10^{-5}$ 17; $\alpha(\text{L})=9.36\times 10^{-7}$ 15; $\alpha(\text{M})=1.226\times 10^{-7}$ 20; $\alpha(\text{N+..})=0.00102$ 4

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^f	Comments
3958.7	3/2 ⁺	3959	40 1	0.0	3/2 ⁻	(E1(+M2)) ^h	-0.10 15	0.00166 5	$\alpha(\text{N})=6.43\times 10^{-9}$ 11; $\alpha(\text{IPF})=0.00102$ 4 B(M1)(W.u.)=0.005 3; B(E2)(W.u.)=1.6 7 $\alpha=0.00166$ 5; $\alpha(\text{K})=6.9\times 10^{-6}$ 3; $\alpha(\text{L})=6.2\times 10^{-7}$ 3; $\alpha(\text{M})=8.1\times 10^{-8}$ 4; $\alpha(\text{N}+..)=0.00166$ 5 $\alpha(\text{N})=4.27\times 10^{-9}$ 20; $\alpha(\text{IPF})=0.00166$ 5 B(E1)(W.u.)=0.00037 12; B(M2)(W.u.)=1.08 +322-11 δ : +6 3 excluded by $\Delta\pi$ and comparison to RUL.
3984.97	7/2,3/2 ⁺ ,5/2 ⁺	2846	4 1	1138.55	7/2 ⁺	D,E2&			
		3324	48 2	660.358	5/2 ⁺	D,E2&			
		3725 ^v	<44	259.486	3/2 ⁺				
		3897	5 1	87.525	5/2 ⁻				
4080.60	3/2 ⁺	3420	9 2	660.358	5/2 ⁺	D,E2&			
		3821	59 3	259.486	3/2 ⁺	M1+E2		0.00106 7	$\alpha=0.00106$ 7; $\alpha(\text{K})=9.83\times 10^{-6}$ 21; $\alpha(\text{L})=8.88\times 10^{-7}$ 19; $\alpha(\text{M})=1.164\times 10^{-7}$ 25; $\alpha(\text{N}+..)=0.00105$ 7 $\alpha(\text{N})=6.10\times 10^{-9}$ 13; $\alpha(\text{IPF})=0.00105$ 7 δ : -0.15 3 or +9 3.
		3993	25 2	87.525	5/2 ⁻	(E1(+M2)) ^g	&	0.0012 5	$\delta\leq 0.160$ 23; B(E1)(W.u.)=0.00014 4 $\alpha=0.0012$ 5; $\alpha(\text{K})=1.0\times 10^{-5}$ 3; $\alpha(\text{L})=9.E-7$ 3; $\alpha(\text{M})=1.1\times 10^{-7}$ 4; $\alpha(\text{N}+..)=0.0012$ 5 $\alpha(\text{N})=6.0\times 10^{-9}$ 19; $\alpha(\text{IPF})=0.0012$ 5
4099.06	5/2 ⁻ ,3/2 ⁻	3839	11 1	259.486	3/2 ⁺	D(+Q)	0.00 11		
		3953	30 1	145.821	7/2 ⁻	D+Q			Mult.: M1+E2 if $J_i=5/2$ from δ and comparison to RUL. δ : -0.04 8 or <-0.7 if $J_i=5/2$.
		4011	4 1	87.525	5/2 ⁻	D,E2&			
		4099	35 1	0.0	3/2 ⁻	D,E2&			
4100.31	3/2 ⁻	3841	9 1	259.486	3/2 ⁺	D+Q			δ : +0.30 9 or <-0.3.
		4013	14 1	87.525	5/2 ⁻	D+Q			δ : -0.04 13 or -4 +1-4.
		4100	56 2	0.0	3/2 ⁻	D,E2&			
4118.12	3/2,1/2,5/2	4118	50 4	0.0	3/2 ⁻	D,E2&			
4133.0	19/2 ⁻	1518.0 ^d 5	100 ^d	2615.0	15/2 ⁻	E2		0.0001490 21	$\alpha=0.0001490$ 21; $\alpha(\text{K})=4.93\times 10^{-5}$ 7; $\alpha(\text{L})=4.48\times 10^{-6}$ 7; $\alpha(\text{M})=5.86\times 10^{-7}$ 9; $\alpha(\text{N}+..)=9.48\times 10^{-5}$ 14 $\alpha(\text{N})=3.06\times 10^{-8}$ 5; $\alpha(\text{IPF})=9.47\times 10^{-5}$ 14 B(E2)(W.u.)=16.7 12 Mult.: approximately stretched Q In (³² S,2 $\alpha\pi\gamma$); J \rightarrow J or J \rightarrow J-2 from angular anisotropy In (⁴⁰ Ca,n2 $\pi\gamma$). \neq M2 from comparison to RUL.
4150.35	5/2 ⁽⁻⁾	4004	13 1	145.821	7/2 ⁻	D,E2&			

Adopted Levels, Gammas (continued)

							<u>$\gamma(^{47}\text{V})$ (continued)</u>			
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	α^f	Comments		
4150.35	5/2 ⁽⁻⁾	4063	37 1	87.525	5/2 ⁻	D,E2&				
		4150	50 1	0.0	3/2 ⁻	D,E2&				
4197.3	5/2	4051 ^v	<24	145.821	7/2 ⁻					
		4197	43 4	0.0	3/2 ⁻	D,E2&				
4207.10	3/2,1/2,5/2	2238	30 8	1968.92	3/2 ⁺					
		2546 ^v	<5	1660.62	1/2 ⁺					
		3068 ^v	<7	1138.55	7/2 ⁺					
		3547 ^v	<7	660.358	5/2 ⁺					
		3947	29 8	259.486	3/2 ⁺					
		4061 ^v	<10	145.821	7/2 ⁻					
		4119 ^v	<5	87.525	5/2 ⁻					
		4207 ^v	<10	0.0	3/2 ⁻					
4222.48	5/2	4135	32 2	87.525	5/2 ⁻	D,E2&				
		4222	60 2	0.0	3/2 ⁻	D+Q ^m		$\delta: -0.16\ 5$ or $-2.1\ 3.$		
4271.60	7/2,3/2 ⁺ ,5/2 ⁺	2189 ^v	<3	2082.72	3/2 ⁻					
		2611 ^v	<11	1660.62	1/2 ⁺					
		3611	16 3	660.358	5/2 ⁺					
		4012	24 3	259.486	3/2 ⁺					
		4126 ^v	<3	145.821	7/2 ⁻					
		4184 ^v	<4	87.525	5/2 ⁻					
		4272 ^v	<3	0.0	3/2 ⁻					
4271.75	(1/2)	2611	13 2	1660.62	1/2 ⁺	D,E2&				
		4012 ^v	<13	259.486	3/2 ⁺					
		4272	24 4	0.0	3/2 ⁻	D,E2&				
4345.19	(1/2 ⁺)	2169 ^v	<4	2175.86	5/2 ⁻	(E1) ^g	0.000833 12	B(E1)(W.u.)>0.00050 $\alpha=0.000833\ 12; \alpha(K)=1.422\times 10^{-5}\ 20; \alpha(L)=1.285\times 10^{-6}\ 18;$ $\alpha(M)=1.684\times 10^{-7}\ 24$ $\alpha(N+..)=0.000817\ 12$ $\alpha(N)=8.82\times 10^{-9}\ 13; \alpha(IPF)=0.000817\ 12$		
		2262	10 3	2082.72	3/2 ⁻					
		3685	29 2	660.358	5/2 ⁺	(E2) ^k	0.001070 15	B(E2)(W.u.)>2.7 $\alpha=0.001070\ 15; \alpha(K)=1.054\times 10^{-5}\ 15; \alpha(L)=9.53\times 10^{-7}\ 14;$ $\alpha(M)=1.248\times 10^{-7}\ 18$ $\alpha(N+..)=0.001059\ 15$ $\alpha(N)=6.55\times 10^{-9}\ 10; \alpha(IPF)=0.001059\ 15$		
		4086	20 3	259.486	3/2 ⁺	(E1) ^g	0.001720 25	B(E1)(W.u.)>0.00017 $\alpha=0.001720\ 25; \alpha(K)=6.57\times 10^{-6}\ 10; \alpha(L)=5.93\times 10^{-7}\ 9; \alpha(M)=7.77\times 10^{-8}\ 11;$ $\alpha(N+..)=0.001711\ 24$ $\alpha(N)=4.07\times 10^{-9}\ 6; \alpha(IPF)=0.001711\ 24$		
		4345	14 2	0.0	3/2 ⁻	D,E2&				

Adopted Levels, Gammas (continued) $\gamma(^{47}\text{V})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	α^f	Comments
4346.8?		1931 ^{jv} I		2415.0	11/2 ⁺			
4392.80	1/2 ⁻ , 3/2 ⁻	4247 ^v	<4	145.821	7/2 ⁻			
		4305	24 4	87.525	5/2 ⁻	D,E2&		
		4393	15 2	0.0	3/2 ⁻	D,E2&		
4402.6	7/2,5/2,9/2	3108 ^v	<10	1294.96	11/2 ⁻			
		3130	42 15	1271.80	9/2 ⁻	D+Q		Mult.: M1+E2 if $J_i=7/2$ from δ and comparison to RUL. δ : -0.10 15 or <-2 if $J_i=7/2$.
		3264 ^v	<23	1138.55	7/2 ⁺			
		3742 ^v	<14	660.358	5/2 ⁺			
		4143 ^v	<13	259.486	3/2 ⁺			
		4257 ^v	<13	145.821	7/2 ⁻			
		4315 ^v	<13	87.525	5/2 ⁻			
		4402.6 ^v	<14	0.0	3/2 ⁻			
4406.4		3746 ^v	<6	660.358	5/2 ⁺			
		4147	30 5	259.486	3/2 ⁺			
		4260 ^v	<5	145.821	7/2 ⁻			
		4319 ^v	<5	87.525	5/2 ⁻			
		4406 ^v	<11	0.0	3/2 ⁻			
4453.7	7/2	2793 ^v	<3	1660.62	1/2 ⁺			
		3159 ^v	<15	1294.96	11/2 ⁻			
		3315	16 2	1138.55	7/2 ⁺	D+Q ^m		δ : -0.29 7 or <-0.6.
		3793 ^v	<9	660.358	5/2 ⁺			
		4308	24 4	145.821	7/2 ⁻			
		4366 ^v	<5	87.525	5/2 ⁻			
		4453 ^v	<5	0.0	3/2 ⁻			
4509.52	7/2,3/2,5/2 ⁺	3849	63 8	660.358	5/2 ⁺	D+Q		δ : +0.02 7 or -4 1 if $J_i=7/2$.
4510.01	5/2,3/2 ⁻	4422	50 9	87.525	5/2 ⁻	D,E2&		
		4510	31 2	0.0	3/2 ⁻	D,E2&		
4514.5	3/2,1/2,5/2 ⁻	3854 ^v	<16	660.358	5/2 ⁺			
		4255 ^v	<16	259.486	3/2 ⁺			
		4368 ^v	<17	145.821	7/2 ⁻			
		4427 ^v	<17	87.525	5/2 ⁻			
		4514 ^v	<17	0.0	3/2 ⁻			
4543.02	03/2,1/2,5/2 ⁺	4283	89 3	259.486	3/2 ⁺			
		4543	11 3	0.0	3/2 ⁻			
4568.68	5/2	4568	73 4	0.0	3/2 ⁻	D,E2&		
4694.33	5/2 ⁺ , 3/2 ⁺	4435	51 4	259.486	3/2 ⁺	M1+E2	0.00126 7	$\alpha=0.00126$ 7; $\alpha(\text{K})=7.91\times 10^{-6}$ 16; $\alpha(\text{L})=7.14\times 10^{-7}$ 15; $\alpha(\text{M})=9.36\times 10^{-8}$ 19; $\alpha(\text{N}+..)=0.00125$ 7 $\alpha(\text{N})=4.91\times 10^{-9}$ 10; $\alpha(\text{IPF})=0.00125$ 7 δ : -0.29 7 or -1.6 2 if $J_i=5/2$.

Adopted Levels, Gammas (continued)

E _i (level)	J _i ^π	E _γ [†]	I _γ [‡]	E _f	J _f ^π	<u>γ(⁴⁷V) (continued)</u>		Comments
						Mult.#	δ [#]	
4719.2	3/2,1/2,5/2 ⁻	2543	35 3	2175.86	5/2 ⁻			
		2636	20 9	2082.72	3/2 ⁻			
		2750 ^v	<7	1968.92	3/2 ⁺			
		3058 ^v	<11	1660.62	1/2 ⁺			
		4631	14 4	87.525	5/2 ⁻			
4733.8	9/2	3462	46 7	1271.80	9/2 ⁻	D+Q ^m	δ: -0.04 9 or <-5.	
		3464	23 9			D,E2&		
		3594 ^v	<8	1138.55	7/2 ⁺			
		4588 ^v	<7	145.821	7/2 ⁻			
		4646 ^v	<7	87.525	5/2 ⁻			
		4734 ^v	<7	0.0	3/2 ⁻			
4792.9	1/2,3/2	2710	17 3	2082.72	3/2 ⁻			
		4648 ^v	<6	145.821	7/2 ⁻			
		4705 ^v	<7	87.525	5/2 ⁻			
		4793	68 7	0.0	3/2 ⁻			
4796.8	3/2,1/2 ⁻ ,5/2 ⁻	2585	3 1	2211.75	1/2 ⁻			
		2714	21 2	2082.72	3/2 ⁻			
		4709	9 2	87.525	5/2 ⁻			
		4797	49 3	0.0	3/2 ⁻			
4807.30	5/2	4147	24 6	660.358	5/2 ⁺			
		4548 ^v	<5	259.486	3/2 ⁺			
		4661	26 4	145.821	7/2 ⁻	D+Q ^m	δ: +0.06 20 or <-3.5.	
		4720 ^v	<6	87.525	5/2 ⁻			
		4807 ^v	<4	0.0	3/2 ⁻			
4852.5	5/2,1/2 ⁻ ,3/2 ⁻	4192 ^v	<6	660.358	5/2 ⁺			
4593	31 4	259.486	3/2 ⁺					
4706 ^v	<6	145.821	7/2 ⁻					
4765	18 4	87.525	5/2 ⁻					
4852 ^v	<6	0.0	3/2 ⁻					
4907.6	5/2,3/2 ⁺ ,7/2 ⁺	3769 ^v	<12	1138.55	7/2 ⁺			
		4247	69 5	660.358	5/2 ⁺	D(+Q)	+0.6 10	
		4648 ^v	<6	259.486	3/2 ⁺			
4955.12	1/2,3/2,5/2 ⁺	4295 ^v	<10	660.358	5/2 ⁺			
		4695	78 11	259.486	3/2 ⁺			
		4809 ^v	<14	145.821	7/2 ⁻			
		4867 ^v	<15	87.525	5/2 ⁻			
		4955 ^v	<17	0.0	3/2 ⁻			
4976.5	5/2,7/2	4976	22 2	0.0	3/2 ⁻			
4998.7		4338 ^v	<13	660.358	5/2 ⁺			
4739 ^v		<13	259.486	3/2 ⁺				
		4852	20 9	145.821	7/2 ⁻			

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	α^t	Comments
4998.7	5/2,7/2	4911	49 12	87.525	5/2 ⁻			
		4998 ^v	<13	0.0	3/2 ⁻			
4999.3	17/2 ⁺	1045.2 ^j 7	10 ^j 2	3954.3	15/2 ⁺	D,E2&		
		1728.6 ^j 9	90 ^j 2	3270.3	13/2 ⁺	E2	0.000227 4	$\alpha=0.000227$ 4; $\alpha(\text{K})=3.81\times 10^{-5}$ 6; $\alpha(\text{L})=3.46\times 10^{-6}$ 5; $\alpha(\text{M})=4.53\times 10^{-7}$ 7; $\alpha(\text{N+..})=0.000185$ 3 $\alpha(\text{N})=2.37\times 10^{-8}$ 4; $\alpha(\text{IPF})=0.000185$ 3 $\text{B}(\text{E}2)(\text{W.u.})=23$ 8 Mult.: J→J or J→J-2 from angular anisotropy In (⁴⁰ Ca,n2py). ≠ M2 from from comparison to RUL; ≠ J→J from existence of cascade transition.
		2387 ^{dv}	39 ^d	2615.0	15/2 ⁻	(E1)	0.000910 13	$\alpha=0.000910$ 13; $\alpha(\text{K})=1.319\times 10^{-5}$ 19; $\alpha(\text{L})=1.192\times 10^{-6}$ 17; $\alpha(\text{M})=1.561\times 10^{-7}$ 22 $\alpha(\text{N+..})=0.000895$ 13 $\alpha(\text{N})=8.18\times 10^{-9}$ 12; $\alpha(\text{IPF})=0.000895$ 13 $\text{B}(\text{E}1)(\text{W.u.})=0.00010$ 4 Mult.: D,E2 from comparison to RUL. $\Delta\pi=\text{yes}$ from level scheme.
5016.0	3/2,5/2 ⁺	4355 ^v	<14	660.358	5/2 ⁺			
		4756 ^v	<6	259.486	3/2 ⁺			
		4870 ^v	<6	145.821	7/2 ⁻			
		4928 ^v	<7	87.525	5/2 ⁻			
		5016	43 6	0.0	3/2 ⁻	D+Q		Mult.: M1+E2 if $J_i=3/2$ from δ and comparison to RUL. $\delta: -0.02$ 15 or <-3 if $J_i=3/2$.
5108.65	1/2,3/2,5/2 ⁺	4448 ^v	<13	660.358	5/2 ⁺			
		4849 ^v	<13	259.486	3/2 ⁺			
		4962 ^v	<15	145.821	7/2 ⁻			
		5021 ^v	<13	87.525	5/2 ⁻			
		5108	54 25	0.0	3/2 ⁻			
5123.86	7/2,5/2 ⁺	3376	17 3	1746.96	9/2 ⁺			
		3985	24 3	1138.55	7/2 ⁺			
		4463	38 12	660.358	5/2 ⁺			
5142.16	3/2,1/2 ⁻ ,5/2 ⁻	4481 ^v	<8	660.358	5/2 ⁺			
		4882 ^v	<9	259.486	3/2 ⁺			
		4996 ^v	<11	145.821	7/2 ⁻			
		5054 ^v	<12	87.525	5/2 ⁻			
		5142	100	0.0	3/2 ⁻	D,E2&		
5222.71	3/2,5/2 ⁺	4562 ^v	<21	660.358	5/2 ⁺			
		4963 ^v	<21	259.486	3/2 ⁺			
		5076 ^v	<23	145.821	7/2 ⁻			
		5135 ^v	<13	87.525	5/2 ⁻			
		5222	64 24	0.0	3/2 ⁻	D+Q		$\delta: -0.3$ 2 or <-3 if $J_i=3/2$.

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. [#]	α^f	Comments
5240.0	5/2,3/2 ⁺ ,7/2 ⁺	4579	76 ³	660.358	5/2 ⁺	D+Q		Mult.: M1+E2 if $J_i=5/2$ from δ and comparison to RUL. δ : -0.03 8 or +1.8 4 if $J_i=5/2$.
5635.9	3/2 ⁻	3424	8	2211.75	1/2 ⁻	(M1+E2) ⁿ	0.00091 7	$\alpha=0.00091$ 7; $\alpha(\text{K})=1.16\times 10^{-5}$ 3; $\alpha(\text{L})=1.048\times 10^{-6}$ 24; $\alpha(\text{M})=1.37\times 10^{-7}$ 3; $\alpha(\text{N}+..)=0.00090$ 7 $\alpha(\text{N})=7.20\times 10^{-9}$ 16; $\alpha(\text{IPF})=0.00090$ 7 δ : -0.07 17 or -1.5 5.
		3553	37	2082.72	3/2 ⁻	(M1+E2) ⁿ	0.00096 7	$\alpha=0.00096$ 7; $\alpha(\text{K})=1.096\times 10^{-5}$ 24; $\alpha(\text{L})=9.90\times 10^{-7}$ 22; $\alpha(\text{M})=1.30\times 10^{-7}$ 3; $\alpha(\text{N}+..)=0.00095$ 7 $\alpha(\text{N})=6.81\times 10^{-9}$ 15; $\alpha(\text{IPF})=0.00095$ 7 δ : +0.08 8 or +2.9 7.
		3975	6	1660.62	1/2 ⁺	(E1) ^g	0.001680 24	B(E1)(W.u.) $>2.6\times 10^{-5}$ $\alpha=0.001680$ 24; $\alpha(\text{K})=6.79\times 10^{-6}$ 10; $\alpha(\text{L})=6.13\times 10^{-7}$ 9; $\alpha(\text{M})=8.03\times 10^{-8}$ 12; $\alpha(\text{N}+..)=0.001672$ 24 $\alpha(\text{N})=4.21\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.001672$ 24
		5548	30	87.525	5/2 ⁻	(M1+E2) ⁿ	0.00157 8	$\alpha=0.00157$ 8; $\alpha(\text{K})=5.78\times 10^{-6}$ 11; $\alpha(\text{L})=5.22\times 10^{-7}$ 10; $\alpha(\text{M})=6.84\times 10^{-8}$ 13; $\alpha(\text{N}+..)=0.00157$ 8 $\alpha(\text{N})=3.59\times 10^{-9}$ 7; $\alpha(\text{IPF})=0.00157$ 8 δ : -0.14 15 or -2.8 10.
5728.3	(19/2 ⁺)	5635 729 ^v 1 1774.0 ^j 9	19 <10 100 ^j	0.0 4999.3 3954.3	3/2 ⁻ 17/2 ⁺ 15/2 ⁺	(E2)	0.000246 4	E_γ, I_γ : from $^{28}\text{Si}(^{28}\text{Si}, 2\alpha p\gamma)$ E=125 MeV. $\alpha=0.000246$ 4; $\alpha(\text{K})=3.63\times 10^{-5}$ 5; $\alpha(\text{L})=3.29\times 10^{-6}$ 5; $\alpha(\text{M})=4.31\times 10^{-7}$ 6; $\alpha(\text{N}+..)=0.000206$ 3 $\alpha(\text{N})=2.25\times 10^{-8}$ 4; $\alpha(\text{IPF})=0.000206$ 3 B(E2)(W.u.)=38 9 Mult.: J \rightarrow J or J \rightarrow J-2 from AD. \neq M2 from comparison to RUL. \neq J \rightarrow J from existence of cascade transition?
5738	1/2,3/2	3562 4077 5077 5478 5650	4 9 11 72 4	2175.86 1660.62 660.358 259.486 87.525	5/2 ⁻ 1/2 ⁺ 5/2 ⁺ 3/2 ⁺ 5/2 ⁻	D,E2 ^{&} D+Q ^m D,E2 ^{&} D+Q ^m D,E2 ^{&}		δ : +0.15 8 or -2.5 6. δ : -0.38 8 or <-5.
5853.41	1/2	2080 2091 2482.69 3641 3770 5593 5853	1.9 1.0 8.1 23 58 2.8 1.3	3773.4 3762.7 3370.56 2211.75 2082.72 259.486 0.0	(1/2) 1/2 to 5/2 3/2 1/2 ⁻ 3/2 ⁻ 3/2 ⁺ 3/2 ⁻	D,E2 ^{&} D,E2 ^{&} D,E2 ^{&} D,E2 ^{&} D,E2 ^{&} D,E2 ^{&} D,E2 ^{&}		
5885.20	3/2	2295 3445	3 8	3590.35 2439.54	5/2 5/2 ⁺	D+Q ^m D+Q ^m		δ : +0.02 15 or <-3. δ : -0.05 10 or -3.7 +12-25.

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	α^t	Comments	
5885.20	3/2	3673	13	2211.75	1/2 ⁻	D+Q ^m		δ : +0.08 5 or -2.1 3.	
		3802	6	2082.72	3/2 ⁻	D+Q ^m		δ : -0.07 9 or +5.3 +48-18.	
		4224	12	1660.62	1/2 ⁺	D+Q ^m		δ : +0.02 5 or -1.8 2.	
		5797	37	87.525	5/2 ⁻	D+Q ^m		δ : -0.13 9 or -2.8 7.	
		5885	21	0.0	3/2 ⁻	D+Q		δ : -0.02 13 or +3.6 +33-13.	
5887.33	1/2	3675	2.1	2211.75	1/2 ⁻	D,E2&			
		3804	14	2082.72	3/2 ⁻	D,E2&			
		4226	3.5	1660.62	1/2 ⁺	D,E2&			
5894.60	1/2	5887	77	0.0	3/2 ⁻	D,E2&			
		2590	1.1	3303.53	3/2	D,E2&			
		3682	6.2	2211.75	1/2 ⁻	D,E2&			
		3811	7.4	2082.72	3/2 ⁻	D,E2&			
		4233	37	1660.62	1/2 ⁺	D,E2&			
5903.0	(23/2 ⁻)	5634	24	259.486	3/2 ⁺	D,E2&			
		5894	20	0.0	3/2 ⁻	D,E2&			
		1769.8 ^j 9	100 ^j 5	4133.0	19/2 ⁻	(E2) ^c	0.000244 4	α =0.000244 4; α (K)=3.64×10 ⁻⁵ 6; α (L)=3.30×10 ⁻⁶ 5; α (M)=4.33×10 ⁻⁷ 6; α (N+..)=0.000204 3 α (N)=2.26×10 ⁻⁸ 4; α (IPF)=0.000204 3 B(E2)(W.u.)=12.7 9	
5961.2	1/2	1690.25	1.2	4271.75	(1/2)	D,E2&			
		1844	1.4	4118.12	3/2,1/2,5/2	D,E2&			
		2070	2.9	3892.26	3/2,5/2 ⁺	D,E2&			
		3750	20	2211.75	1/2 ⁻	D,E2&			
		3993	15	1968.92	3/2 ⁺	D,E2&			
		4301	20	1660.62	1/2 ⁺	D,E2&			
		5702	7.0	259.486	3/2 ⁺	D,E2&			
		5962	28	0.0	3/2 ⁻	D,E2&			
5994.3	3/2	2171	1.6	3822.6	1/2,3/2	D,E2&			
		2221	1.0	3773.4	(1/2)	D,E2&			
		2623.54	1.0	3370.56	3/2	D,E2&			
		2989	2.3	3005.45	3/2 ⁻	D,E2&			
		3227	4.9	2767.32	(1/2) ⁻	D+Q ^m		δ : +0.05 6 or -2.0 3.	
		3271	4.9	2722.63	5/2 ⁻	D,E2&			
		3554	2.0	2439.54	5/2 ⁺	D+Q ^m		δ : -0.1 3 or -2.9 +15-45.	
		3782	4.3	2211.75	1/2 ⁻	D+Q		δ : -0.4 2 or -0.8 +6-3.	
		3818	17	2175.86	5/2 ⁻	D,E2&			
		3911	2.4	2082.72	3/2 ⁻	D,E2&			

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>										
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^f	Comments	
5994.3	3/2	4333	4.2	1660.62	1/2 ⁺	D(+Q)	+0.07 8			
		5333	28	660.358	5/2 ⁺	D(+Q)	+0.03 3			
		5734	21	259.486	3/2 ⁺	D+Q	-0.05 3			
		5994	6	0.0	3/2 ⁻	D+Q			δ : -0.54 10 or -4 1.	
6024.00	1/2 ⁻	1227	1.3	4796.8	3/2, 1/2 ⁻ , 5/2 ⁻	D, E2 &				
		2201	1.2	3822.6	1/2, 3/2	D, E2 &				
		2661	3.1	3362.65	1/2	D, E2 &				
		3811	5.7	2211.75	1/2 ⁻	D, E2 &				
		3941	16	2082.72	3/2 ⁻	D, E2 &				
		4054	1.5	1968.92	3/2 ⁺	D, E2 &				
		5935	2.2	87.525	5/2 ⁻	D, E2 &				
		6023	63	0.0	3/2 ⁻	D, E2 &				
		6036.8	(21/2 ⁻)	1903.7 ^{jo} 9	100 ^j	4133.0	19/2 ⁻	D, E2 &		
		6087.43	5/2	1865	1.3	4222.48	5/2	D, E2 &		
2135	4.6			3952.6	7/2	D+Q	-0.04 3			
2428	1.1			3659.71	(7/2)	D, E2 &				
3082	1			3005.45	3/2 ⁻	D, E2 &				
3648	33			2439.54	5/2 ⁺	D(+Q)	-0.02 2			
3911	1.0			2175.86	5/2 ⁻					
4118	1.0			1968.92	3/2 ⁺					
4340	2.0			1746.96	9/2 ⁺	D(+Q)	+0.06 11		Mult., δ : discrepant with $\Delta J=2$ from level scheme.	
4948	8			1138.55	7/2 ⁺	(M1+E2)		0.00141 8	$\alpha=0.00141$ 8; $\alpha(\text{K})=6.77\times 10^{-6}$ 13; $\alpha(\text{L})=6.11\times 10^{-7}$ 12; $\alpha(\text{M})=8.01\times 10^{-8}$ 16; $\alpha(\text{N+..})=0.00141$ 8	
									$\alpha(\text{N})=4.21\times 10^{-9}$ 9; $\alpha(\text{IPF})=0.00141$ 8	
									δ : +0.62 6 or +2.1 2.	
		5427	35	660.358	5/2 ⁺	(M1+E2)	+0.23 4	0.001480 21	B(M1)(W.u.)>0.0090; B(E2)(W.u.)>0.028	
									$\alpha=0.001480$ 21; $\alpha(\text{K})=5.89\times 10^{-6}$ 9; $\alpha(\text{L})=5.32\times 10^{-7}$ 8; $\alpha(\text{M})=6.97\times 10^{-8}$ 10; $\alpha(\text{N+..})=0.001474$ 21	
		5827	4	259.486	3/2 ⁺	(M1+E2)	+2.0 5	0.00168 3	$\alpha(\text{N})=3.66\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.001474$ 21	
									B(M1)(W.u.)>0.00011; B(E2)(W.u.)>0.048	
									$\alpha=0.00168$ 3; $\alpha(\text{K})=5.45\times 10^{-6}$ 8; $\alpha(\text{L})=4.92\times 10^{-7}$ 7;	
									$\alpha(\text{M})=6.45\times 10^{-8}$ 10; $\alpha(\text{N+..})=0.00168$ 3	
									$\alpha(\text{N})=3.38\times 10^{-9}$ 5; $\alpha(\text{IPF})=0.00168$ 3	
		5941	0.8	145.821	7/2 ⁻	D(+Q)	+0.11 16			
		5999	1.0	87.525	5/2 ⁻	D(+Q)	-0.2 2			
		6087	5	0.0	3/2 ⁻	D+Q	-0.07 6			
6122.07	1/2	2163	8.2	3958.7	3/2 ⁺	D, E2 &				
		3354	1.4	2767.32	(1/2) ⁻	D, E2 &				
		3910	4.4	2211.75	1/2 ⁻	D, E2 &				

Adopted Levels, Gammas (continued) $\gamma(^{47}\text{V})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	α^f	Comments
6122.07	1/2	4039	8.1	2082.72	3/2 ⁻	D,E2&		
		4153	7.6	1968.92	3/2 ⁺	D,E2&		
		4461	45	1660.62	1/2 ⁺	D,E2&		
		5862	18	259.486	3/2 ⁺	D,E2&		
		6121	1.8	0.0	3/2 ⁻			
6132.60	1/2 ⁺	2761.83	1.5	3370.56	3/2	D,E2&		
		2761.87	5.3	3370.52	1/2,3/2,5/2 ⁺	D,E2&		
		2770	1.8	3362.65	1/2	D,E2&		
		2829	5.7	3303.53	3/2	D,E2&		
		3693	4.2	2439.54	5/2 ⁺	(E2) ^k	0.001070 15	B(E2)(W.u.)>2.4 $\alpha=0.001070$ 15; $\alpha(\text{K})=1.051\times 10^{-5}$ 15; $\alpha(\text{L})=9.49\times 10^{-7}$ 14; $\alpha(\text{M})=1.244\times 10^{-7}$ 18 $\alpha(\text{N}+..)=0.001062$ 15 $\alpha(\text{N})=6.53\times 10^{-9}$ 10; $\alpha(\text{IPF})=0.001062$ 15
		3920	3.7	2211.75	1/2 ⁻	D,E2&		
		4163	12	1968.92	3/2 ⁺	D,E2&		
		5472	11	660.358	5/2 ⁺	(E2) ^k	0.001620 23	B(E2)(W.u.)>0.90 $\alpha=0.001620$ 23; $\alpha(\text{K})=5.97\times 10^{-6}$ 9; $\alpha(\text{L})=5.39\times 10^{-7}$ 8; $\alpha(\text{M})=7.06\times 10^{-8}$ 10; $\alpha(\text{N}+..)=0.001618$ 23 $\alpha(\text{N})=3.71\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.001618$ 23
		5873	14	259.486	3/2 ⁺	D,E2&		
		6132	35	0.0	3/2 ⁻	(E1) ^g		B(E1)(W.u.)>0.00056
6157.52	(5/2)	2199	1.5	3958.7	3/2 ⁺	D,E2&		
		2463	4.8	3694.4	5/2,3/2 ⁺	D,E2&		
		2802	1.0	3355.49	5/2 ⁺			
		3718	3.3	2439.54	5/2 ⁺			
		4188	4.1	1968.92	3/2 ⁺			
		5018	29	1138.55	7/2 ⁺	D,E2&		
		5497	17	660.358	5/2 ⁺			
		5897	25	259.486	3/2 ⁺			
		6011	1.9	145.821	7/2 ⁻			
		6069	3.5	87.525	5/2 ⁻			
6165.97	3/2 ⁽⁻⁾	6157	6.3	0.0	3/2 ⁻			
		1656	1.0	4510.01	5/2,3/2 ⁻	D,E2&		
		1894.4	1.4	4271.60	7/2,3/2 ⁺ ,5/2 ⁺	D,E2&		
		1969	1.2	4197.3	5/2	D,E2&		
		2016	7.6	4150.35	5/2 ⁽⁻⁾	D,E2&		
		2066	1.8	4100.31	3/2 ⁻	D,E2&		

Adopted Levels, Gammas (continued) $\gamma(^{47}\text{V})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	$\delta^\#$	α^f	Comments
6165.97	3/2 ⁽⁻⁾	2795	4.5	3370.56	3/2	D,E2&			
		2803	2.2	3362.65	1/2	D,E2&			
		3160	8.7	3005.45	3/2 ⁻	D,E2&			
		3399	1.5	2767.32	(1/2) ⁻	D,E2&			
		3443	10	2722.63	5/2 ⁻	D,E2&			
		3954	34	2211.75	1/2 ⁻	D,E2&			
		3990	4.1	2175.86	5/2 ⁻	D,E2&			
		4083	3.1	2082.72	3/2 ⁻	D,E2&			
		5906	2.2	259.486	3/2 ⁺				
6190.59	(3/2)	6078	7.7	87.525	5/2 ⁻	D,E2&			
		1622	1.3	4568.68	5/2	D,E2&			
		1968	1.3	4222.48	5/2	D,E2&			
		3185	1.9	3005.45	3/2 ⁻	D,E2&			
		3423	1.8	2767.32	(1/2) ⁻	D,E2&			
		3468	1.9	2722.63	5/2 ⁻	D,E2&			
		4014	1.3	2175.86	5/2 ⁻	D,E2&			
		5530	11	660.358	5/2 ⁺	D,E2&			
		5930	47	259.486	3/2 ⁺	D,E2&			
		6102	3.2	87.525	5/2 ⁻				
6229.55	5/2 ⁺	6190	23	0.0	3/2 ⁻	D,E2&			
		1213	0.7	5016.0	3/2,5/2 ⁺	D(+Q)	+0.03 3		
		1535	1.4	4694.33	5/2 ⁺ ,3/2 ⁺	D(+Q)	+0.08 8		
		2032	0.3	4197.3	5/2	D(+Q)	+0.1 3		
		2079	0.3	4150.35	5/2 ⁽⁻⁾	(E1(+M2)) ^h	+0.1 3	0.00071 7	B(E1)(W.u.)>5.4×10 ⁻⁵ α=0.00071 7; α(K)=1.6×10 ⁻⁵ 4; α(L)=1.5×10 ⁻⁶ 3; α(M)=1.9×10 ⁻⁷ 4; α(N+..)=0.00069 7 α(N)=1.01×10 ⁻⁸ 21; α(IPF)=0.00069 7
		2360	4.1	3869.0	5/2	D(+Q)	-0.03 3		
		2508	1.7	3721.29	7/2 ⁺	D+Q ^m			δ: -0.14 4 or -3.9 6.
		2511	0.6	3718.0	7/2,5/2,9/2 ⁺	D+Q ^m			δ: -0.13 11 or -4 1.
		2570	1.0	3659.71	(7/2)	D+Q ^m			δ: +0.37 8 or +4 1.
		2705	1.5	3524.60	7/2 ⁺	D,E2&			
		2926	1.2	3303.53	3/2	D,E2&			
		3224	2.8	3005.45	3/2 ⁻	(E1) ^g		0.001360 20	B(E1)(W.u.)>0.00014 α=0.001360 20; α(K)=8.83×10 ⁻⁶ 13; α(L)=7.98×10 ⁻⁷ 12; α(M)=1.045×10 ⁻⁷ 15 α(N+..)=0.001350 19 α(N)=5.48×10 ⁻⁹ 8; α(IPF)=0.001350 19

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. [#]	$\delta^\#$	α^t	Comments
6229.55	5/2 ⁺	3419	22	2810.04	7/2 ⁺	(M1+E2) ⁿ	+0.05 1	0.000850 12	B(M1)(W.u.)>0.040; B(E2)(W.u.)>0.013 $\alpha=0.000850$ 12; $\alpha(\text{K})=1.142\times 10^{-5}$ 16; $\alpha(\text{L})=1.032\times 10^{-6}$ 15; $\alpha(\text{M})=1.352\times 10^{-7}$ 19 $\alpha(\text{N}+..)=0.000838$ 12
		3790	14	2439.54	5/2 ⁺	(M1+E2) ⁿ	+0.04 2	0.000983 14	$\alpha(\text{N})=7.09\times 10^{-9}$ 10; $\alpha(\text{IPF})=0.000838$ 12 B(M1)(W.u.)>0.019; B(E2)(W.u.)> 8.5×10^{-6} $\alpha=0.000983$ 14; $\alpha(\text{K})=9.79\times 10^{-6}$ 14; $\alpha(\text{L})=8.84\times 10^{-7}$ 13; $\alpha(\text{M})=1.159\times 10^{-7}$ 17 $\alpha(\text{N}+..)=0.000973$ 14
		4053	4.6	2175.86	5/2 ⁻	(E1(+M2)) ^h	+0.04 4	1.71×10^{-3} 3	$\alpha(\text{N})=6.08\times 10^{-9}$ 9; $\alpha(\text{IPF})=0.000973$ 14 B(E1)(W.u.)>0.00012 $\alpha=1.71\times 10^{-3}$ 3; $\alpha(\text{K})=6.64\times 10^{-6}$ 10; $\alpha(\text{L})=5.99\times 10^{-7}$ 9; $\alpha(\text{M})=7.85\times 10^{-8}$ 12; $\alpha(\text{N}+..)=0.001698$ 25
		4147	2.0	2082.72	3/2 ⁻	(E1(+M2)) ^h	-0.01 2	0.001740 25	$\alpha(\text{N})=4.12\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.001698$ 25 B(E1)(W.u.)> 4.8×10^{-5} $\alpha=0.001740$ 25; $\alpha(\text{K})=6.45\times 10^{-6}$ 9; $\alpha(\text{L})=5.82\times 10^{-7}$ 9; $\alpha(\text{M})=7.63\times 10^{-8}$ 11; $\alpha(\text{N}+..)=0.001731$ 25
		4260	23	1968.92	3/2 ⁺	M1+E2	-0.15 1	0.001140 16	$\alpha(\text{N})=4.00\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.001731$ 25 B(M1)(W.u.)>0.021; B(E2)(W.u.)>0.059 $\alpha=0.001140$ 16; $\alpha(\text{K})=8.26\times 10^{-6}$ 12; $\alpha(\text{L})=7.46\times 10^{-7}$ 11; $\alpha(\text{M})=9.78\times 10^{-8}$ 14 $\alpha(\text{N}+..)=0.001131$ 16
		4482	1.9	1746.96	9/2 ⁺	E2(+M3)	-0.02 4	0.001340 19	$\alpha(\text{N})=5.13\times 10^{-9}$ 8; $\alpha(\text{IPF})=0.001131$ 16 B(E2)(W.u.)>0.20 $\alpha=0.001340$ 19; $\alpha(\text{K})=7.90\times 10^{-6}$ 12; $\alpha(\text{L})=7.14\times 10^{-7}$ 11; $\alpha(\text{M})=9.35\times 10^{-8}$ 14 $\alpha(\text{N}+..)=0.001333$ 19
		4569	0.5	1660.62	1/2 ⁺	E2+M3	-0.09 7	1.37×10^{-3} 2	$\alpha(\text{N})=4.91\times 10^{-9}$ 7; $\alpha(\text{IPF})=0.001333$ 19 B(E2)(W.u.)>0.046 $\alpha=1.37\times 10^{-3}$ 2; $\alpha(\text{K})=7.73\times 10^{-6}$ 15; $\alpha(\text{L})=6.98\times 10^{-7}$ 13; $\alpha(\text{M})=9.15\times 10^{-8}$ 17; $\alpha(\text{N}+..)=0.001357$ 22
		5569	2.9	660.358	5/2 ⁺	M1+E2		0.00158 8	$\alpha(\text{N})=4.80\times 10^{-9}$ 9; $\alpha(\text{IPF})=0.001357$ 22 $\alpha=0.00158$ 8; $\alpha(\text{K})=5.75\times 10^{-6}$ 11; $\alpha(\text{L})=5.19\times 10^{-7}$ 10; $\alpha(\text{M})=6.81\times 10^{-8}$ 13; $\alpha(\text{N}+..)=0.00157$ 8 $\alpha(\text{N})=3.57\times 10^{-9}$ 7; $\alpha(\text{IPF})=0.00157$ 8 $\delta: -0.45$ 5 or +4 1.
		5970	2.8	259.486	3/2 ⁺	M1+E2	-2.75 10	0.001720 25	B(M1)(W.u.)>0.00011; B(E2)(W.u.)>0.060 $\alpha=0.001720$ 25; $\alpha(\text{K})=5.28\times 10^{-6}$ 8; $\alpha(\text{L})=4.77\times 10^{-7}$ 7; $\alpha(\text{M})=6.25\times 10^{-8}$ 9; $\alpha(\text{N}+..)=0.001718$ 24
		6083	3.4	145.821	7/2 ⁻	(E1+M2) ^h	+0.10 4		B(E1)(W.u.)> 2.6×10^{-5} ; B(M2)(W.u.)>0.0067 δ : other values excluded from ΔJ^π and comparison to RUL.

Adopted Levels, Gammas (continued)

							<u>$\gamma(^{47}\text{V})$ (continued)</u>		
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	$\delta^\#$	Comments	
6229.55	5/2 ⁺	6142	2.8	87.525	5/2 ⁻	(E1+M2) ^h	-0.15 5	B(E1)(W.u.)>2.0×10 ⁻⁵ ; B(M2)(W.u.)>0.019	
		6229	1.6	0.0	3/2 ⁻	(E1+M2) ^h	-0.07 2	B(E1)(W.u.)>1.1×10 ⁻⁵ ; B(M2)(W.u.)>0.0028	
6239.95	3/2	1241	0.3	4998.7	5/2,7/2	D+Q ^p		δ : -0.21 12 or -2.3 6 if $J_f=5/2$.	
		1521	0.4	4719.2	3/2,1/2,5/2 ⁻	D+Q ^q		δ : -0.05 6 or +5 1 if $J_f=3/2$.	
		1671	0.8	4568.68	5/2	D+Q ^m		δ : +0.03 5 or -6 2.	
		1725	0.3	4514.5	3/2,1/2,5/2 ⁻	D+Q ^q		δ : +0.03 7 or +3.5 10 if $J_f=3/2$.	
		1847	0.4	4392.80	1/2 ⁻ ,3/2 ⁻	D+Q ^q		δ : +0.04 7 or +3.3 7 if $J_f=3/2$.	
		1895	1.1	4345.19	(1/2 ⁺)	D(+Q)	+0.01 4		
		2017	1.1	4222.48	5/2	D,E2 ^{&}			
		2139	3.6	4100.31	3/2 ⁻	D+Q	-0.14 5		
		2141	1.0	4099.06	5/2 ⁻ ,3/2 ⁻	D+Q ^m		δ : -0.07 2 or +5.4 5.	
		2649	2.4	3590.35	5/2	D+Q ^m		δ : -0.04 3 or -3.8 4.	
		2877	1.2	3362.65	1/2	D+Q ^m		δ : -0.05 2 or -1.6 8.	
		3185	2.8	3054.22	5/2 ⁻	D+Q ^m		δ : -0.04 3 or -1.9 4.	
		3234	0.5	3005.45	3/2 ⁻	D+Q ^m		δ : -0.21 5 or +20 10.	
		3472	3.2	2767.32	(1/2) ⁻	D+Q ^m		δ : +0.06 1 or -2.0 1.	
		3800	1.3	2439.54	5/2 ⁺	D+Q ^m		δ : -0.16 6 or -2.6 4.	
		4028	4.9	2211.75	1/2 ⁻	D+Q	-0.14 2		
		4064	29	2175.86	5/2 ⁻	D+Q ^m		δ : +0.01 1 or -4.8 3.	
		4157	0.5	2082.72	3/2 ⁻	D+Q		δ : +0.30 10 or -1.7 3.	
		4579	0.7	1660.62	1/2 ⁺	D+Q	-0.05 3		
		5579	1.2	660.358	5/2 ⁺	D(+Q)	-0.04 6		
5980	1.2	259.486	3/2 ⁺	D(+Q)	+0.00 6				
6152	35	87.525	5/2 ⁻	D+Q ^m		δ : -0.02 2 or -4.3 3.			
6239	4.9	0.0	3/2 ⁻	D+Q ^m		δ : -0.39 3 or -8 2.			
6270.93	(3/2)	1878	2.1	4392.80	1/2 ⁻ ,3/2 ⁻	D,E2 ^{&}			
		2048	1.8	4222.48	5/2	D,E2 ^{&}			
		2170	6.0	4100.31	3/2 ⁻	D,E2 ^{&}			
		2378	1.4	3892.26	3/2,5/2 ⁺	D,E2 ^{&}			
		2680	1.5	3590.35	5/2	D,E2 ^{&}			
		2754	1.2	3517.08	5/2	D,E2 ^{&}			
		2900.13	4.1	3370.56	3/2	D,E2 ^{&}			
		2908	1.9	3362.65	1/2	D,E2 ^{&}			
		3217	1.9	3054.22	5/2 ⁻	D,E2 ^{&}			
		3503	1.0	2767.32	(1/2) ⁻	D,E2 ^{&}			
		3548	9.3	2722.63	5/2 ⁻	D,E2 ^{&}			
		6011	4.3	259.486	3/2 ⁺	D,E2 ^{&}			
		6183	46	87.525	5/2 ⁻	D,E2 ^{&}			
		6270	12	0.0	3/2 ⁻	D,E2 ^{&}			

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>												
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^f	Comments			
6296.60	3/2 ⁻	1154	0.3	5142.16	3/2, 1/2 ⁻ , 5/2 ⁻	D(+Q)	+0.02 15					
		1444	0.5	4852.5	5/2, 1/2 ⁻ , 3/2 ⁻	D+Q ^P		δ : -0.02 7 or -4.3 13 if $J_f=5/2$.				
		1500	0.6	4796.8	3/2, 1/2 ⁻ , 5/2 ⁻	D+Q ^Q		δ : -0.01 7 or -4.2 12 if $J_f=3/2$.				
		1786	1.8	4510.01	5/2, 3/2 ⁻	D+Q ^P		δ : -0.01 5 or -4.3 9 if $J_f=5/2$.				
		2024.6	0.9	4271.75	(1/2)	D+Q		Mult.: M1+E2 if $J_f=1/2$ from δ and comparison to RUL.				
		2099	1.1	4197.3	5/2	D+Q ^m		δ : +0.04 3 or -1.9 1 if $J_f=1/2$.				
		2178	2.8	4118.12	3/2, 1/2, 5/2	D, E2 &		δ : -0.09 5 or -3.2 5.				
		2197	4.2	4099.06	5/2 ⁻ , 3/2 ⁻	D+Q ^P		δ : -0.08 2 or -3.4 3 if $J_f=5/2$.				
		2523	0.8	3773.4	(1/2)	D+Q		Mult.: M1+E2 if $J_f=1/2$ from δ and comparison to RUL.				
		2706	1.9	3590.35	5/2	D, E2 &		δ : +0.02 4 or -1.8 2 if $J_f=1/2$.				
		2925.79	9.4	3370.56	3/2	D+Q ^m		δ : -0.09 2 or +6.2 6.				
		2934	2.4	3362.65	1/2	D, E2 &						
		3857	1.8	2439.54	5/2 ⁺	D(+Q)						
		4120	1.2	2175.86	5/2 ⁻	E1 ^g		-0.01 4	0.001730 25	B(E1)(W.u.) > 6.4 × 10 ⁻⁵ $\alpha=0.001730$ 25; $\alpha(K)=6.50 \times 10^{-6}$ 10; $\alpha(L)=5.87 \times 10^{-7}$ 9; $\alpha(M)=7.69 \times 10^{-8}$ 11; $\alpha(N+..)=0.001722$ 25 $\alpha(N)=4.03 \times 10^{-9}$ 6; $\alpha(IPF)=0.001722$ 25		
		4213	5.1	2082.72	3/2 ⁻	M1+E2			0.00119 7	$\alpha=0.00119$ 7; $\alpha(K)=8.51 \times 10^{-6}$ 18; $\alpha(L)=7.69 \times 10^{-7}$ 16; $\alpha(M)=1.008 \times 10^{-7}$ 21; $\alpha(N+..)=0.00118$ 7 $\alpha(N)=5.29 \times 10^{-9}$ 11; $\alpha(IPF)=0.00118$ 7 δ : +0.33 4 or +1.5 1.		
		4327	1.2	1968.92	3/2 ⁺	(E1+M2) ^h		-0.08 4	0.00180 3	B(E1)(W.u.) > 5.4 × 10 ⁻⁵ ; B(M2)(W.u.) > 0.00054 $\alpha=0.00180$ 3; $\alpha(K)=6.16 \times 10^{-6}$ 10; $\alpha(L)=5.56 \times 10^{-7}$ 9; $\alpha(M)=7.28 \times 10^{-8}$ 12; $\alpha(N+..)=0.00179$ 3 $\alpha(N)=3.82 \times 10^{-9}$ 6; $\alpha(IPF)=0.00179$ 3		
		4635	5.4	1660.62	1/2 ⁺	(E1(+M2)) ^h		-0.00 1	0.00191 3	B(E1)(W.u.) > 0.00020 $\alpha=0.00191$ 3; $\alpha(K)=5.64 \times 10^{-6}$ 8; $\alpha(L)=5.09 \times 10^{-7}$ 8; $\alpha(M)=6.67 \times 10^{-8}$ 10; $\alpha(N+..)=0.00190$ 3 $\alpha(N)=3.50 \times 10^{-9}$ 5; $\alpha(IPF)=0.00190$ 3		
		6350.98	(3/2)	6208	2.5	87.525		5/2 ⁻	(M1+E2) ⁿ			δ : +0.85 20 or +1.2 +12-6.
				6296	52	0.0		3/2 ⁻	M1+E2			δ : +0.31 2 or +1.6 1.
				1209	0.1	5142.16		3/2, 1/2 ⁻ , 5/2 ⁻				
1335	0.2			5016.0	3/2, 5/2 ⁺							
1352	0.1			4998.7	5/2, 7/2							
1782	1.0			4568.68	5/2							
1836	0.1			4514.5	3/2, 1/2, 5/2 ⁻							
1841	0.4			4510.01	5/2, 3/2 ⁻							
2079	0.6			4271.75	(1/2)							
2128	0.9			4222.48	5/2							

Adopted Levels, Gammas (continued) $\gamma(^{47}\text{V})$ (continued)

<u>E_i(level)</u>	<u>J_i^{π}</u>	<u>E_{γ}[†]</u>	<u>I_{γ}[‡]</u>	<u>E_f</u>	<u>J_f^{π}</u>	<u>Mult. #</u>
6350.98	(3/2)	2153	0.2	4197.3	5/2	
		2200	0.1	4150.35	5/2 ⁽⁻⁾	
		2233	0.5	4118.12	3/2,1/2,5/2	
		2250	1.7	4100.31	3/2 ⁻	
		2270	1.0	4080.60	3/2 ⁺	
		2392	0.4	3958.7	3/2 ⁺	
		2475.3	0.3	3875.8	5/2,3/2 ⁻	
		2528	0.3	3822.6	1/2,3/2	
		2760	1.1	3590.35	5/2	
		2834	0.6	3517.08	5/2	
		2980	1.4	3370.56	3/2	
		2980	1.2	3370.52	1/2,3/2,5/2 ⁺	
		3296	0.5	3054.22	5/2 ⁻	
		3345	0.1	3005.45	3/2 ⁻	
		3583	1.2	2767.32	(1/2) ⁻	
		3628	2.9	2722.63	5/2 ⁻	
		3911	0.9	2439.54	5/2 ⁺	
		4139	7.1	2211.75	1/2 ⁻	
		4175	0.9	2175.86	5/2 ⁻	
		4268	11	2082.72	3/2 ⁻	
		4383	2.3	1968.92	3/2 ⁺	
		4690	3.4	1660.62	1/2 ⁺	
		5690	1.8	660.358	5/2 ⁺	
		6091	9.8	259.486	3/2 ⁺	
		6204	0.6	145.821	7/2 ⁻	
		6263	17	87.525	5/2 ⁻	
		6350	28	0.0	3/2 ⁻	
		6373.82	(1/2)	1831	3.5	4543.02
2166	2.2			4207.10	3/2,1/2,5/2	D,E2&
2273	1.0			4100.31	3/2 ⁻	D,E2&
2293	9			4080.60	3/2 ⁺	D,E2&
2415	3.4			3958.7	3/2 ⁺	D,E2&
2483	2.5			3890.1	1/2,3/2,5/2 ⁺	D,E2&
2600	4.3			3773.4	(1/2)	D,E2&
3003	1.0			3370.56	3/2	D,E2&
3003	1.8			3370.52	1/2,3/2,5/2 ⁺	D,E2&
3606	3.6			2767.32	(1/2) ⁻	D,E2&
4162	5.5			2211.75	1/2 ⁻	D,E2&
4291	1.4			2082.72	3/2 ⁻	D,E2&
4404	2.0			1968.92	3/2 ⁺	D,E2&

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^t	Comments
6373.82	(1/2)	4713	32	1660.62	1/2 ⁺	D,E2&			
		6114	11	259.486	3/2 ⁺	D,E2&			
6387.28	(5/2 ⁺)	6373	15	0.0	3/2 ⁻	D,E2&			
		1147	1.1	5240.0	5/2,3/2 ⁺ ,7/2 ⁺	D,E2&			
		1877.49	1.5	4509.52	7/2,3/2,5/2 ⁺	D,E2&			
		1933	1.3	4453.7	7/2	D,E2&			
		1981	1.2	4406.4		D,E2&			
		2402	5.1	3984.97	7/2,3/2 ⁺ ,5/2 ⁺	D,E2&			
		2518	5.0	3869.0	5/2	D,E2&			
		2666	1.0	3721.29	7/2 ⁺	(E1) ^g	0.001070 15		B(E1)(W.u.)>9.1×10 ⁻⁵ α=0.001070 15; α(K)=1.134×10 ⁻⁵ 16; α(L)=1.024×10 ⁻⁶ 15; α(M)=1.342×10 ⁻⁷ 19 α(N+..)=0.001060 15 α(N)=7.03×10 ⁻⁹ 10; α(IPF)=0.001060 15
		2727	1.9	3659.71	(7/2)	D,E2&			
		2862	26	3524.60	7/2 ⁺	D,E2&			
6392.5?	5/2 ⁺	3031	2.8	3355.49	5/2 ⁺	D,E2&			
		3333	2.7	3054.22	5/2 ⁻	(E1) ^g	0.001410 20		B(E1)(W.u.)>0.00013 α=0.001410 20; α(K)=8.47×10 ⁻⁶ 12; α(L)=7.64×10 ⁻⁷ 11; α(M)=1.002×10 ⁻⁷ 14 α(N+..)=0.001401 20 α(N)=5.25×10 ⁻⁹ 8; α(IPF)=0.001401 20
		3403	1.4	2984.29	7/2 ⁻	(E1) ^g	0.001440 21		B(E1)(W.u.)>6.1×10 ⁻⁵ α=0.001440 21; α(K)=8.25×10 ⁻⁶ 12; α(L)=7.44×10 ⁻⁷ 11; α(M)=9.75×10 ⁻⁸ 14 α(N+..)=0.001432 20 α(N)=5.11×10 ⁻⁹ 8; α(IPF)=0.001432 20
		3577	3.2	2810.04	7/2 ⁺	D,E2&			
6393.95	5/2 ⁺	3947	3.0	2439.54	5/2 ⁺	D,E2&			
		4418	7.5	1968.92	3/2 ⁺	D,E2&			
		5248	1.6	1138.55	7/2 ⁺				
		5726	21	660.358	5/2 ⁺	D,E2&			
		6299	3.1	87.525	5/2 ⁻				
		6387	1.7	0.0	3/2 ⁻				
		486.0 ^{dy} 20		5903.0	(23/2 ⁻)				
		1154	1.2	5240.0	5/2,3/2 ⁺ ,7/2 ⁺	D(+Q)	+0.02 3		
		1270	0.8	5123.86	7/2,5/2 ⁺	D+Q ^r			δ: -0.01 2 or -8 1 if J _f =7/2.
		1486	0.7	4907.6	5/2,3/2 ⁺ ,7/2 ⁺	D+Q	-0.06 4		
1584	0.4	4807.30	5/2	D+Q ^p			δ: +0.04 7 or +1.2 2 if J _f =5/2.		

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)								
$E_i(\text{level})$	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	$\delta^\#$	α^t	Comments
6393.95	1884.1	0.7	4509.52	7/2,3/2,5/2 ⁺	D+Q ^r			δ : +0.02 4 or -12 3 if $J_f=7/2$.
	1940	1.2	4453.7	7/2	D+Q ^m			δ : +0.01 4 or <-7.
	2244	0.1	4150.35	5/2 ⁽⁻⁾	(E1+M2) ^h	-0.16 2	0.000807 12	B(E1)(W.u.)>3.2×10 ⁻⁵ ; B(M2)(W.u.)>0.56 $\alpha=0.000807$ 12; $\alpha(K)=1.49\times 10^{-5}$ 3; $\alpha(L)=1.349\times 10^{-6}$ 23; $\alpha(M)=1.77\times 10^{-7}$ 3; $\alpha(N+..)=0.000791$ 12 $\alpha(N)=9.26\times 10^{-9}$ 16; $\alpha(\text{IPF})=0.000791$ 12
	2314	1.1	4080.60	3/2 ⁺	D,E2&			
	2409	3.1	3984.97	7/2,3/2 ⁺ ,5/2 ⁺	D(+Q)	+0.02 3		
	2441	1.0	3952.6	7/2	D,E2&			
	2672	6.1	3721.29	7/2 ⁺	D+Q ^m			δ : +0.08 2 or <-15.
	2699	1	3694.4	5/2,3/2 ⁺	D,E2&			
	2734	3.4	3659.71	(7/2)	D+Q	+0.02 1		
	2869	25	3524.60	7/2 ⁺	(M1+E2) ⁿ	+0.02 1	0.000637 9	B(M1)(W.u.)>0.17; B(E2)(W.u.)>8.2×10 ⁻⁶ $\alpha=0.000637$ 9; $\alpha(K)=1.495\times 10^{-5}$ 21; $\alpha(L)=1.352\times 10^{-6}$ 19; $\alpha(M)=1.771\times 10^{-7}$ 25 $\alpha(N+..)=0.000620$ 9 $\alpha(N)=9.29\times 10^{-9}$ 13; $\alpha(\text{IPF})=0.000620$ 9
	3038	8.4	3355.49	5/2 ⁺	(M1(+E2)) ⁿ	+0.02 2	0.000704 10	B(M1)(W.u.)>0.047 $\alpha=0.000704$ 10; $\alpha(K)=1.367\times 10^{-5}$ 20; $\alpha(L)=1.236\times 10^{-6}$ 18; $\alpha(M)=1.620\times 10^{-7}$ 23 $\alpha(N+..)=0.000689$ 10 $\alpha(N)=8.50\times 10^{-9}$ 12; $\alpha(\text{IPF})=0.000689$ 10
	3146	0.7	3247.73	7/2 ⁻	(E1+M2) ^h	-0.09 6	1.31×10 ⁻³ 2	B(E1)(W.u.)>8.2×10 ⁻⁵ $\alpha=1.31\times 10^{-3}$ 2; $\alpha(K)=9.20\times 10^{-6}$ 19; $\alpha(L)=8.31\times 10^{-7}$ 18; $\alpha(M)=1.088\times 10^{-7}$ 23; $\alpha(N+..)=0.001305$ 22 $\alpha(N)=5.71\times 10^{-9}$ 12; $\alpha(\text{IPF})=0.001305$ 22
	3583	10	2810.04	7/2 ⁺	(M1+E2) ⁿ	-0.04 1	0.000910 13	B(M1)(W.u.)>0.034; B(E2)(W.u.)>0.0054 $\alpha=0.000910$ 13; $\alpha(K)=1.064\times 10^{-5}$ 15; $\alpha(L)=9.61\times 10^{-7}$ 14; $\alpha(M)=1.260\times 10^{-7}$ 18 $\alpha(N+..)=0.000898$ 13 $\alpha(N)=6.61\times 10^{-9}$ 10; $\alpha(\text{IPF})=0.000898$ 13
	3671	0.7	2722.63	5/2 ⁻	(E1(+M2)) ^h	-0.09 10	0.00155 4	B(E1)(W.u.)>5.1×10 ⁻⁵ $\alpha=0.00155$ 4; $\alpha(K)=7.55\times 10^{-6}$ 22; $\alpha(L)=6.82\times 10^{-7}$ 20; $\alpha(M)=8.9\times 10^{-8}$ 3; $\alpha(N+..)=0.00154$ 4 $\alpha(N)=4.68\times 10^{-9}$ 14; $\alpha(\text{IPF})=0.00154$ 4
	3954	4.4	2439.54	5/2 ⁺	(M1+E2) ⁿ	+0.04 3	0.001040 15	B(M1)(W.u.)>0.011 $\alpha=0.001040$ 15; $\alpha(K)=9.20\times 10^{-6}$ 13; $\alpha(L)=8.31\times 10^{-7}$ 12; $\alpha(M)=1.089\times 10^{-7}$ 16 $\alpha(N+..)=0.001033$ 15 $\alpha(N)=5.72\times 10^{-9}$ 8; $\alpha(\text{IPF})=0.001033$ 15

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>										
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. [#]	$\delta^\#$	α^f	Comments	
6393.95	5/2 ⁺	4311	3.7	2082.72	3/2 ⁻	(E1+M2) ^h	+0.04 1	0.00180 3	B(E1)(W.u.)>0.00017; B(M2)(W.u.)>0.034 $\alpha=0.00180$ 3; $\alpha(\text{K})=6.16\times 10^{-6}$ 9; $\alpha(\text{L})=5.56\times 10^{-7}$ 8; $\alpha(\text{M})=7.29\times 10^{-8}$ 11; $\alpha(\text{N+..})=0.00179$ 3	
		4424	6.5	1968.92	3/2 ⁺	(M1(+E2)) ⁿ	-0.01 1	0.001190 17	$\alpha(\text{N})=3.82\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.00179$ 3 B(M1)(W.u.)>0.012 $\alpha=0.001190$ 17; $\alpha(\text{K})=7.82\times 10^{-6}$ 11; $\alpha(\text{L})=7.06\times 10^{-7}$ 10; $\alpha(\text{M})=9.26\times 10^{-8}$ 13 $\alpha(\text{N+..})=0.001185$ 17 $\alpha(\text{N})=4.86\times 10^{-9}$ 7; $\alpha(\text{IPF})=0.001185$ 17	
	5733	12	660.358	5/2 ⁺		D,E2&				
	6134	2.5	259.486	3/2 ⁺		(M1+E2) ⁿ	+0.13 1		B(M1)(W.u.)>0.0017; B(E2)(W.u.)>0.0016	
	6247	0.7	145.821	7/2 ⁻		(E1+M2) ^h	-0.16 4		B(E1)(W.u.)>1.0×10 ⁻⁵ ; B(M2)(W.u.)>0.016	
	6306	0.5	87.525	5/2 ⁻		(E1+M2) ^h	+0.26 12		B(E1)(W.u.)>6.5×10 ⁻⁶ ; B(M2)(W.u.)>0.0073	
	6425.87	3/2	2275	2.4	4150.35	5/2 ⁽⁻⁾	D+Q ^p			δ : +0.06 3 or -7 1 if $J_f=5/2$.
			2307	1.6	4118.12	3/2,1/2,5/2	D+Q ^q			δ : -0.06 4 or +5 1 if $J_f=3/2$.
			2325	2.3	4100.31	3/2 ⁻	D,E2&			
			2550.2	2.1	3875.8	5/2,3/2 ⁻	D+Q ^p			δ : +0.01 5 or -5 1 if $J_f=5/2$.
2835			2.3	3590.35	5/2	D+Q ^m			δ : -0.01 4 or -4.5 9.	
3055			1.8	3370.56	3/2	D,E2&				
3122			1.0	3303.53	3/2	D,E2&				
3659			1.1	2767.32	(1/2) ⁻	D,E2&				
4214			37	2211.75	1/2 ⁻	D+Q ^m			δ : -0.06 1 or -1.53 2.	
4250			30	2175.86	5/2 ⁻	D+Q	-0.06 1			
4457	3.9	1968.92	3/2 ⁺	D+Q ^m			δ : -0.01 3 or +4.1 5.			
4765	1.9	1660.62	1/2 ⁺	D+Q			δ : -0.06 4 or -1.5 1.			
5765	1.0	660.358	5/2 ⁺							
6166	0.9	259.486	3/2 ⁺	D+Q			δ : -0.16 9 or >+6.			
6279	0.3	145.821	7/2 ⁻	Q+O ^m			δ : +0.4 3 or <-2.1.			
6338	3.6	87.525	5/2 ⁻	D+Q			δ : -0.15 5 or -2.7 4.			
6425	3.1	0.0	3/2 ⁻	D(+Q)	<+0.1					
6427.39	5/2	2346	1.1	4080.60	3/2 ⁺	D,E2&				
		2706	1.0	3721.29	7/2 ⁺	D,E2&				
		2902	2.1	3524.60	7/2 ⁺	D,E2&				
		3987	6.7	2439.54	5/2 ⁺	D,E2&				
		4458	21	1968.92	3/2 ⁺	D,E2&				
		5288	4.5	1138.55	7/2 ⁺	D,E2&				
		5766	26	660.358	5/2 ⁺	D,E2&				
		6167	3.1	259.486	3/2 ⁺					
6339	25	87.525	5/2 ⁻	D,E2&						

Adopted Levels, Gammas (continued) $\gamma(^{47}\text{V})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. [#]	$\delta^\#$	α^f	Comments	
6475.30	5/2 ⁺	1252	0.5	5222.71	3/2,5/2 ⁺	D+Q	+0.08 3			
		2394	2.5	4080.60	3/2 ⁺	(M1(+E2)) ⁿ	+0.00 1	0.000441 7	B(M1)(W.u.)>0.029 $\alpha=0.000441$ 7; $\alpha(\text{K})=2.00\times 10^{-5}$ 3; $\alpha(\text{L})=1.81\times 10^{-6}$ 3; $\alpha(\text{M})=2.37\times 10^{-7}$ 4; $\alpha(\text{N}+..)=0.000419$ 6 $\alpha(\text{N})=1.242\times 10^{-8}$ 18; $\alpha(\text{IPF})=0.000419$ 6	
		2490	0.6	3984.97	7/2,3/2 ⁺ ,5/2 ⁺	D,E2&				
		2516	1.1	3958.7	3/2 ⁺	D,E2&				
		2522	2.4	3952.6	7/2	D,E2&				
		2781	1.1	3694.4	5/2,3/2 ⁺	D+Q ^p				δ : +0.07 6 or +1.0 2 if $J_f=5/2$.
		2815	2.6	3659.71	(7/2)	D,E2&				
		3171	19	3303.53	3/2	D+Q		-0.10 1		
		3227	0.5	3247.73	7/2 ⁻	D+Q ^m				δ : +0.09 9 or <-15.
		3665	3.3	2810.04	7/2 ⁺	D,E2&				
		4035	1.6	2439.54	5/2 ⁺	(M1(+E2)) ⁿ		+0.04 6	0.001070 15	B(M1)(W.u.)>0.0038 $\alpha=0.001070$ 15; $\alpha(\text{K})=8.93\times 10^{-6}$ 13; $\alpha(\text{L})=8.07\times 10^{-7}$ 12; $\alpha(\text{M})=1.057\times 10^{-7}$ 15 $\alpha(\text{N}+..)=0.001059$ 15 $\alpha(\text{N})=5.55\times 10^{-9}$ 8; $\alpha(\text{IPF})=0.001059$ 15
		4392	4.2	2082.72	3/2 ⁻	(E1+M2) ^h		+0.03 1	0.00183 3	B(E1)(W.u.)>0.00018; B(M2)(W.u.)>0.013 $\alpha=0.00183$ 3; $\alpha(\text{K})=6.02\times 10^{-6}$ 9; $\alpha(\text{L})=5.43\times 10^{-7}$ 8; $\alpha(\text{M})=7.12\times 10^{-8}$ 10; $\alpha(\text{N}+..)=0.00182$ 3 $\alpha(\text{N})=3.73\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.00182$ 3
		4506	20	1968.92	3/2 ⁺	(M1+E2) ⁿ		+0.02 1	0.001220 18	B(M1)(W.u.)>0.034; B(E2)(W.u.)>6.9×10 ⁻⁷ 10; $\alpha=0.001220$ 18; $\alpha(\text{K})=7.62\times 10^{-6}$ 11; $\alpha(\text{L})=6.88\times 10^{-7}$ 10; $\alpha(\text{M})=9.02\times 10^{-8}$ 13 $\alpha(\text{N}+..)=0.001210$ 17 $\alpha(\text{N})=4.73\times 10^{-9}$ 7; $\alpha(\text{IPF})=0.001210$ 17
		5336	2.0	1138.55	7/2 ⁺	M1+E2		-1.00 19	0.00152 3	B(M1)(W.u.)>0.00084; B(E2)(W.u.)>0.075 $\alpha=0.00152$ 3; $\alpha(\text{K})=6.10\times 10^{-6}$ 9; $\alpha(\text{L})=5.51\times 10^{-7}$ 8; $\alpha(\text{M})=7.22\times 10^{-8}$ 11; $\alpha(\text{N}+..)=0.00151$ 3 $\alpha(\text{N})=3.79\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.00151$ 3
		5814	19	660.358	5/2 ⁺	(M1+E2) ⁿ		-0.10 2	0.001570 22	B(M1)(W.u.)>0.015; B(E2)(W.u.)>0.0069 $\alpha=0.001570$ 22; $\alpha(\text{K})=5.36\times 10^{-6}$ 8; $\alpha(\text{L})=4.84\times 10^{-7}$ 7; $\alpha(\text{M})=6.34\times 10^{-8}$ 9; $\alpha(\text{N}+..)=0.001565$ 22 $\alpha(\text{N})=3.33\times 10^{-9}$ 5; $\alpha(\text{IPF})=0.001565$ 22
		6215	7.0	259.486	3/2 ⁺	(M1+E2) ⁿ		-0.47 2		B(M1)(W.u.)>0.0037; B(E2)(W.u.)>0.051
		6329	0.4	145.821	7/2 ⁻	(E1(+M2)) ^h		-0.07 10		B(E1)(W.u.)>5.7×10 ⁻⁶
6679.73	7/2 ⁽⁻⁾	6475	7.0	0.0	3/2 ⁻	(E1+M2) ^h	+0.07		B(E1)(W.u.)>9.5×10 ⁻⁵ ; B(M2)(W.u.)>0.051	
		1681	0.3	4998.7	5/2,7/2	D(+Q)	+0.02 4			
		1946	0.8	4733.8	9/2	D+Q ^m			δ : -0.04 4 or -11 4.	

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^f	Comments
6679.73	7/2 ⁽⁻⁾	2111	0.4	4568.68	5/2	D+Q	+0.19 6		
		2277	0.4	4402.6	7/2,5/2,9/2	D+Q ^r			δ : -0.12 14 or +1.0 3 if $J_f=7/2$.
		2457	1.4	4222.48	5/2	D+Q	+0.05 2		
		2803	1.3	3876.0	7/2 ⁻	(M1+(E2)) ⁿ	+0.03 6	0.000611 9	B(M1)(W.u.)>0.0092 $\alpha=0.000611$ 9; $\alpha(K)=1.551\times 10^{-5}$ 22; $\alpha(L)=1.402\times 10^{-6}$ 20; $\alpha(M)=1.84\times 10^{-7}$ 3; $\alpha(N+..)=0.000593$ 9 $\alpha(N)=9.64\times 10^{-9}$ 14; $\alpha(\text{IPF})=0.000593$ 9
		2958	0.4	3721.29	7/2 ⁺	D(+Q)	+0.3 3		
		2961	0.6	3718.0	7/2,5/2,9/2 ⁺	(E1+M2) ^h		0.0009 4	$\alpha=0.0009$ 4; $\alpha(K)=1.6\times 10^{-5}$ 6; $\alpha(L)=1.4\times 10^{-6}$ 6; $\alpha(M)=1.9\times 10^{-7}$ 7; $\alpha(N+..)=0.0008$ 4 $\alpha(N)=1.0\times 10^{-8}$ 4; $\alpha(\text{IPF})=0.0008$ 4 δ : -0.08 9 or +0.9 2. δ : -0.03 6 or -3.1 7.
		3089	0.5	3590.35	5/2	D+Q ^m			
		3162	2.3	3517.08	5/2	D+Q	-0.06 2		
		3432	3.7	3247.73	7/2 ⁻	(M1+(E2)) ⁿ	-0.02 2	0.000855 12	B(M1)(W.u.)>0.014 $\alpha=0.000855$ 12; $\alpha(K)=1.135\times 10^{-5}$ 16; $\alpha(L)=1.026\times 10^{-6}$ 15; $\alpha(M)=1.344\times 10^{-7}$ 19 $\alpha(N+..)=0.000842$ 12 $\alpha(N)=7.05\times 10^{-9}$ 10; $\alpha(\text{IPF})=0.000842$ 12
		3625	3.4	3054.22	5/2 ⁻	(M1+E2) ⁿ	+0.03 1	0.000925 13	B(M1)(W.u.)>0.011; B(E2)(W.u.)>0.00065 $\alpha=0.000925$ 13; $\alpha(K)=1.046\times 10^{-5}$ 15; $\alpha(L)=9.45\times 10^{-7}$ 14; $\alpha(M)=1.238\times 10^{-7}$ 18 $\alpha(N+..)=0.000913$ 13 $\alpha(N)=6.50\times 10^{-9}$ 9; $\alpha(\text{IPF})=0.000913$ 13
		3695	22	2984.29	7/2 ⁻	(M1+(E2)) ⁿ	+0.02 2	0.000949 14	B(M1)(W.u.)>0.068 $\alpha=0.000949$ 14; $\alpha(K)=1.016\times 10^{-5}$ 15; $\alpha(L)=9.18\times 10^{-7}$ 13; $\alpha(M)=1.203\times 10^{-7}$ 17 $\alpha(N+..)=0.000938$ 14 $\alpha(N)=6.32\times 10^{-9}$ 9; $\alpha(\text{IPF})=0.000938$ 14
		3932	6.6	2747.12	9/2 ⁻	(M1+E2) ⁿ	+0.02 1	0.001040 15	B(M1)(W.u.)>0.017; B(E2)(W.u.)>4.5 $\times 10^{-7}$ $\alpha=0.001040$ 15; $\alpha(K)=9.27\times 10^{-6}$ 13; $\alpha(L)=8.38\times 10^{-7}$ 12; $\alpha(M)=1.098\times 10^{-7}$ 16 $\alpha(N+..)=0.001025$ 15 $\alpha(N)=5.76\times 10^{-9}$ 8; $\alpha(\text{IPF})=0.001025$ 15
		3957	9.2	2722.63	5/2 ⁻	(M1+(E2)) ⁿ	-0.00 1	0.001040 15	B(M1)(W.u.)>0.023 $\alpha=0.001040$ 15; $\alpha(K)=9.19\times 10^{-6}$ 13; $\alpha(L)=8.30\times 10^{-7}$ 12; $\alpha(M)=1.088\times 10^{-7}$ 16 $\alpha(N+..)=0.001034$ 15 $\alpha(N)=5.71\times 10^{-9}$ 8; $\alpha(\text{IPF})=0.001034$ 15
		4240	4.2	2439.54	5/2 ⁺	(E1+(M2)) ^h	-0.01 1	0.001770 25	B(E1)(W.u.)>0.00020

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)								
$E_i(\text{level})$	E_γ †	I_γ ‡	E_f	J_f^π	Mult. #	δ #	α^f	Comments
6679.73	4503	0.4	2175.86	5/2 ⁻	(M1(+E2)) ⁿ	-0.06 6	1.22×10 ⁻³ 2	$\alpha=0.001770$ 25; $\alpha(\text{K})=6.28\times 10^{-6}$ 9; $\alpha(\text{L})=5.67\times 10^{-7}$ 8; $\alpha(\text{M})=7.42\times 10^{-8}$ 11; $\alpha(\text{N}+..)=0.001765$ 25 $\alpha(\text{N})=3.89\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.001765$ 25 B(M1)(W.u.)>0.00068
	4932	1.4	1746.96	9/2 ⁺	(E1(+M2)) ^h	-0.00 3	0.00201 3	$\alpha=1.22\times 10^{-3}$ 2; $\alpha(\text{K})=7.63\times 10^{-6}$ 11; $\alpha(\text{L})=6.89\times 10^{-7}$ 10; $\alpha(\text{M})=9.03\times 10^{-8}$ 13; $\alpha(\text{N}+..)=0.001210$ 17 $\alpha(\text{N})=4.74\times 10^{-9}$ 7; $\alpha(\text{IPF})=0.001210$ 17 B(E1)(W.u.)>4.3×10 ⁻⁵
	5407	19	1271.80	9/2 ⁻	(M1+E2) ⁿ	-0.04 1	0.001470 21	$\alpha=0.00201$ 3; $\alpha(\text{K})=5.24\times 10^{-6}$ 8; $\alpha(\text{L})=4.73\times 10^{-7}$ 7; $\alpha(\text{M})=6.19\times 10^{-8}$ 9; $\alpha(\text{N}+..)=0.00200$ 3 $\alpha(\text{N})=3.25\times 10^{-9}$ 5; $\alpha(\text{IPF})=0.00200$ 3 B(M1)(W.u.)>0.019; B(E2)(W.u.)>0.0013
6683.16	6533	10	145.821	7/2 ⁻	(M1+E2) ⁿ	-0.21 2		$\alpha=0.001470$ 21; $\alpha(\text{K})=5.91\times 10^{-6}$ 9; $\alpha(\text{L})=5.34\times 10^{-7}$ 8; $\alpha(\text{M})=7.00\times 10^{-8}$ 10; $\alpha(\text{N}+..)=0.001462$ 21 $\alpha(\text{N})=3.67\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.001462$ 21 B(M1)(W.u.)>0.0054; B(E2)(W.u.)>0.012
	6591	10	87.525	5/2 ⁻	(M1+E2) ⁿ	-0.03 1		B(M1)(W.u.)>0.0055; B(E2)(W.u.)>9.7×10 ⁻⁵
	1440 ^V	0.7	5240.0	5/2,3/2 ⁺ ,7/2 ⁺	D+Q			$\delta: -0.07$ 2 or -2.9 3.
	1541	0.4	5142.16	3/2,1/2 ⁻ ,5/2 ⁻	D+Q			$\delta: -0.00$ 3 or -3.7 7.
	2114	2.1	4568.68	5/2				
	2173 ^{uv}	4.2 ^u	4510.01	5/2,3/2 ⁻				
	2173 ^{uv}	4.2 ^u	4509.52	7/2,3/2,5/2 ⁺				
	2411 ^{uv}	2.8 ^u	4271.75	(1/2)	D+Q ^S			
	2411 ^{uv}	2.8 ^u	4271.60	7/2,3/2 ⁺ ,5/2 ⁺	D+Q ^S			
	2460	12.3	4222.48	5/2	D+Q			$\delta: +0.00$ 1 or $+4.5$ 3.
	2791	1.4	3892.26	3/2,5/2 ⁺				
	3092	6.0	3590.35	5/2	D+Q			$\delta: -0.02$ 1 or $+5.4$ 3.
	3166	6.9	3517.08	5/2	D+Q			$\delta: +0.01$ 3 or $+4.7$ 9.
	3312 ^{uv}	6.6 ^u	3370.56	3/2	D+Q ^S			
	3312 ^{uv}	6.6 ^u	3370.52	1/2,3/2,5/2 ⁺	D+Q ^S			
	3320	6.4	3362.65	1/2	D+Q			$\delta: +0.07$ 1 or $+1.5$ 1.
	3629	1.1	3054.22	5/2 ⁻				
	3677	12.0	3005.45	3/2 ⁻	D+Q			$\delta: -0.01$ 2 or -4.0 3.
	3916	1.1	2767.32	(1/2) ⁻				
	3960	4.5	2722.63	5/2 ⁻	D+Q			$\delta: +0.04$ 2 or $+3.7$ 2.
	4507	4.2	2175.86	5/2 ⁻				
	4600	0.9	2082.72	3/2 ⁻	D+Q			$\delta: -0.11$ 6 or -2.5 6.
	4714	0.5	1968.92	3/2 ⁺	D+Q			$\delta: +0.02$ 3 or -4.2 5.
	5022	1.2	1660.62	1/2 ⁺	D+Q			$\delta: -0.02$ 3 or $+1.8$ 1.
	6022	3.9	660.358	5/2 ⁺	D+Q			$\delta: +0.00$ 1 or $+4.6$ 4.
	6595	2.8	87.525	5/2 ⁻	D+Q			$\delta: +0.11$ 3 or $+2.9$ 4.
	6683	14.1	0.0	3/2 ⁻	D+Q			$\delta: +0.13$ 1 or -7.9 8.

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^f	Comments
6693.23	1/2 ⁺	2486	1.4	4207.10	3/2,1/2,5/2	D,E2&			
		2734	1.0	3958.7	3/2 ⁺	D,E2&			
		2803	1.7	3890.1	1/2,3/2,5/2 ⁺	D,E2&			
		3322	1.5	3370.56	3/2	D,E2&			
		4610	3.1	2082.72	3/2 ⁻	(E1) ^g		0.00190 3	B(E1)(W.u.)>0.00018 $\alpha=0.00190$ 3; $\alpha(\text{K})=5.68\times 10^{-6}$ 8; $\alpha(\text{L})=5.12\times 10^{-7}$ 8; $\alpha(\text{M})=6.71\times 10^{-8}$ 10; $\alpha(\text{N}+..)=0.00189$ 3 $\alpha(\text{N})=3.52\times 10^{-9}$ 5; $\alpha(\text{IPF})=0.00189$ 3
		5032	37	1660.62	1/2 ⁺	D,E2&			
		6433	49	259.486	3/2 ⁺	D,E2&			
		1460	1.0	5240.0	5/2,3/2 ⁺ ,7/2 ⁺				
		2131	1.8	4568.68	5/2	D+Q			$\delta: -0.00$ 2 or +4.5 4.
		2428 ^{uv}	1.2 ^u	4271.75	(1/2)				
2428 ^{uv}	1.2 ^u	4271.60	7/2,3/2 ⁺ ,5/2 ⁺						
2477	7.7	4222.48	5/2	D+Q			$\delta: -0.01$ 2 or +4.8 2.		
3109	4.1	3590.35	5/2	D+Q			$\delta: -0.06$ 2 or +6.6 8.		
3182	5.3	3517.08	5/2	D+Q			$\delta: -0.03$ 1 or +5.2 3.		
3329 ^{uv}	5.5 ^u	3370.56	3/2	D+Q ^s					
3329 ^{uv}	5.5 ^u	3370.52	1/2,3/2,5/2 ⁺	D+Q ^s					
3645	4.2	3054.22	5/2 ⁻	D+Q			$\delta: +0.03$ 3 or +4.1 4.		
3694	2.3	3005.45	3/2 ⁻						
3932	2.2	2767.32	(1/2) ⁻	D+Q			$\delta: +0.01$ 2 or +1.7 1.		
4523	2.1	2175.86	5/2 ⁻						
4617	13.0	2082.72	3/2 ⁻	D+Q			$\delta: +0.04$ 2 or -4.7 6.		
6039	1.7	660.358	5/2 ⁺						
6612	43.8	87.525	5/2 ⁻	D+Q			$\delta: -0.06$ 1 or +6.5 3.		
6869.0	21/2 ⁺	966 ^d	6 ^d	5903.0	(23/2 ⁻)	(E1) ^g		6.41×10 ⁻⁵ 9	B(E1)(W.u.)>0.00016 $\alpha=6.41\times 10^{-5}$ 9; $\alpha(\text{K})=5.81\times 10^{-5}$ 9; $\alpha(\text{L})=5.27\times 10^{-6}$ 8; $\alpha(\text{M})=6.90\times 10^{-7}$ 10; $\alpha(\text{N}+..)=3.60\times 10^{-8}$ 5 $\alpha(\text{N})=3.60\times 10^{-8}$ 5
		1869.8 ^j 9	94 ^d	4999.3	17/2 ⁺	E2 ^l		0.000287 5	$\alpha=0.000287$ 5; $\alpha(\text{K})=3.28\times 10^{-5}$ 5; $\alpha(\text{L})=2.98\times 10^{-6}$ 5; $\alpha(\text{M})=3.90\times 10^{-7}$ 6; $\alpha(\text{N}+..)=0.000250$ 4 $\alpha(\text{N})=2.04\times 10^{-8}$ 3; $\alpha(\text{IPF})=0.000250$ 4 B(E2)(W.u.)>11
6953.8	9/2 ⁺	3001	13	3952.6	7/2	D,E2&			
		5206	61	1746.96	9/2 ⁺	M1+E2	-0.18 3	0.001420 20	B(M1)(W.u.)>0.013; B(E2)(W.u.)>0.027 $\alpha=0.001420$ 20; $\alpha(\text{K})=6.23\times 10^{-6}$ 9; $\alpha(\text{L})=5.63\times 10^{-7}$ 8; $\alpha(\text{M})=7.38\times 10^{-8}$ 11; $\alpha(\text{N}+..)=0.001413$ 20 $\alpha(\text{N})=3.87\times 10^{-9}$ 6; $\alpha(\text{IPF})=0.001413$ 20

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>									
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	$\delta^\#$	α^f	Comments
6953.8	9/2 ⁺	5658	9	1294.96	11/2 ⁻	(E1(+M2)) ^h	+0.00 7	0.00221 4	B(E1)(W.u.)>3.7×10 ⁻⁵ $\alpha=0.00221 4$; $\alpha(\text{K})=4.46\times 10^{-6} 7$; $\alpha(\text{L})=4.02\times 10^{-7} 6$; $\alpha(\text{M})=5.27\times 10^{-8} 8$; $\alpha(\text{N}+..)=0.00221 4$ $\alpha(\text{N})=2.77\times 10^{-9} 4$; $\alpha(\text{IPF})=0.00221 4$
		5681	5	1271.80	9/2 ⁻	(E1+M2) ^h		0.0017 5	$\alpha=0.0017 5$; $\alpha(\text{K})=5.8\times 10^{-6} 14$; $\alpha(\text{L})=5.2\times 10^{-7} 13$; $\alpha(\text{M})=6.8\times 10^{-8} 16$; $\alpha(\text{N}+..)=0.0017 5$ $\alpha(\text{N})=3.6\times 10^{-9} 9$; $\alpha(\text{IPF})=0.0017 5$ $\delta: -0.2 2 \text{ or } -0.8 4.$
		6807	12	145.821	7/2 ⁻	D(+Q)	+0.03 4		
7398.9	(25/2 ⁻)	1362.1 ^{jo} 7	8 ^j 2	6036.8	(21/2 ⁻)	(E2)		0.0001120 16	$\alpha=0.0001120 16$; $\alpha(\text{K})=6.17\times 10^{-5} 9$; $\alpha(\text{L})=5.61\times 10^{-6} 8$; $\alpha(\text{M})=7.35\times 10^{-7} 11$; $\alpha(\text{N}+..)=4.41\times 10^{-5} 7$ $\alpha(\text{N})=3.84\times 10^{-8} 6$; $\alpha(\text{IPF})=4.41\times 10^{-5} 7$ B(E2)(W.u.)=11 4 Mult.: D,E2 from comparison to RUL. $\Delta J=2$ from level scheme.
		1495.9 ^j 8	92 ^j 2	5903.0	(23/2 ⁻)	(M1)		0.0001130 16	$\alpha=0.0001130 16$; $\alpha(\text{K})=4.48\times 10^{-5} 7$; $\alpha(\text{L})=4.07\times 10^{-6} 6$; $\alpha(\text{M})=5.33\times 10^{-7} 8$; $\alpha(\text{N}+..)=6.40\times 10^{-5} 10$ $\alpha(\text{N})=2.79\times 10^{-8} 4$; $\alpha(\text{IPF})=6.39\times 10^{-5} 10$ B(M1)(W.u.)=0.067 11 Mult.: stretched dipole from angular anisotropy In (⁴⁰ Ca,n2py). $\Delta\pi=\text{No}$ from level scheme.
7725.9	(23/2 ⁺)	1997.6 ^j 9	100 ^j	5728.3	(19/2 ⁺)	(E2)		0.000344 5	$\alpha=0.000344 5$; $\alpha(\text{K})=2.91\times 10^{-5} 4$; $\alpha(\text{L})=2.63\times 10^{-6} 4$; $\alpha(\text{M})=3.45\times 10^{-7} 5$; $\alpha(\text{N}+..)=0.000312 5$ $\alpha(\text{N})=1.81\times 10^{-8} 3$; $\alpha(\text{IPF})=0.000312 5$ B(E2)(W.u.)=26 8 Mult.: D,E2 from comparison to RUL. $\Delta J=2$ from level scheme.
7883.4	(27/2 ⁻)	484.5 ^j 4	65 ^j 5	7398.9	(25/2 ⁻)	M1		0.000479 7	$\alpha=0.000479 7$; $\alpha(\text{K})=0.000434 7$; $\alpha(\text{L})=3.97\times 10^{-5} 6$; $\alpha(\text{M})=5.20\times 10^{-6} 8$; $\alpha(\text{N}+..)=2.71\times 10^{-7} 4$ $\alpha(\text{N})=2.71\times 10^{-7} 4$ B(M1)(W.u.)=1.18 18 Mult.: J→J-1 D from AD and DCO In ²⁸ Si(²⁸ Si,2 α py) E=125 MeV. M1 from comparison to RUL.
		1980.4 ^j 9	35 ^j 5	5903.0	(23/2 ⁻)	E2		0.000336 5	$\alpha=0.000336 5$; $\alpha(\text{K})=2.95\times 10^{-5} 5$; $\alpha(\text{L})=2.68\times 10^{-6}$

Adopted Levels, Gammas (continued)

<u>$\gamma(^{47}\text{V})$ (continued)</u>								
<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ^\dagger</u>	<u>I_γ^\ddagger</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult. #</u>	<u>α^f</u>	<u>Comments</u>
								4; $\alpha(\text{M})=3.51 \times 10^{-7}$ 5; $\alpha(\text{N}+..)=0.000304$ 5 $\alpha(\text{N})=1.83 \times 10^{-8}$ 3; $\alpha(\text{IPF})=0.000304$ 5 $\text{B}(\text{E}2)(\text{W.u.})=6.0$ 12 Mult.: J→J or J→J-2 from AD and DCO In $^{28}\text{Si}(^{28}\text{Si},2\alpha\text{p}\gamma)$ E=125 MeV and from angular anisotropy In ($^{40}\text{Ca},\text{n}2\text{p}\gamma$). ≠ J→J from existence of cascade transition; ≠ M2 from comparison to RUL.
8781.7	(25/2 ⁺)	1912.6 ^j 9	100 ^j	6869.0	21/2 ⁺			
9610.5	(27/2 ⁺)	1884.5 ^j 9	100 ^j	7725.9	(23/2 ⁺)	(E2)	0.000293 5	$\alpha=0.000293$ 5; $\alpha(\text{K})=3.24 \times 10^{-5}$ 5; $\alpha(\text{L})=2.93 \times 10^{-6}$ 5; $\alpha(\text{M})=3.84 \times 10^{-7}$ 6; $\alpha(\text{N}+..)=0.000257$ 4 $\alpha(\text{N})=2.01 \times 10^{-8}$ 3; $\alpha(\text{IPF})=0.000257$ 4 $\text{B}(\text{E}2)(\text{W.u.})=24.0$ 8 Mult.: J→J-2 Q from DCO In $^{28}\text{Si}(^{28}\text{Si},2\alpha\text{p}\gamma)$ E=125 MeV. ≠ M2 from comparison to RUL. $\Delta\text{J}=2$ from level scheme.
10004.6	(31/2 ⁻)	2121.0 ^j 10	100 ^j 5	7883.4	(27/2 ⁻)	E2	0.000401 6	$\alpha=0.000401$ 6; $\alpha(\text{K})=2.61 \times 10^{-5}$ 4; $\alpha(\text{L})=2.36 \times 10^{-6}$ 4; $\alpha(\text{M})=3.10 \times 10^{-7}$ 5; $\alpha(\text{N}+..)=0.000373$ 6 $\alpha(\text{N})=1.620 \times 10^{-8}$ 23; $\alpha(\text{IPF})=0.000373$ 6 $\text{B}(\text{E}2)(\text{W.u.})=5.3$ 4 Mult.: J→J-2 Q from DCO In $^{28}\text{Si}(^{28}\text{Si},2\alpha\text{p}\gamma)$ E=125 MeV. ≠ M2 from comparison to RUL.
10768.7	(29/2 ⁻)	764.0 ^j 6	50 ^j 7	10004.6	(31/2 ⁻)	M1	0.000181 3	$\alpha=0.000181$ 3; $\alpha(\text{K})=0.0001643$ 24; $\alpha(\text{L})=1.496 \times 10^{-5}$ 21; $\alpha(\text{M})=1.96 \times 10^{-6}$ 3 $\alpha(\text{N}+..)=1.024 \times 10^{-7}$ 15 $\alpha(\text{N})=1.024 \times 10^{-7}$ 15 $\text{B}(\text{M}1)(\text{W.u.})>0.45$ I_γ : branching ratios In $^{28}\text{Si}(^{28}\text{Si},2\alpha\text{p}\gamma)$ E=125 MeV and $^{28}\text{Si}(^{28}\text{Si},2\alpha\text{p}\gamma)$ E=110, 115 MeV are discrepant. Mult.: J→J-1 D from AD In $^{28}\text{Si}(^{28}\text{Si},2\alpha\text{p}\gamma)$ E=125 MeV. ≠ E1 from comparison to RUL.
		2885 ^j 1	20 ^j 6	7883.4	(27/2 ⁻)	D		I_γ : branching ratios In $^{28}\text{Si}(^{28}\text{Si},2\alpha\text{p}\gamma)$ E=125 MeV and $^{28}\text{Si}(^{28}\text{Si},2\alpha\text{p}\gamma)$ E=110, 115 MeV are discrepant. Mult.: J→J-1 D from AD In $^{28}\text{Si}(^{28}\text{Si},2\alpha\text{p}\gamma)$ E=125 MeV.
		3370 ^j 1	30 ^j 5	7398.9	(25/2 ⁻)	D,E2&		
11094.5	(29/2 ⁺)	2312.8 ^j 10	100 ^j	8781.7	(25/2 ⁺)			
11949.0	(31/2 ⁺)	2338.5 ^j 10	100 ^j	9610.5	(27/2 ⁺)	(E2)	0.000503 8	$\alpha=0.000503$ 8; $\alpha(\text{K})=2.20 \times 10^{-5}$ 3; $\alpha(\text{L})=1.99 \times 10^{-6}$ 3; $\alpha(\text{M})=2.61 \times 10^{-7}$ 4; $\alpha(\text{N}+..)=0.000479$ 7 $\alpha(\text{N})=1.365 \times 10^{-8}$ 20; $\alpha(\text{IPF})=0.000479$ 7 $\text{B}(\text{E}2)(\text{W.u.})=9.7$ 17 Mult.: D,E2 from comparison to RUL. $\Delta\text{J}=2$ from level scheme.
14036.8	(35/2 ⁻)	4032 2	100	10004.6	(31/2 ⁻)	E2	0.001190 17	$\alpha=0.001190$ 17; $\alpha(\text{K})=9.21 \times 10^{-6}$ 13; $\alpha(\text{L})=8.33 \times 10^{-7}$ 12; $\alpha(\text{M})=1.091 \times 10^{-7}$ 16 $\alpha(\text{N}+..)=0.001181$ 17 $\alpha(\text{N})=5.72 \times 10^{-9}$ 8; $\alpha(\text{IPF})=0.001181$ 17

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. [#]	α^f	Comments
								B(E2)(W.u.)>0.66 E _γ ,I _γ : from ²⁸ Si(²⁸ Si,2αpγ) E=125 MeV. Mult.: J→J-2 Q from AD In ²⁸ Si(²⁸ Si,2αpγ) E=125 MeV. ≠ M2 from comparison to RUL.
14489.1	(33/2 ⁺)	2540.0 ^j 10	>90 ^j	11949.0	(31/2 ⁺)	D,E2 ^{&}		
		3394 ^{jv} 1	<10 ^j	11094.5	(29/2 ⁺)			
15258.2	(35/2 ⁺)	769.1 ^j 6	10 ^j 3	14489.1	(33/2 ⁺)	D ^{&}		
		3309.0 ^j 10	90 ^j 2	11949.0	(31/2 ⁺)	(E2) ^k	9.26×10 ⁻⁴	B(E2)(W.u.)>1.8 α=9.26×10 ⁻⁴ ; α(K)=1.243×10 ⁻⁵ 18; α(L)=1.124×10 ⁻⁶ 16; α(M)=1.473×10 ⁻⁷ 21; α(N+..)=0.000912 13 α(N)=7.72×10 ⁻⁹ 11; α(IPF)=0.000912 13

[†] Nominal E_γ's calculated from excitation energies in (p,γ) E=0.4-1.8 MeV res, except as noted.

[‡] % photon branching ratio from each state. Data are given as percentages due to heavy reliance on 1986De13 who do not give all transitions.

[#] From γ(θ) in (p,γ) and comparison to RUL, except as noted.

[@] D from comparison to RUL. Δπ=no from level scheme.

[&] From comparison to RUL.

^a From (p,nγ).

^b Weighted average of (p,nγ), ¹⁰B(⁴⁰Ca,n2pγ),..., and ²⁸Si(²⁸Si,2αpγ) E=110, 115 MeV. Arithmetic mean of 99.17% 23 and 0.83% 23 (NRM) and 99.09% 25 and 0.21% 25 (RT).

^c J→J or J→J-2 from angular anisotropy In (⁴⁰Ca,n2pγ). ≠ M2 from comparison to RUL. ΔJ=2 from level scheme.

^d From ¹⁰B(⁴⁰Ca,n2pγ), ²⁴Mg(³²S,2αpγ),...

^e Weighted av from (p,γ), (p,nγ), and ¹⁰B(⁴⁰Ca,n2pγ), ²⁴Mg(³²S,2αpγ),... Arithmetic mean of 11.4% 12 and 88.6% 12 (NRM) and 11.2% 9 and 88.8% 9 (RT).

^f Stretched dipole from angular anisotropy In (⁴⁰Ca,n2pγ).

^g D,E2 from comparison to RUL. Δπ=yes from level scheme.

^h D+Q or D(+Q) from γ(θ) In (p,γ). Δπ=yes from level scheme.

ⁱ From γ(θ) in (p,nγ) and comparison to RUL.

^j From ²⁸Si(²⁸Si,2αpγ) E=110, 115 MeV.

^k D,E2 from comparison to RUL. ΔJ^π=²No from level scheme.

^l J→J or J→J-2 from angular anisotropy In (⁴⁰Ca,n2pγ). ≠ M2 from comparison to RUL; ≠ J→J from existence of cascade transition.

^m M1+E2 if δ(4222)=-2.1 3, δ(3315)<-0.6, δ(3462)<-5, δ(4661)<-3.5, δ(4077)=-2.5 6, δ(5478)<-5, δ(2295)<-3, δ(3445)=-3.7 +12-25, δ(3673)=-2.1 3, δ(3802)=+5.3 +48-18, δ(4224)=-1.8 2, δ(5797)=-2.8 7, δ(3227)=-2.0 3, δ(3554)=-2.9 +15-45, δ(2508)=-3.9 6, δ(2511)=-4 1, δ(2570)=+4 1, δ(1671)=-6 2, δ(2141)=+5.4 5, δ(2649)=-3.8 4, δ(2877)=-1.6 8, δ(3185)=-1.9 4, δ(3234)=+20 10, δ(3472)=-2.0 1, δ(3800)=-2.6 4, δ(4064)=-4.8 3, δ(6152)=-4.3 3, δ(6239)=-8 2, δ(2099)=-3.2 5, δ(2926)=+6.2 6, δ(1940)<-7, δ(2672)<-15, δ(2835)=-4.5 9, δ(4214)=-1.53 2, δ(4457)=+4.1 5, δ(6279)<-2.1, δ(3227)<-15, δ(1946)=-11 4, and δ(3089)=-3.1 7 from comparison to RUL.

ⁿ D+Q or D(+Q) from γ(θ) In (p,γ). Δπ=No from level scheme.

Adopted Levels, Gammas (continued)

$\gamma(^{47}\text{V})$ (continued)

^o 1362 γ -1904 γ sequence assigned to 7399,25/2 \rightarrow 6037,21/2 $^-$ by [1998Be69](#) In $^{24}\text{Mg}(^{28}\text{Si},\alpha p\gamma)$ and [2001Br32](#) In $^{28}\text{Si}(^{28}\text{Si},2\alpha p\gamma)$ E=110, 115 MeV. [1998Ca26](#) assign 1900 γ -1367 γ sequence to 7400,25/2 \rightarrow 5500,21/2 $^-$ In $^{28}\text{Si}(^{28}\text{Si},2\alpha p\gamma)$ E=125 MeV.

^p M1+E2 if $J_f=5/2$ from δ and comparison to RUL.

^q M1+E2 if $J_f=3/2$ from δ and comparison to RUL.

^r M1+E2 if $J_f=7/2$ from δ and comparison to RUL.

^s $\delta(2411)=+0.14$ ⁴ or +13 ⁺¹⁴⁻⁵ and $\delta(3312)=+0.07$ ⁴ or -5.4 ¹⁰ $\delta(3329)=-0.04$ ¹ or -3.3 ² for possible doublets.

^t 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.

^u Multiply placed with undivided intensity.

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

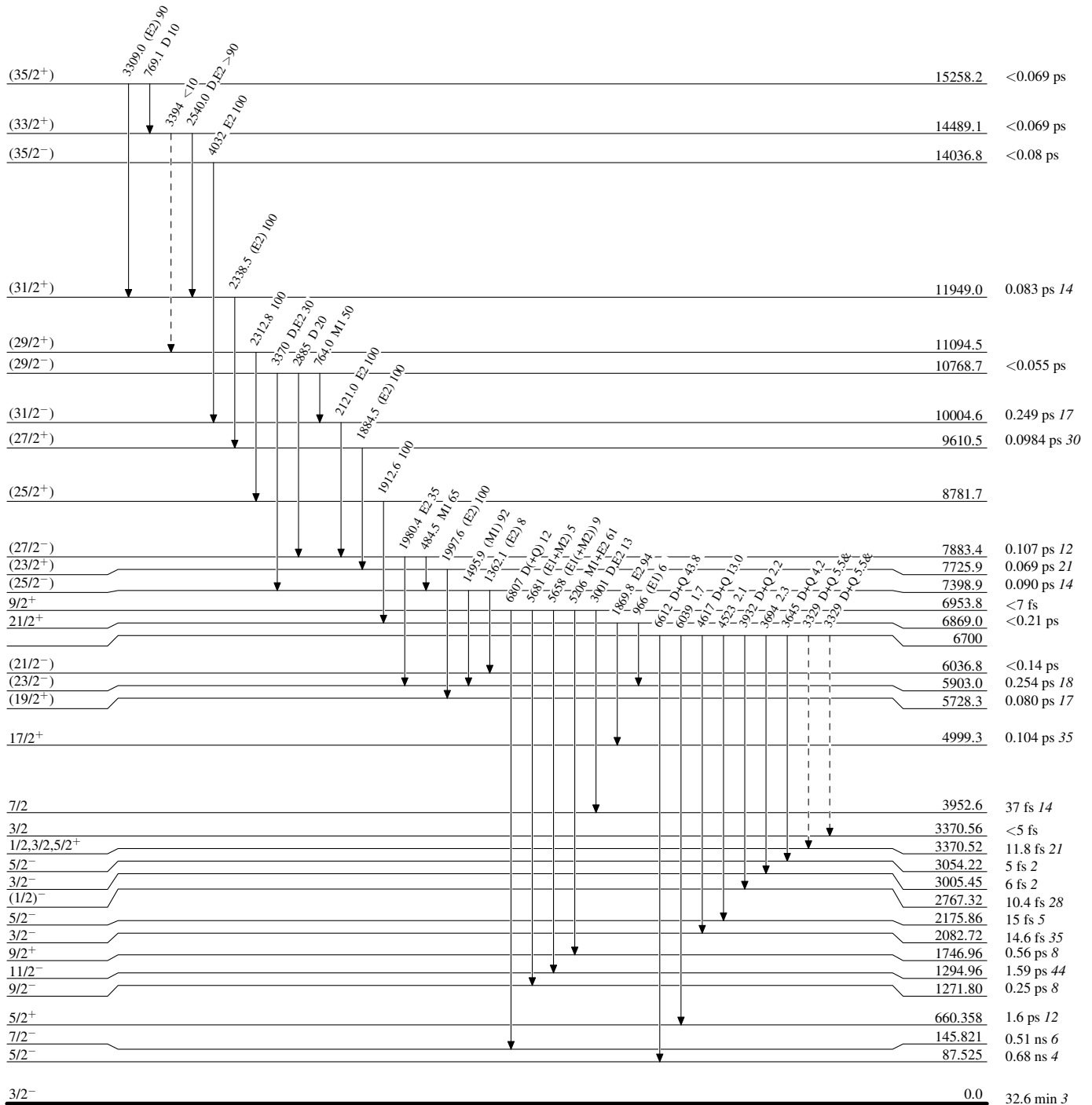
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

-----▶ γ Decay (Uncertain)



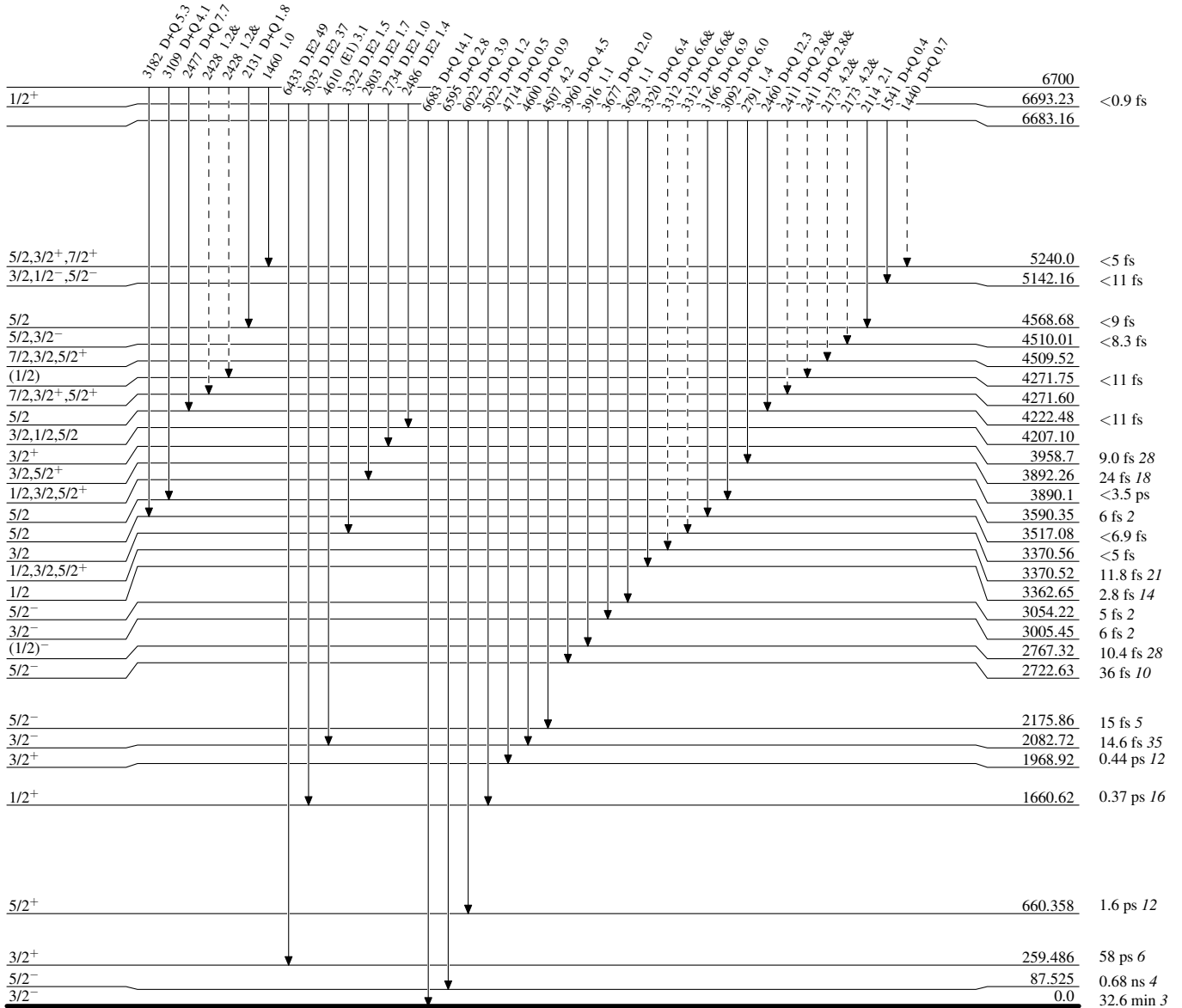
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

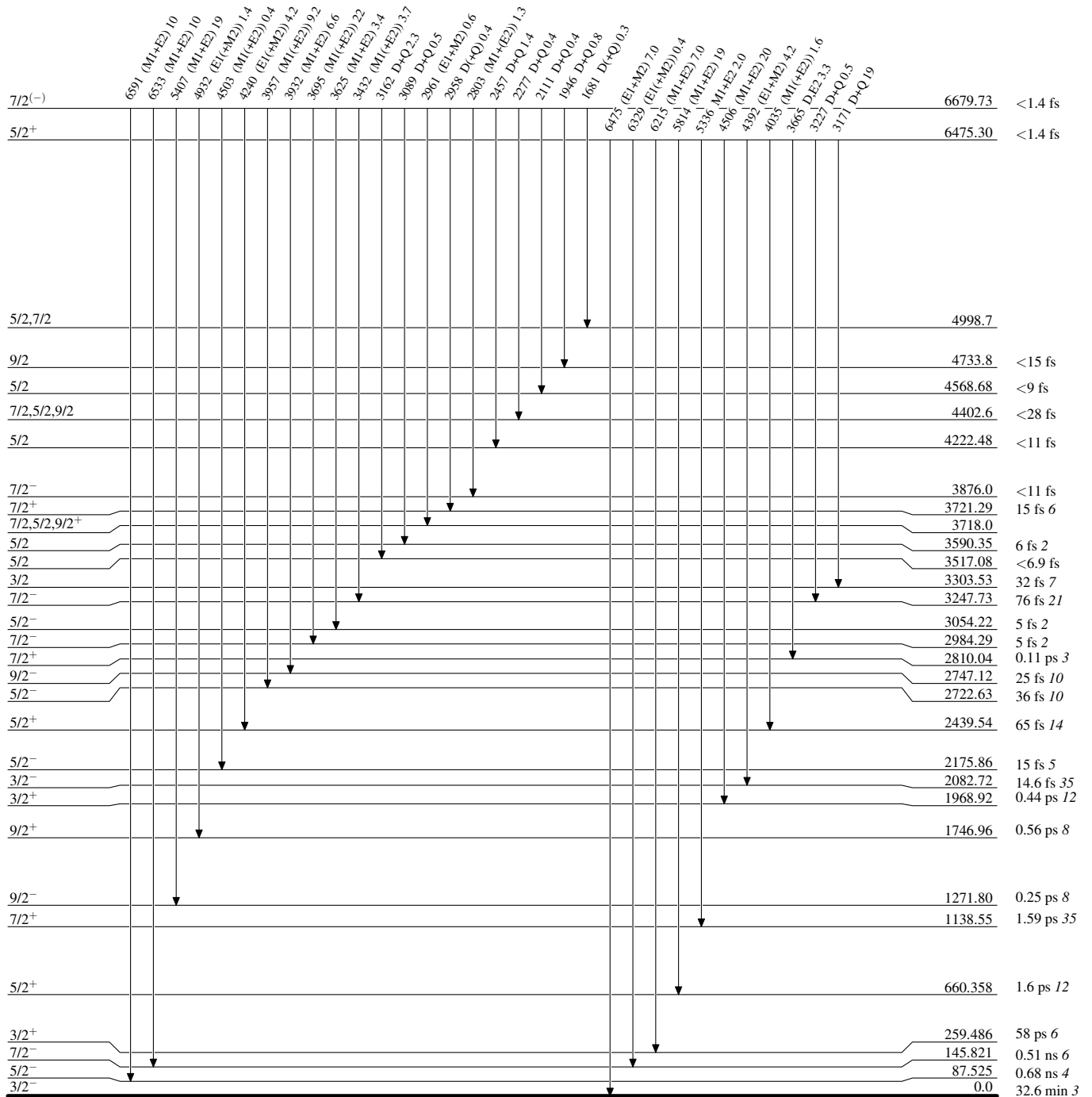
-----> γ Decay (Uncertain)



Adopted Levels, Gammas

Level Scheme (continued)

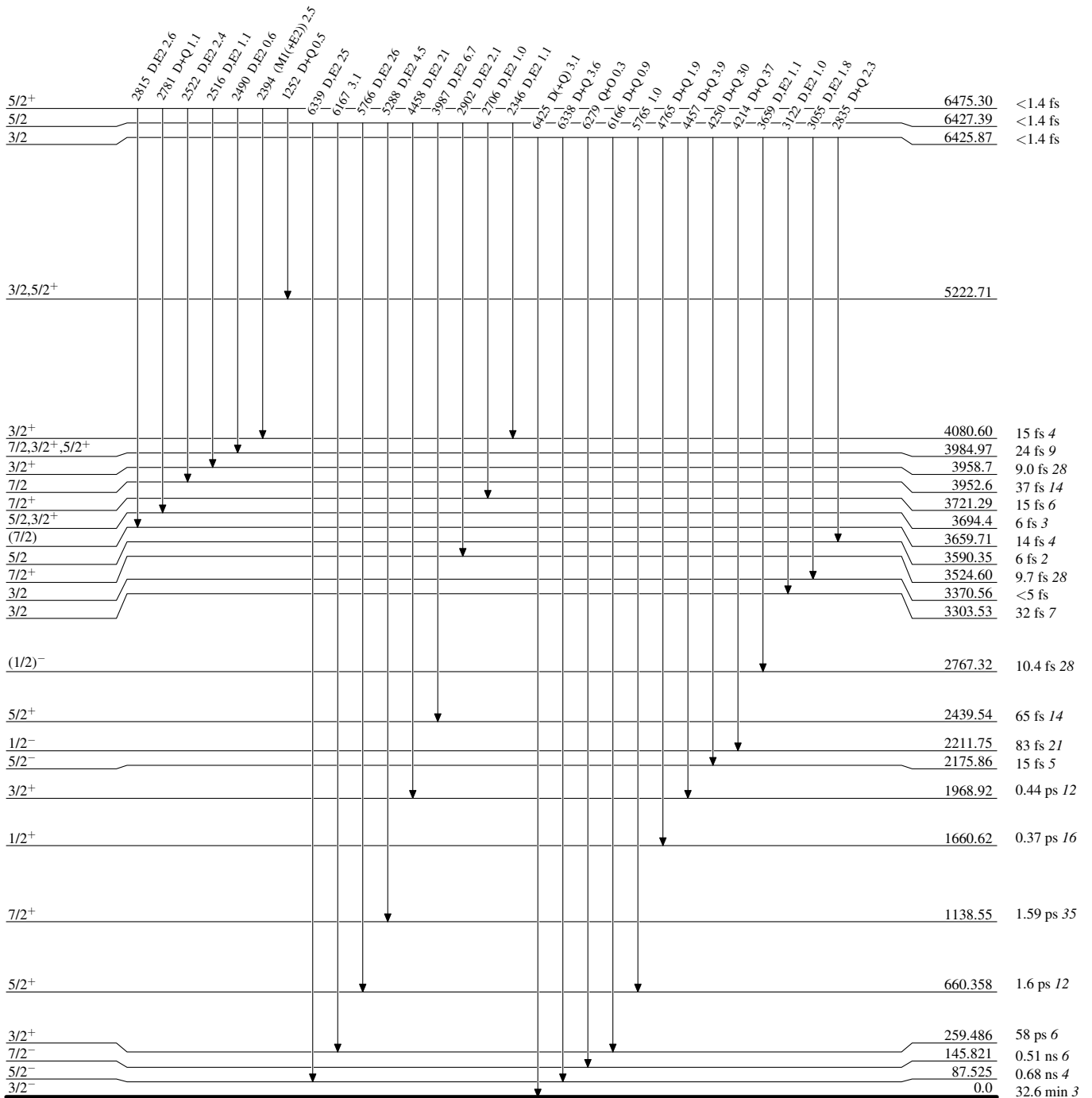
Intensities: % photon branching from each level
& Multiply placed: undivided intensity given



$^{47}_{23}\text{V}_{24}$

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

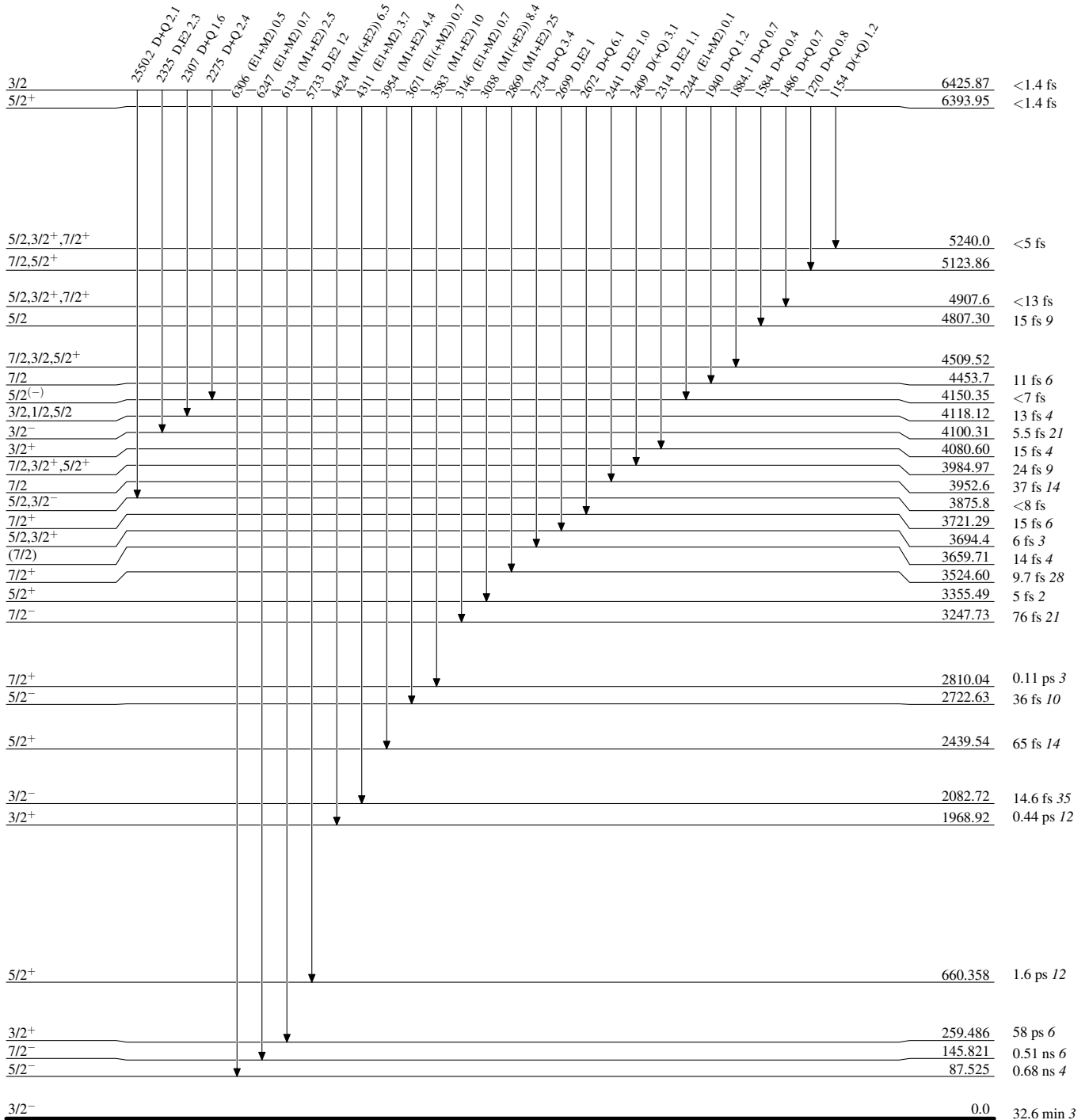
Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

 $^{47}_{23}\text{V}_{24}$

Adopted Levels, Gammas

Level Scheme (continued)

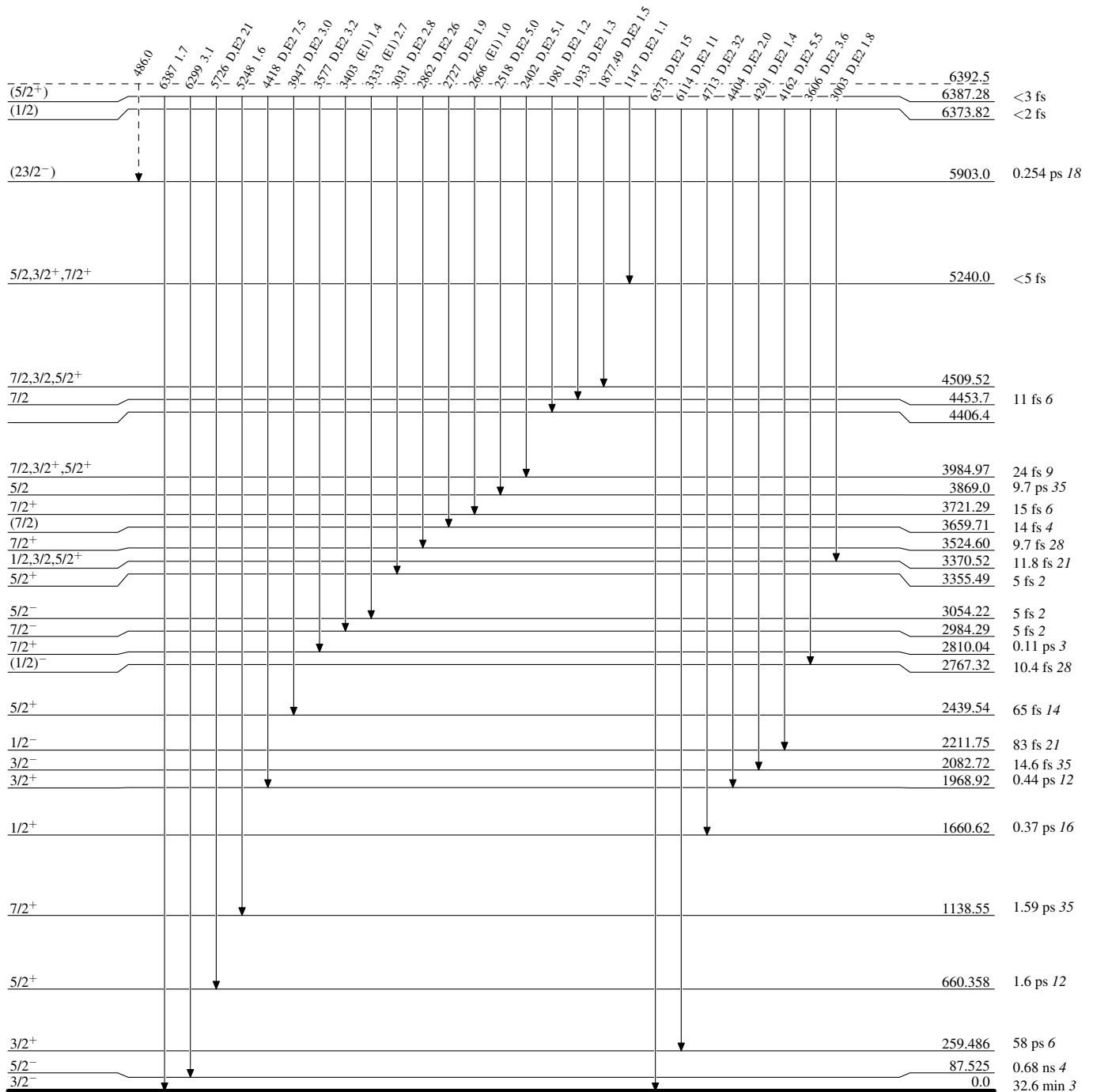
Intensities: % photon branching from each level
& Multiply placed: undivided intensity given



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

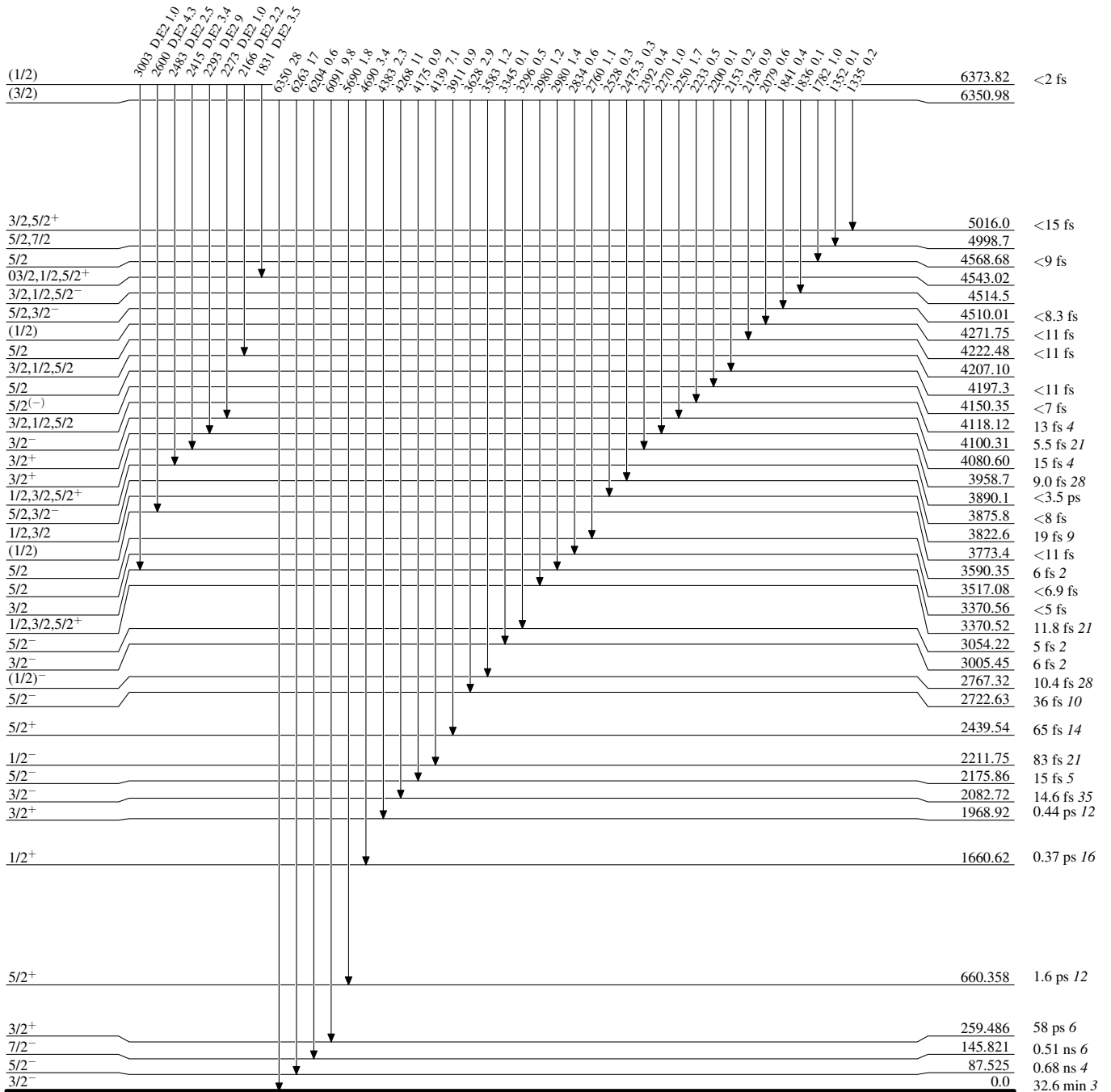
Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

-----▶ γ Decay (Uncertain)

 $^{47}_{23}\text{V}_{24}$

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

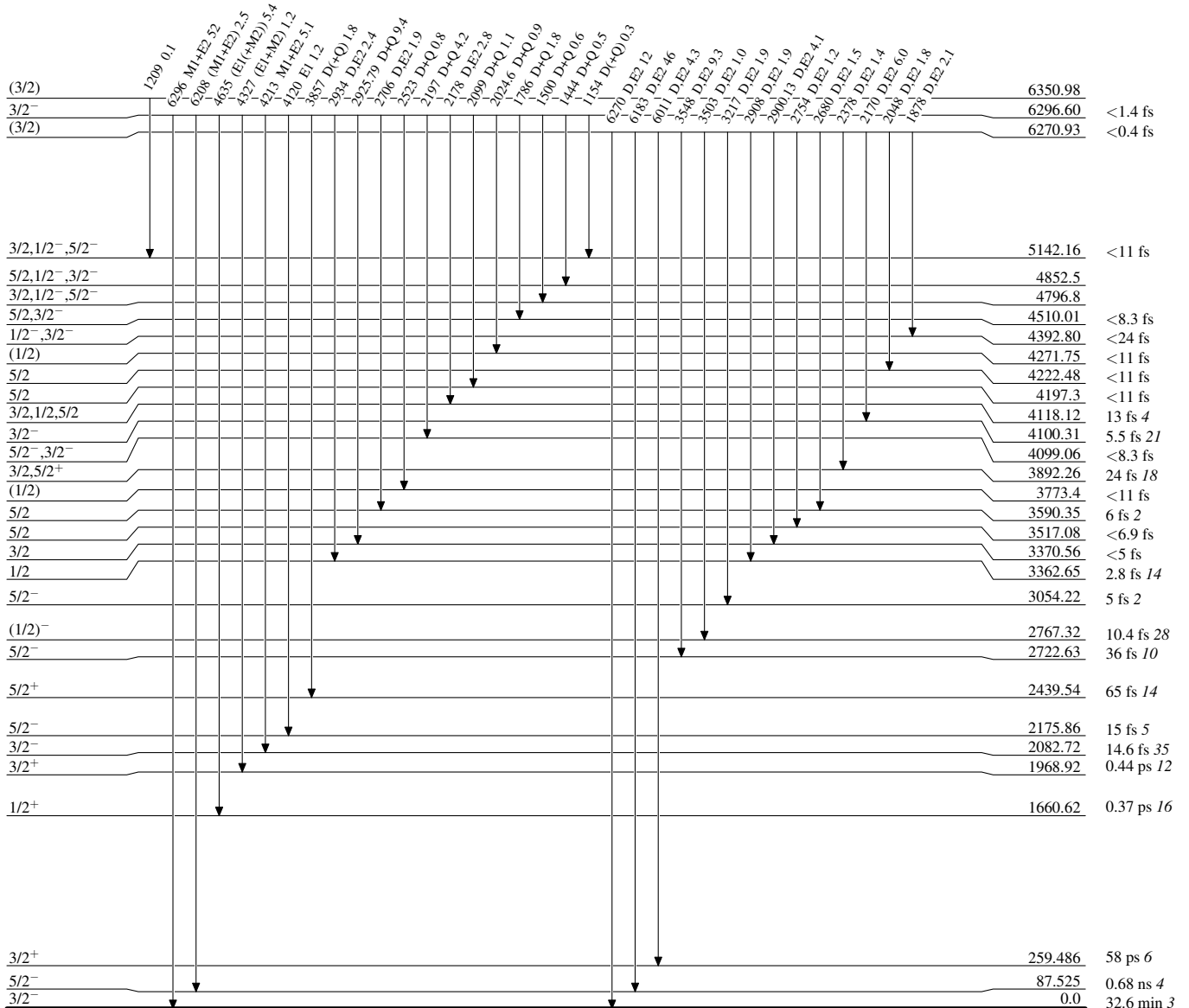
Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

 $^{47}_{23}\text{V}_{24}$

Adopted Levels, Gammas

Level Scheme (continued)

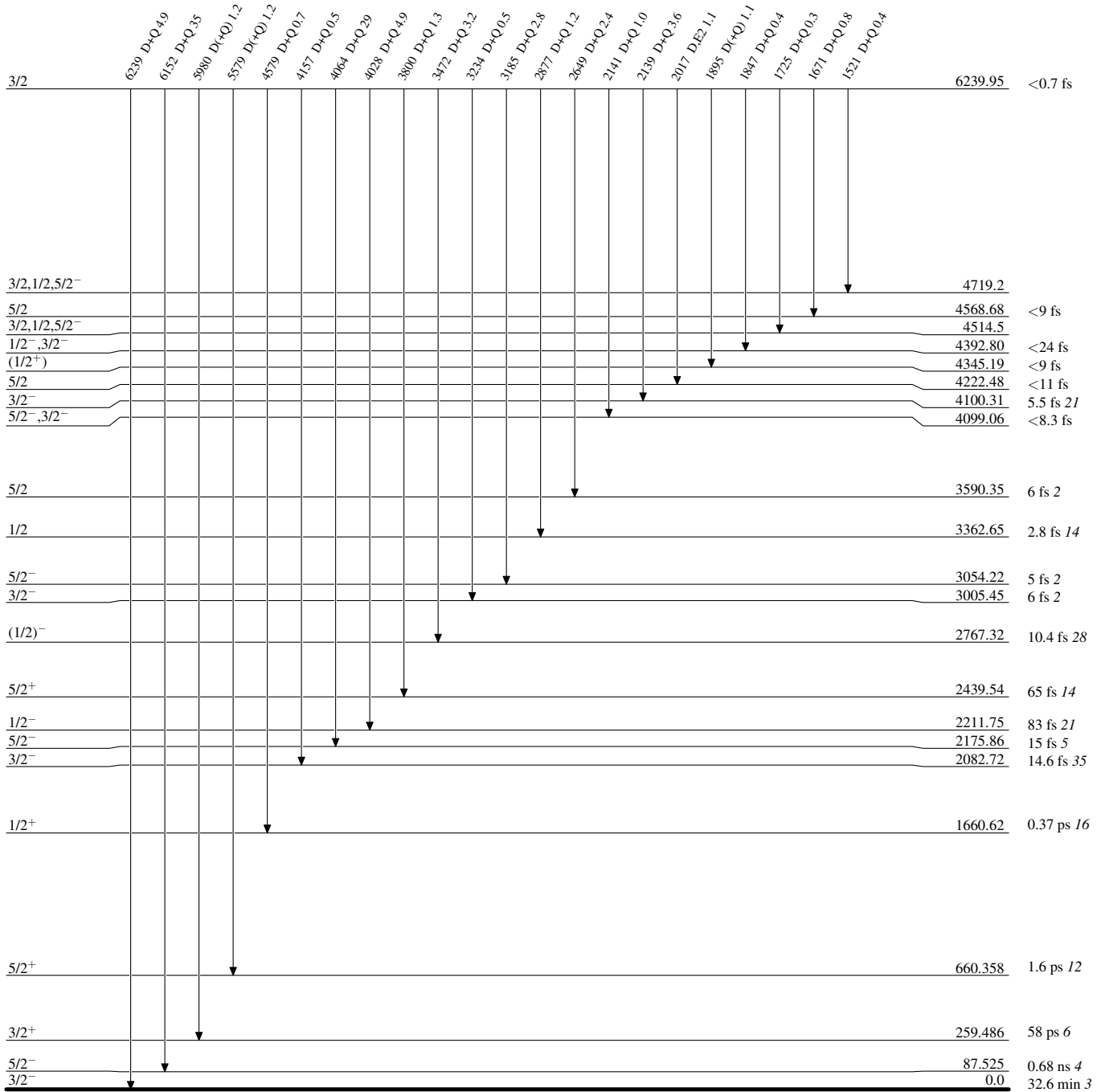
Intensities: % photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

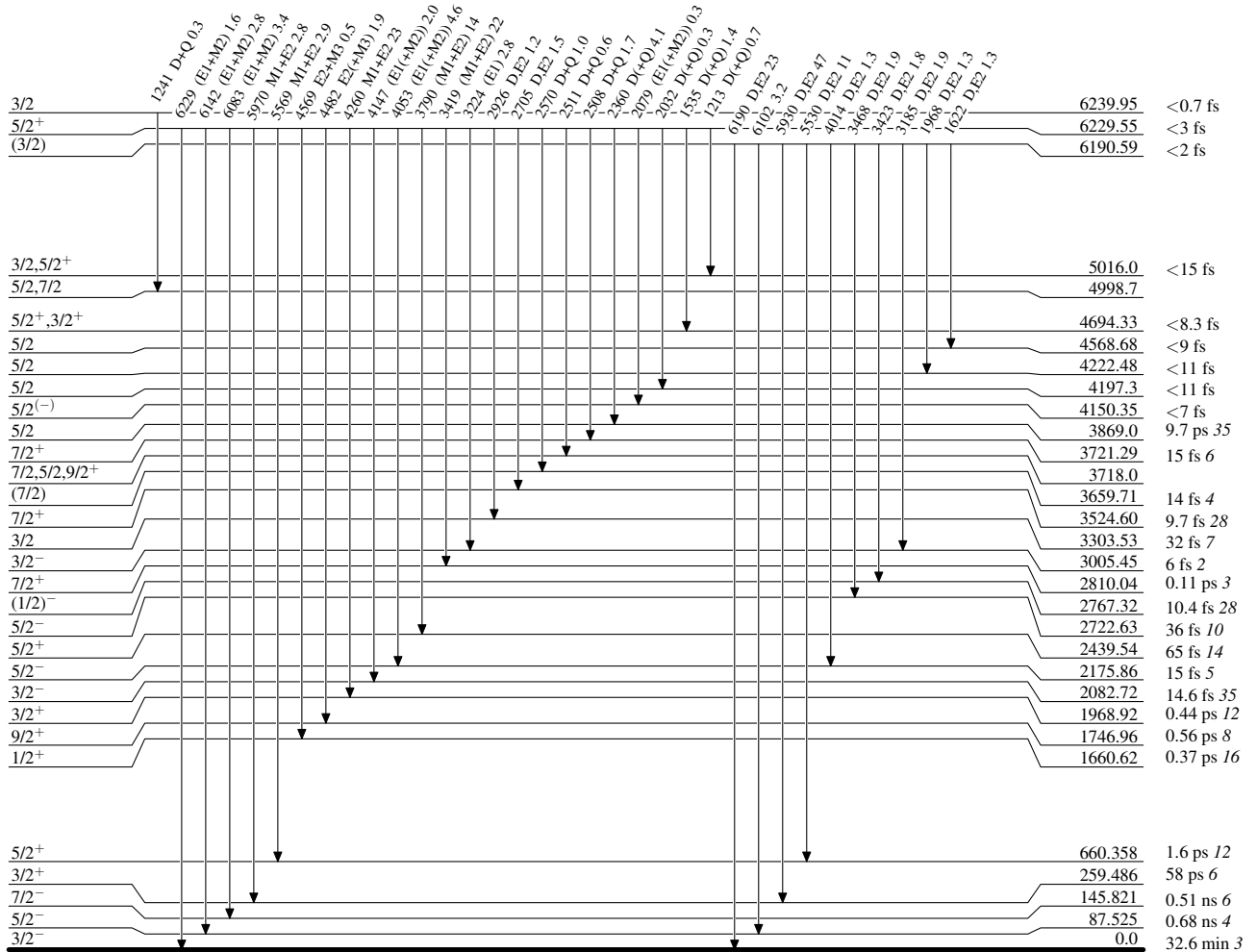


$^{47}_{23}\text{V}_{24}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

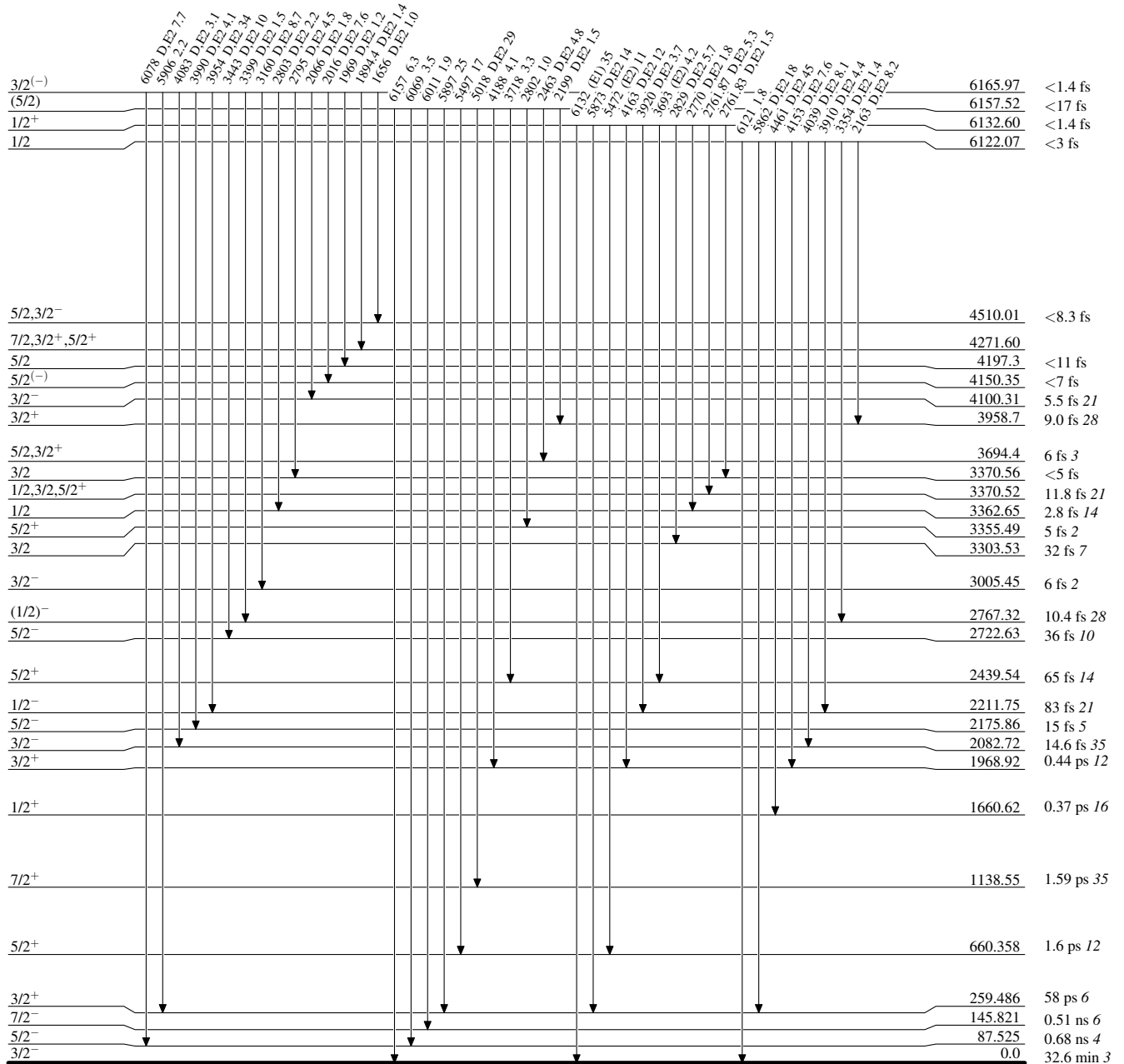


$^{47}_{23}\text{V}_{24}$

Adopted Levels, Gammas

Level Scheme (continued)

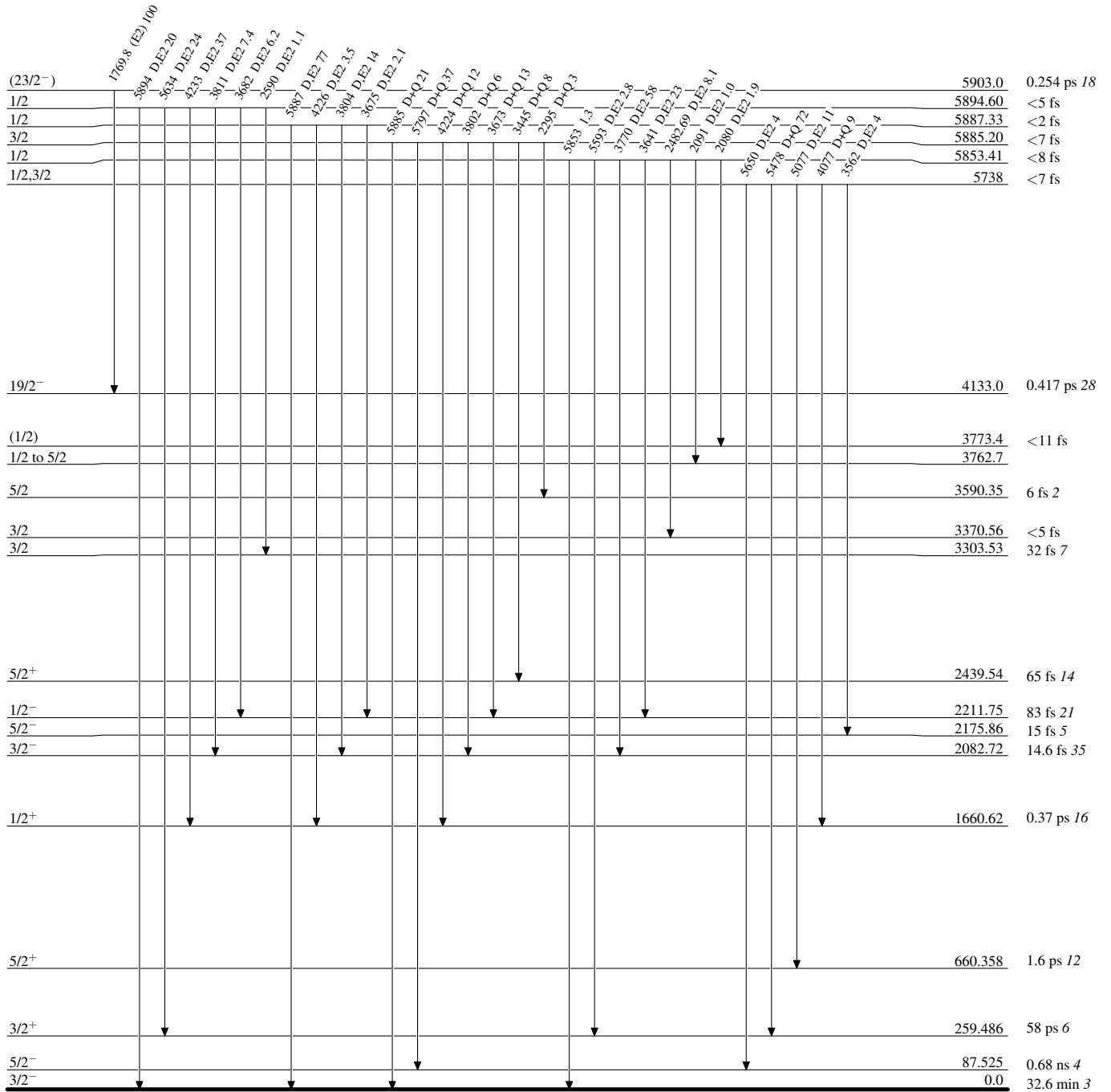
Intensities: % photon branching from each level
& Multiplied placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given



$^{47}_{23}\text{V}_{24}$

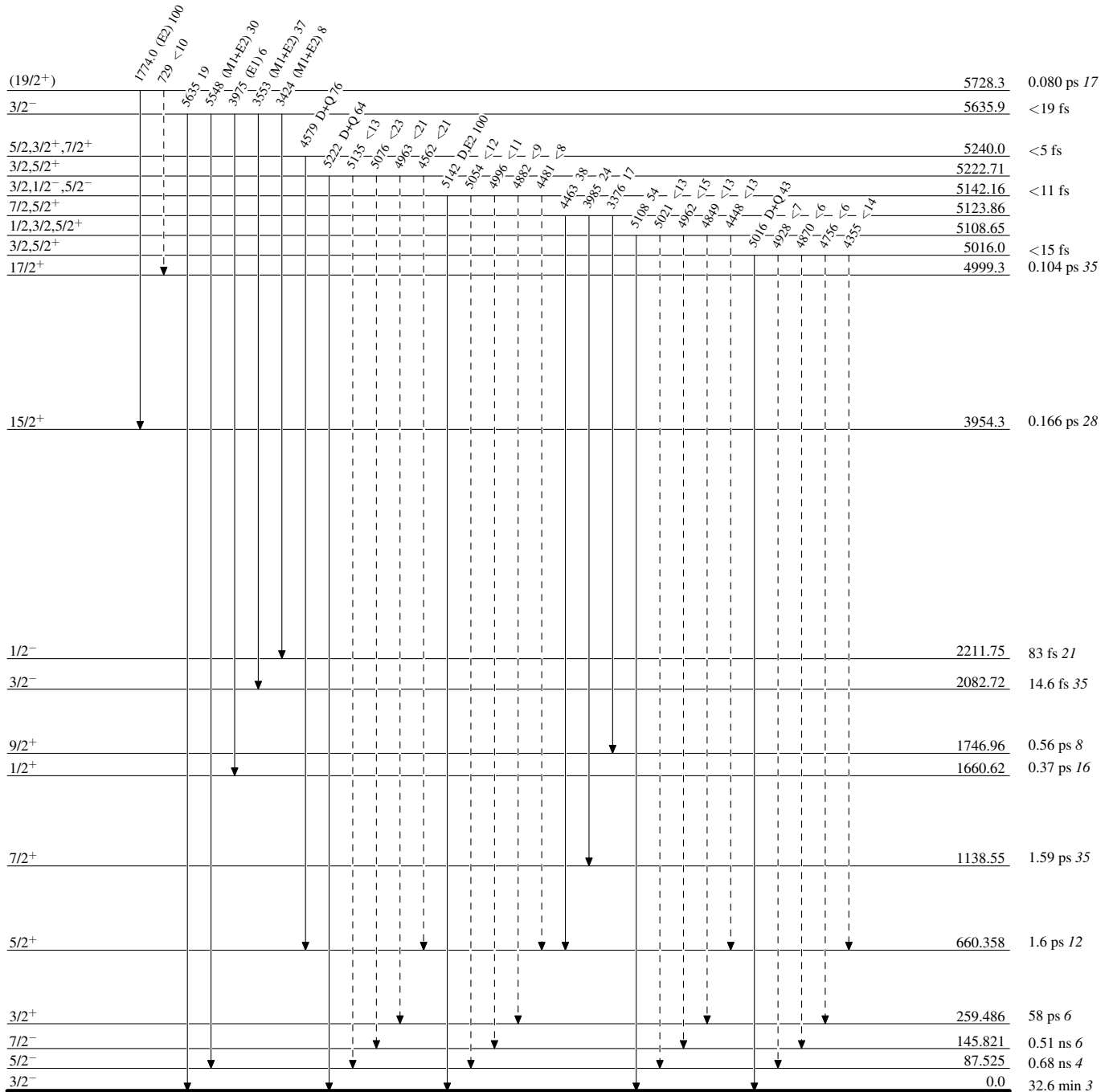
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

-----▶ γ Decay (Uncertain)



$^{47}_{23}\text{V}_{24}$

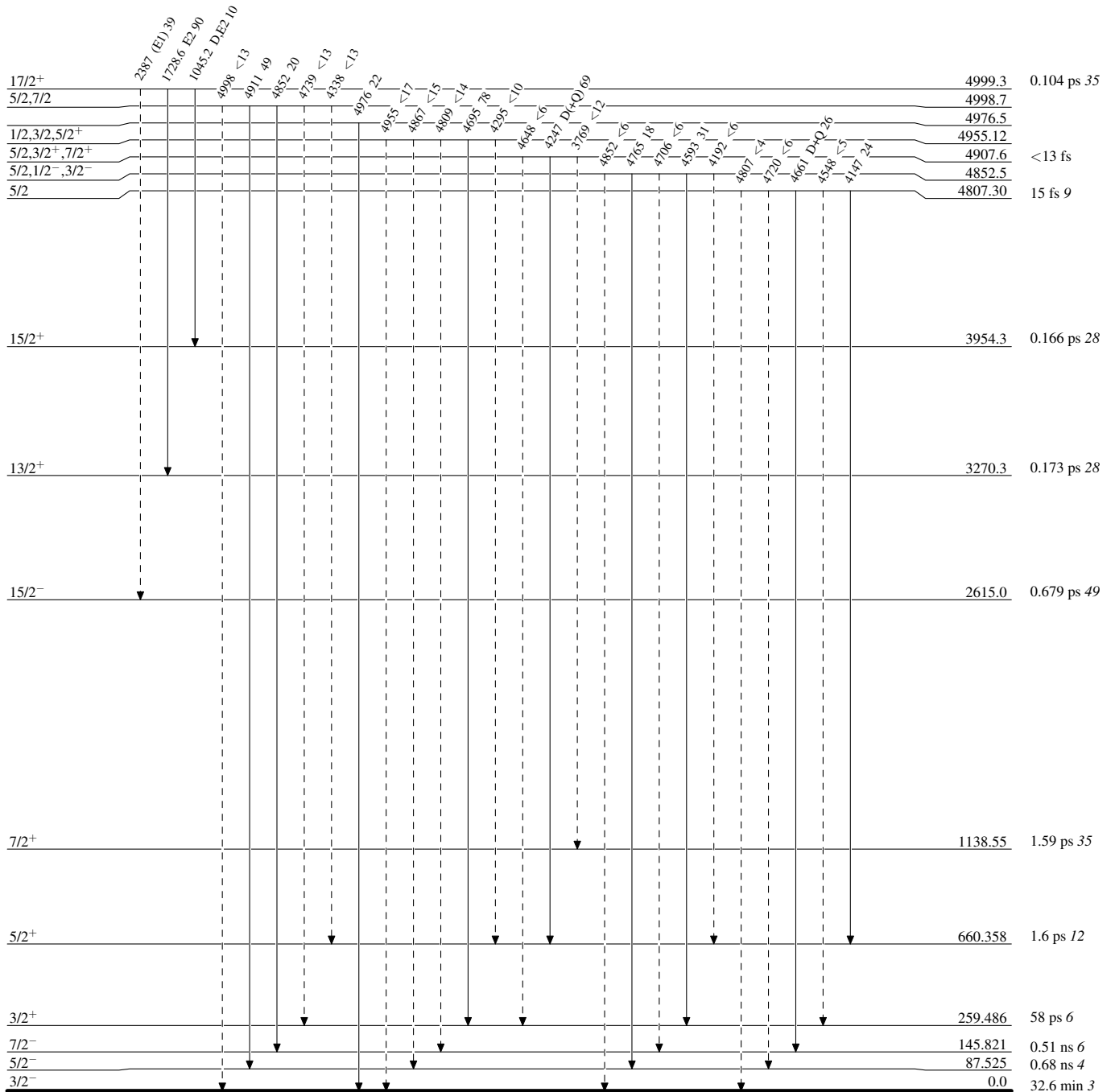
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

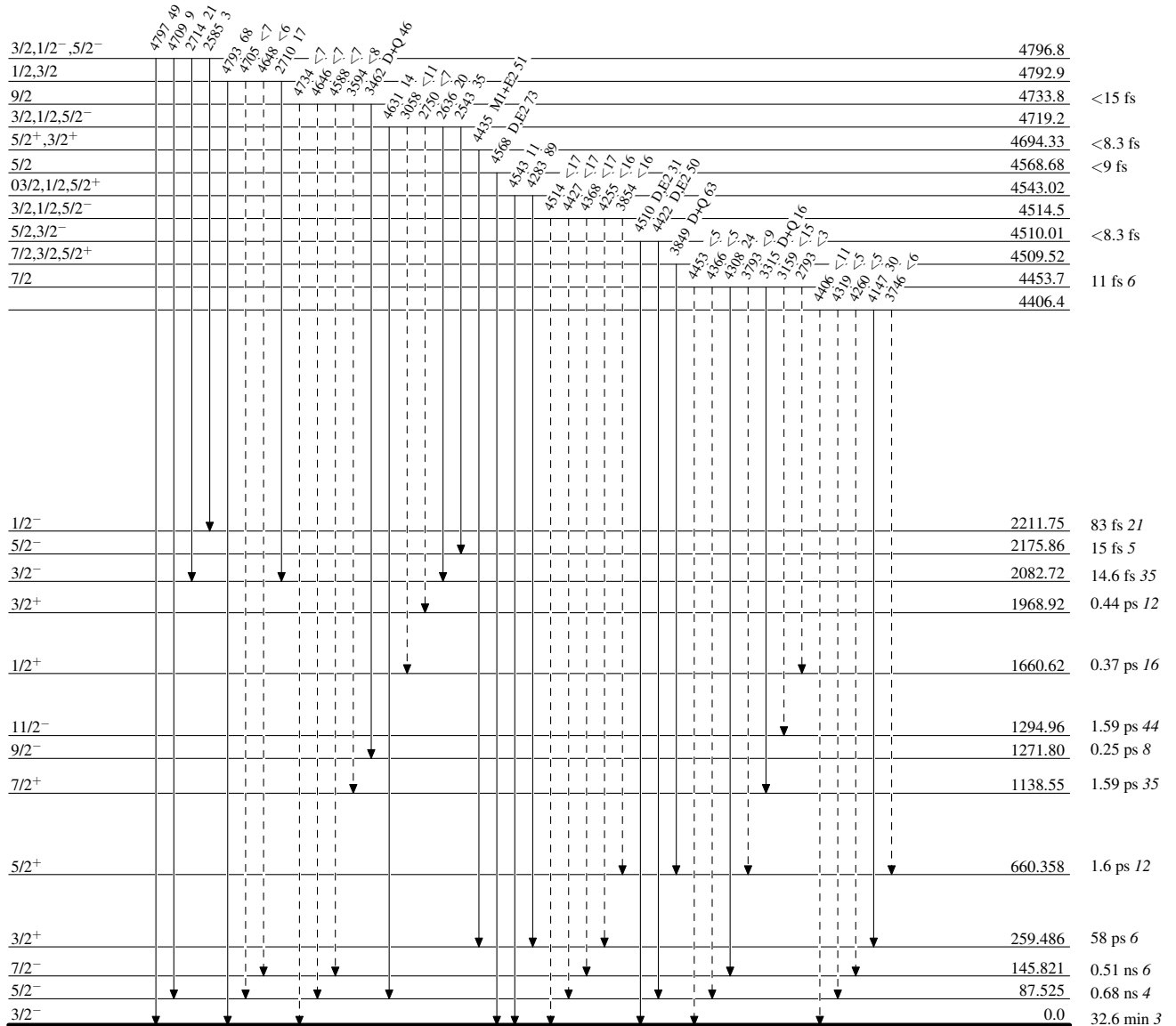
-----▶ γ Decay (Uncertain)



$^{47}_{23}\text{V}_{24}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)Intensities: % photon branching from each level
& Multiply placed: undivided intensity given-----► γ Decay (Uncertain) $^{47}_{23}\text{V}_{24}$

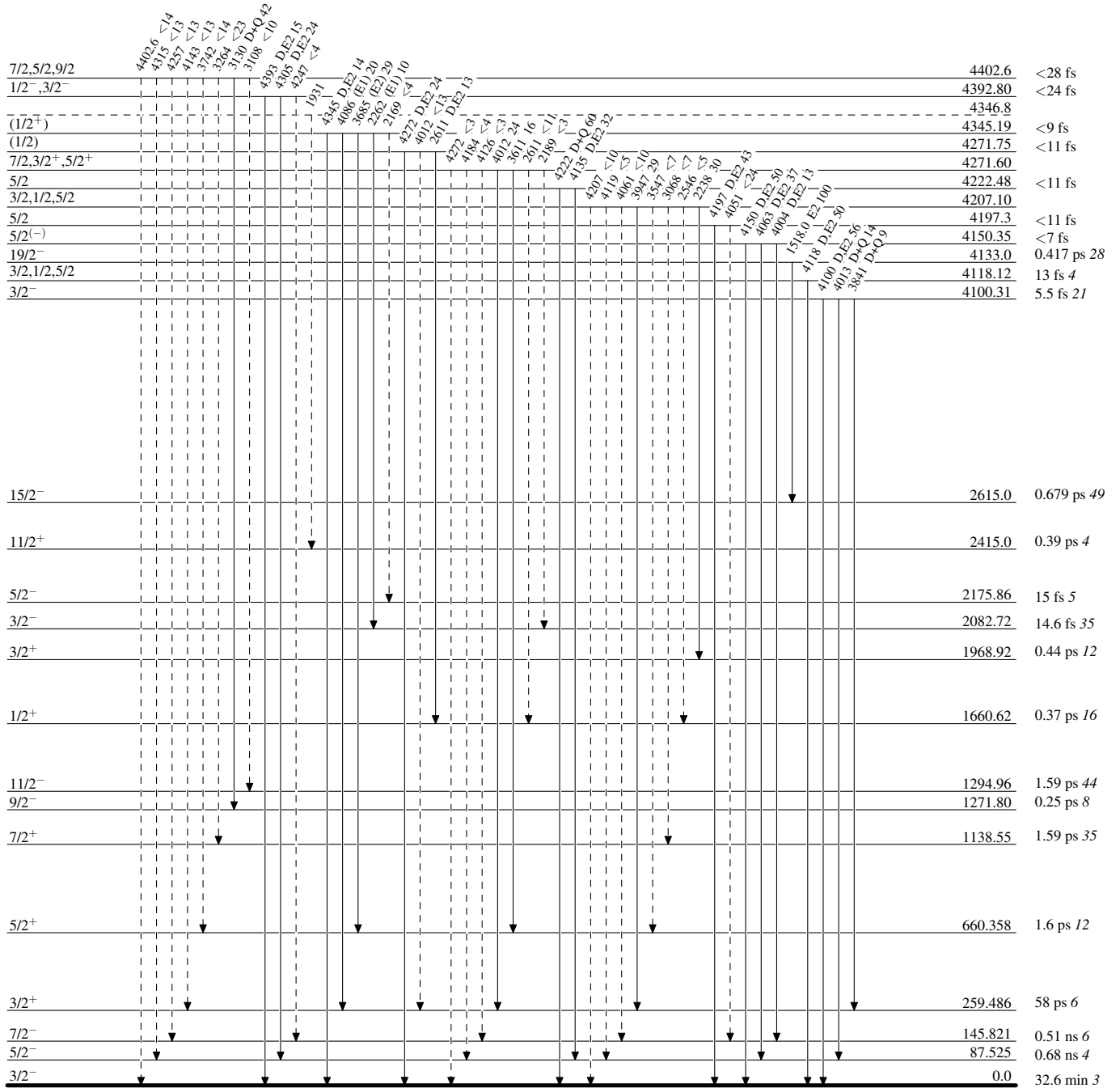
Adopted Levels, Gammas

Legend

Level Scheme (continued)

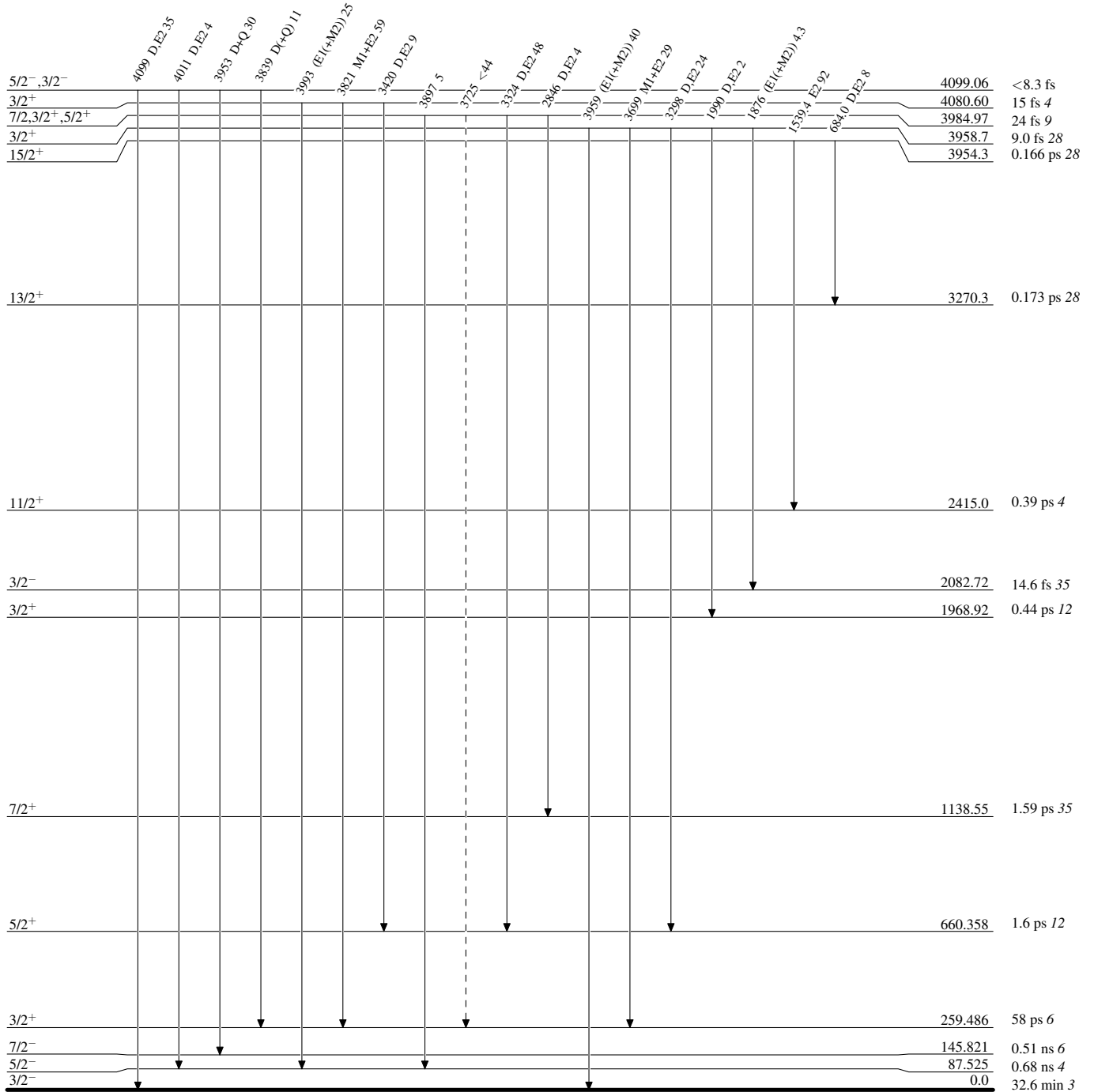
Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

-----▶ γ Decay (Uncertain)



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

Legend

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given-----▶ γ Decay (Uncertain) $^{47}_{23}\text{V}_{24}$

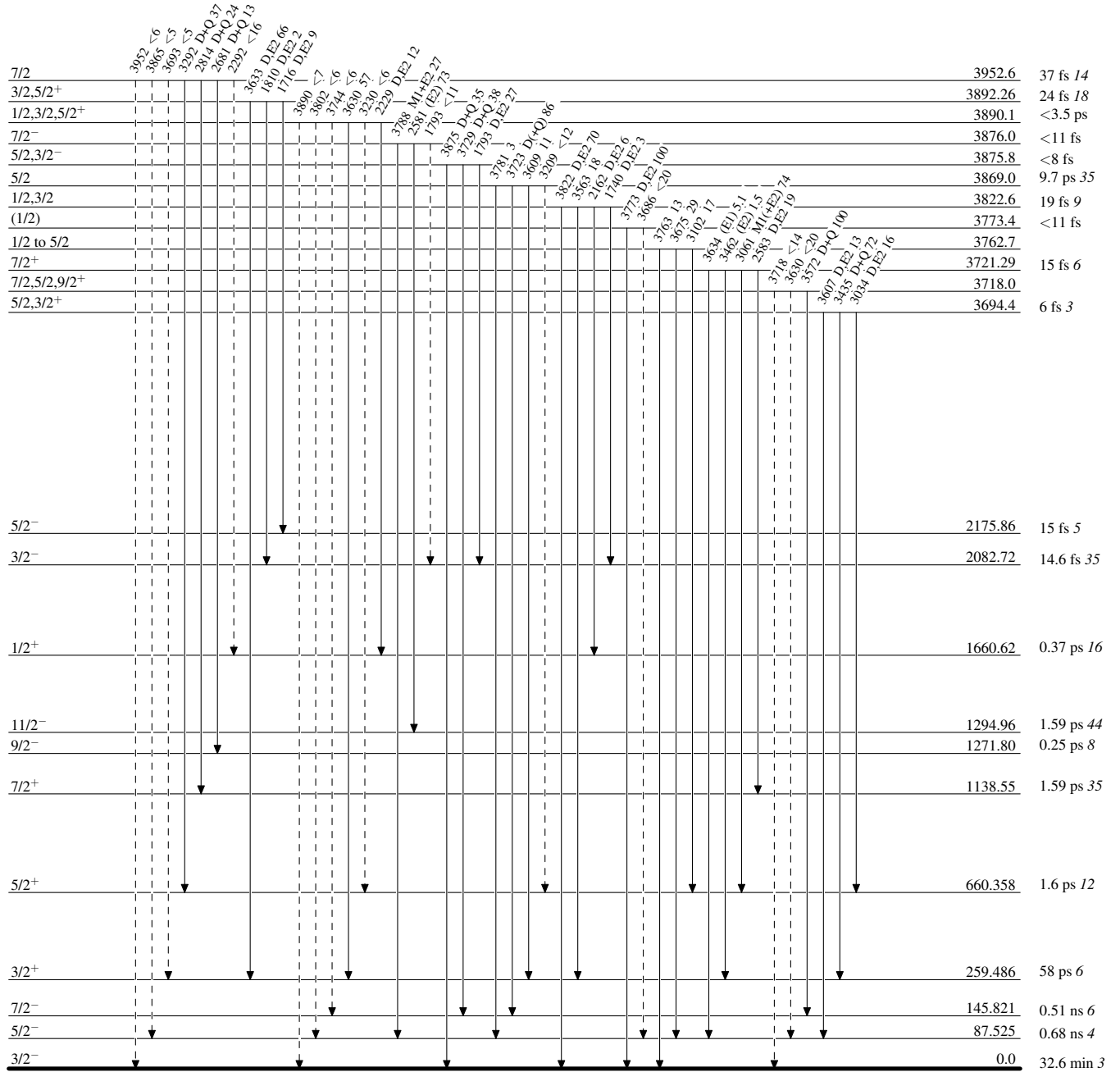
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

-----> γ Decay (Uncertain)



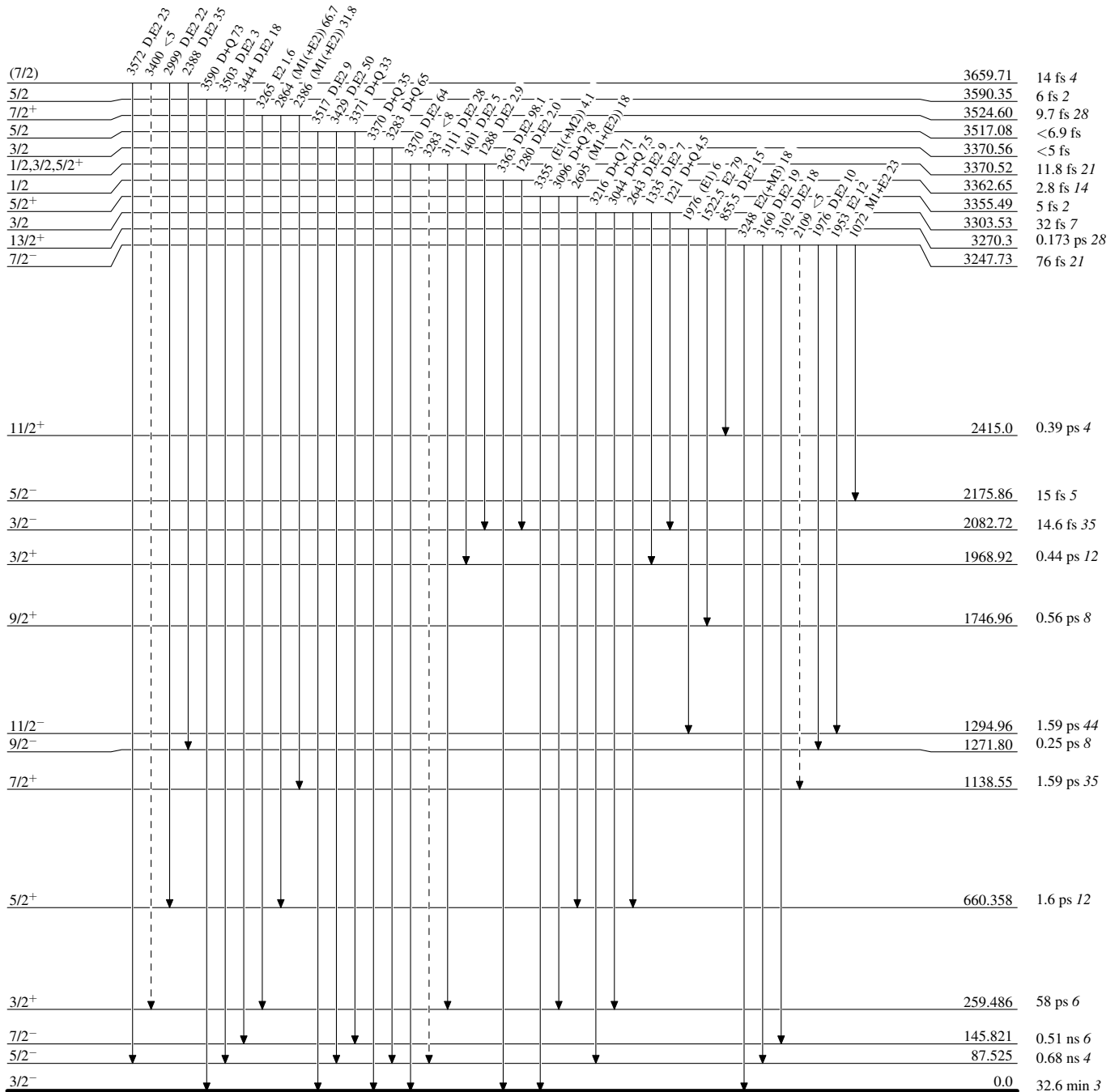
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

-----> γ Decay (Uncertain)



$^{47}_{23}\text{V}_{24}$

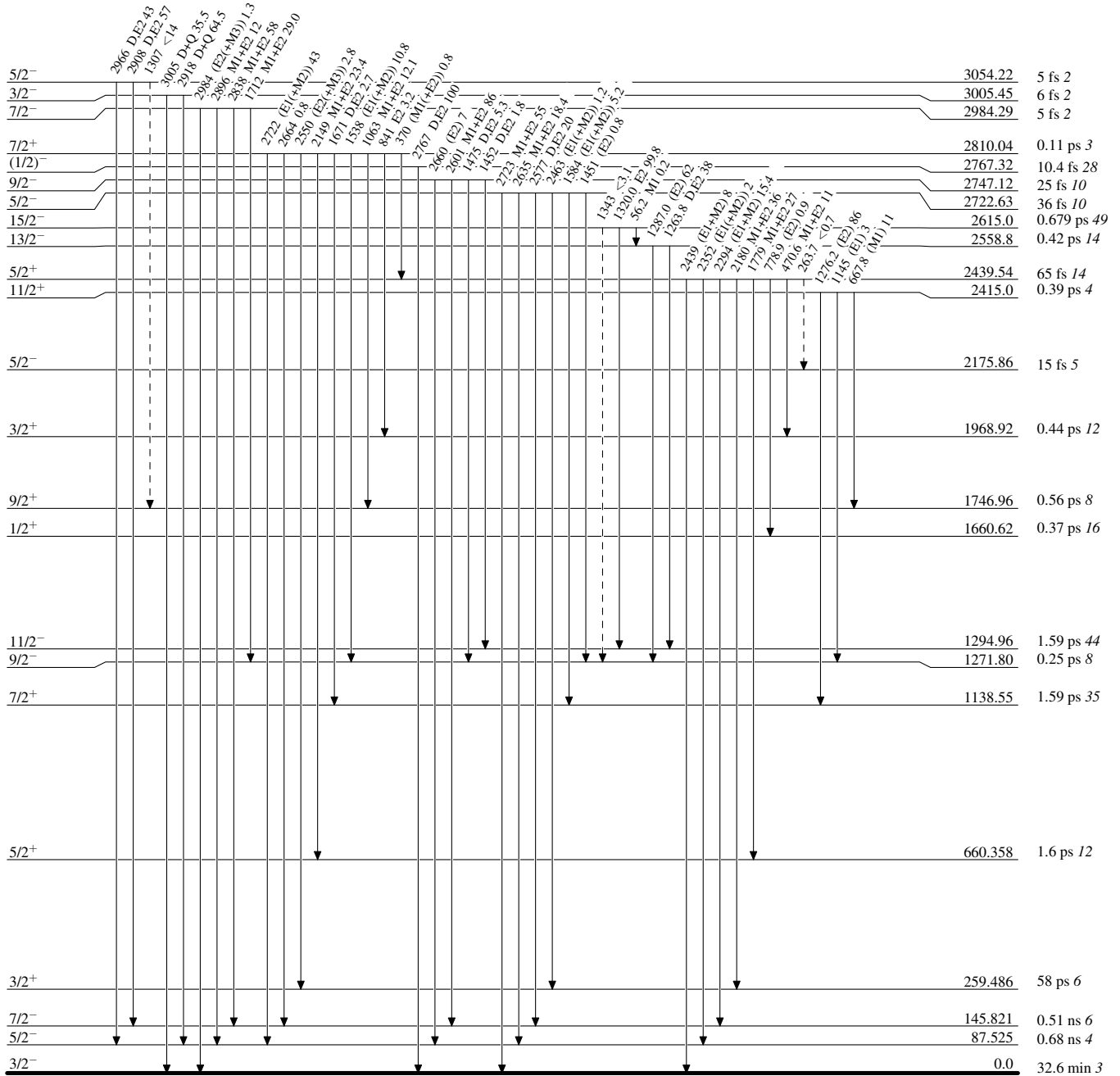
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given

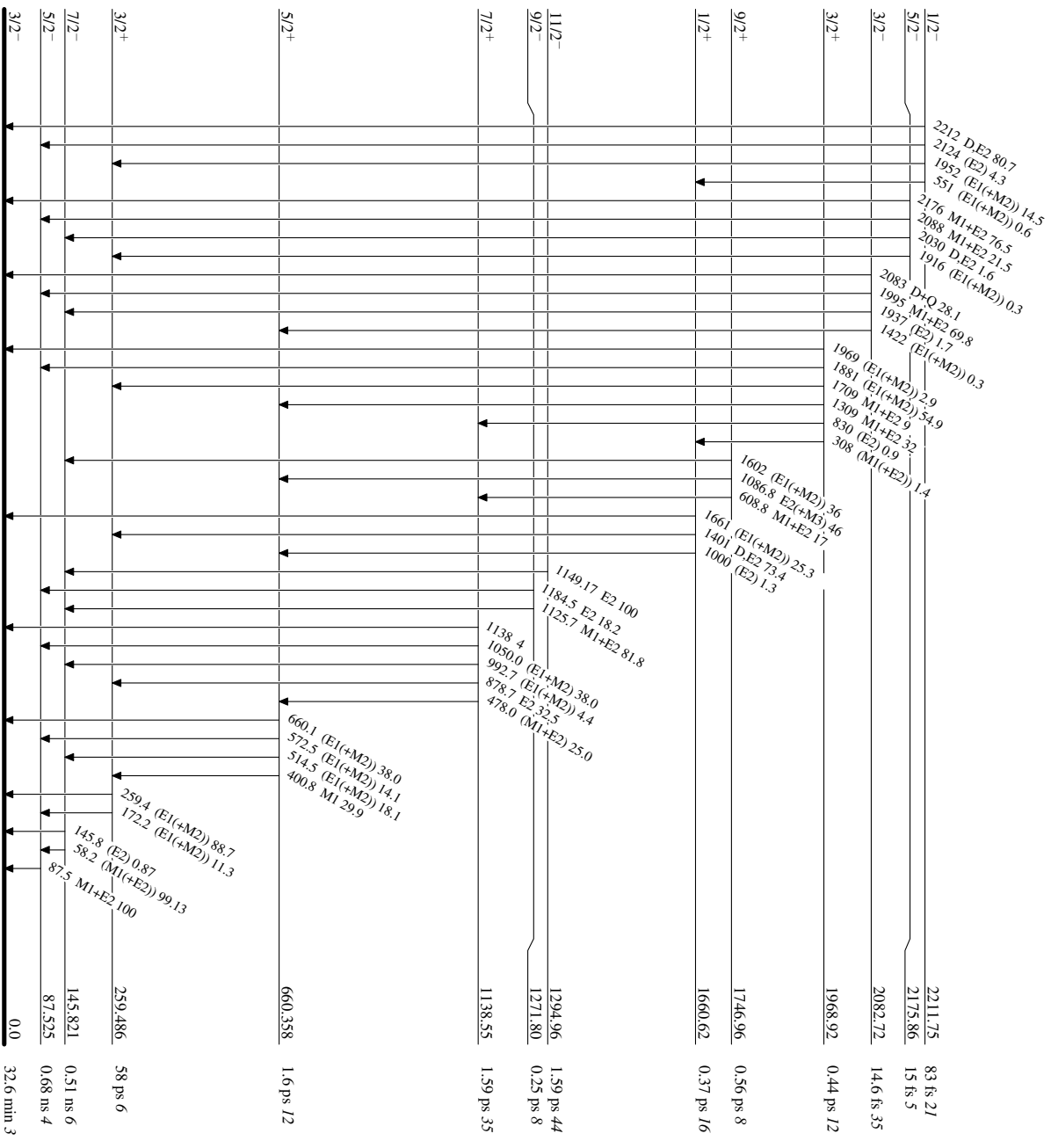
-----> γ Decay (Uncertain)



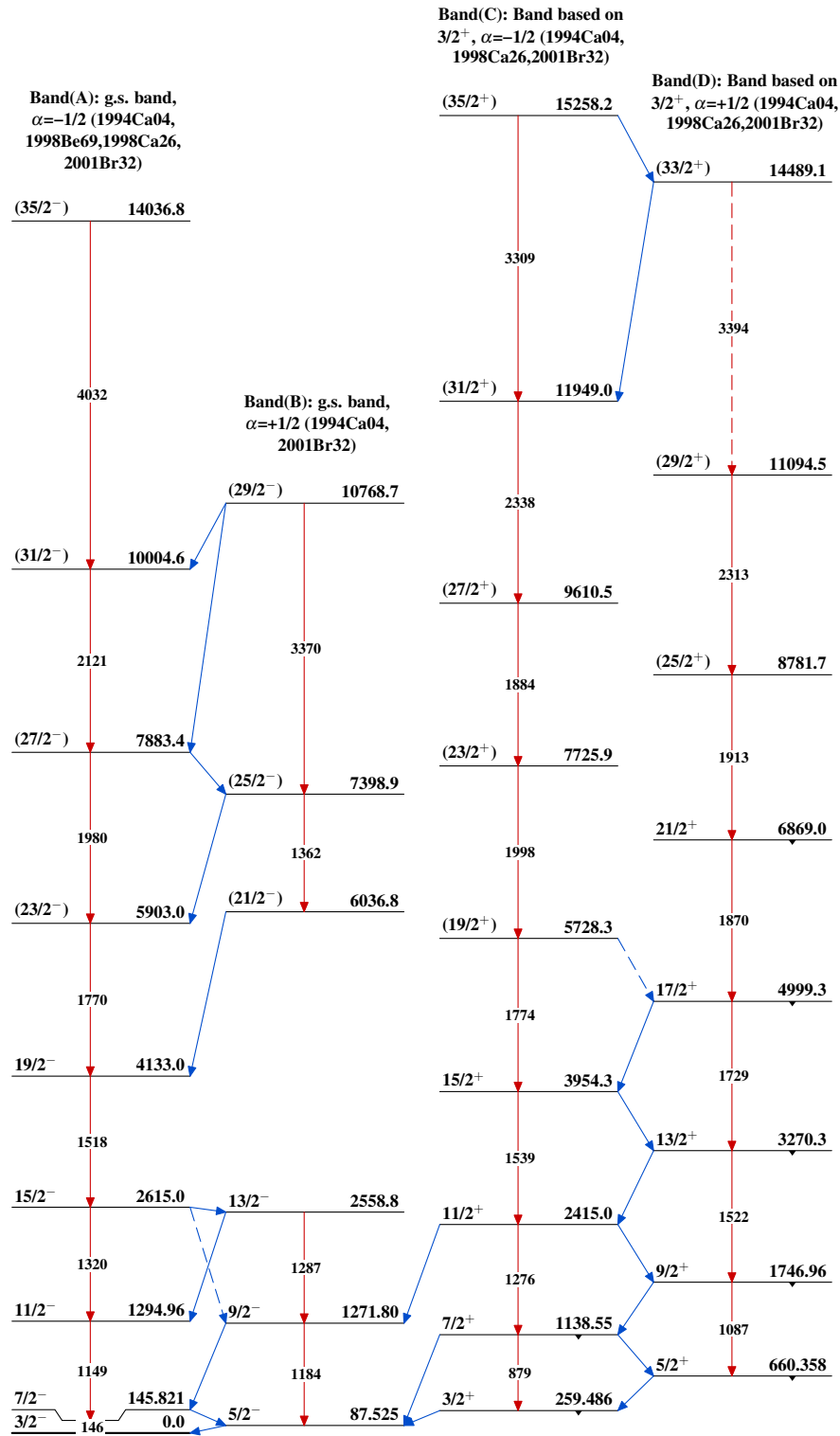
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: % photon branching from each level
& Multiply placed: undivided intensity given



$^{47}\text{V}_{24}$

Adopted Levels, Gammas $^{47}_{23}\text{V}_{24}$