

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 149, 1 (2018)	1-Jan-2018

$Q(\beta^-) = -6524.5$ 6; $S(n) = 13077.75$ 20; $S(p) = 6381.34$ 19; $Q(\alpha) = -7218.58$ 4 [2017Wa10](#)

$S(2n) = 25149.63$ 9, $S(2p) = 16623.59$ 5 ([2017Wa10](#)).

First identification of ^{39}K nuclide by F. W. Aston in the paper: Nature 107, 72 (1921), according to the compilation of isotope discovery in [2012Th10](#).

Other reactions:

$^{40}\text{Ca}(\pi^\pm, \pi^\pm)$: [1980Bu07](#) (E=291 MeV, measured $\sigma(\theta)$), [1979Li11](#) (E=200 MeV, measured E_γ , I_γ).

$^{40}\text{Ca}(\pi, n\gamma)$: [1974La12](#) (E=100 MeV, measured neutron spectra and $n\gamma(\theta)$).

$^{40}\text{Ca}(n, n'p)$: [1969Wi12](#) (E=14.6 MeV), [1968Ka05](#) (E=14.1 MeV, measured $\sigma(\theta)$).

$^{40}\text{Ca}({}^3\text{He}, {}^3\text{He}'p)$: [1977Mo04](#) (E=70 MeV, measured $\sigma(\theta)$).

$^{27}\text{Al}({}^{12}\text{C}, X)$: [1990Ki04](#) (E=33.8-62.7 MeV, measured σ , deduced GDR strength function).

Other experimental information:

Nuclear charge radii: [2000Ga58](#), [1984Ho21](#), [1982To02](#), [1981Wo02](#) (mesic atom),

Hyperfine structure: [1997Si24](#), [1985Gl03](#), [1984Ba03](#), [1982To02](#), [1982Du19](#), [1982Pe14](#), [1975Bo44](#), [1972Gu08](#), [1967Bo40](#).

NMR spectra, quadrupole constants: [2001Li19](#), [1996Mi15](#), [1994Se20](#), [1989To09](#).

LASER spectroscopy: [2004Li47](#), [1994Ga46](#) (review).

 ^{39}K LevelsCross Reference (XREF) Flags

A	$^{39}\text{Ar} \beta^-$ decay (268 y)	N	$^{38}\text{Ar}(d, n)$	Others:
B	$^{39}\text{Ca} \varepsilon$ decay (860.3 ms)	O	$^{38}\text{Ar}({}^3\text{He}, d)$	AA $^{40}\text{Ca}(n, d), (n, np)$
C	$^{40}\text{Sc} \varepsilon p$ decay (182.3 ms)	P	$^{39}\text{K}(\gamma, \gamma')$	AB $^{40}\text{Ca}(p, 2p), (\text{pol } p, 2p)$
D	$^4\text{He}({}^{39}\text{K}, \alpha\gamma)$	Q	$^{39}\text{K}(e, e')$	AC $^{40}\text{Ca}(d, {}^3\text{He}), (\text{pol } d, {}^3\text{He})$
E	$^6\text{Li}({}^{35}\text{Cl}, d\gamma)$	R	$^{39}\text{K}(n, n'\gamma)$	AD $^{40}\text{Ca}(t, \alpha)$
F	$^{16}\text{O}({}^{28}\text{Si}, \alpha p\gamma), {}^{28}\text{Si}({}^{16}\text{O}, \alpha p\gamma)$	S	$^{39}\text{K}(n, n')$	AE $^{40}\text{Ca}(\alpha, \alpha' p)$
G	$^{24}\text{Mg}({}^{18}\text{O}, 2np\gamma)$	T	$^{39}\text{K}(p, p')$	AF $^{40}\text{Ca}({}^7\text{Li}, {}^8\text{Be})$
H	$^{24}\text{Mg}({}^{24}\text{Mg}, 2\alpha p\gamma)$	U	$^{39}\text{K}(p, p'\gamma)$	AG $^{41}\text{K}(p, t)$
I	$^{25}\text{Mg}({}^{16}\text{O}, np\gamma)$	V	$^{39}\text{K}(d, d')$	AH $^{41}\text{Ca}(d, \alpha)$
J	$^{27}\text{Al}({}^{18}\text{O}, \alpha 2n\gamma), ({}^{14}\text{N}, np\gamma)$	W	$^{39}\text{K}(\alpha, \alpha')$	AI $^{42}\text{Ca}(p, \alpha\gamma)$
K	$^{36}\text{Ar}(\alpha, p\gamma), (\alpha, p)$	X	$^{40}\text{Ca}(\gamma, p\gamma')$	AJ $^{42}\text{Ca}(p, \alpha)$
L	$^{37}\text{Cl}({}^3\text{He}, n)$	Y	$^{40}\text{Ca}(e, e'p)$	
M	$^{38}\text{Ar}(p, \gamma)$: resonances	Z	$^{40}\text{Ca}(\mu^-, \nu n\gamma)$	

$E(\text{level})^\dagger$	J^π	$T_{1/2}^\ddagger$	XREF	Comments
0	$3/2^+$	stable	ABCDEFGHIJKLMN OPQRSTUVWXYZ	XREF: Others: AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ $\mu = +0.39146616$ 33 (1974Be50) $Q = +0.0585$ 6 (1998Ke05, 1968Sc09) J^π: optical spectroscopy (1937Ja02), atomic beam (1935Mi08), hyperfine structure (2014Pa45, 2014Kr04); $L(p, t) = 0$ from $3/2^+$; $L(\text{pol } d, {}^3\text{He}) = 2$ and $L-1/2$ from analyzing power; also $L({}^3\text{He}, d) = L(d, n) = L(t, \alpha) = 2$ from 0^+. Experimental nuclear charge radius $\langle r^2 \rangle^{1/2} = 3.4349$ fm 19 (2013An02, evaluation). μ: from atomic beam (1974Be50). Others: $+0.2917$ 13 (2014Pa45, hyperfine structure), $+0.39147$ 3 (1993Du08, atomic-beam laser spectroscopy), $+0.39150731$ 12 (NMR, 1974Sa24 and 1974Sa25), 0.391427 27 (1973CoZB), 1983Ob03, 1973Ti03, 1972Ro40, 1972Za10, 1970ChYV, 1969Zi01, 0.39147 3 (NMR, 1968Br16), 1957Ka07, 1957Ri37, 1955Br11, 1954Br09, 1952Ei09, 1950Oc01,

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Adopted Levels, Gammas (continued) **^{39}K Levels (continued)**

<u>E(level)[†]</u>	<u>J^π</u>	<u>T_{1/2}[‡]</u>	<u>XREF</u>		<u>Comments</u>
					1950Co65, 1939Ku10, 1937Ja02, 1937To04, 1935Mi08. Compilation: 2014StZZ. Q: optical level crossing method (measured value of +0.057 4 by 1968Sc09, re-evaluated by 1998Ke05). Other re-evaluations of 1968Sc09 measurement: +0.0601 15 (1993Su36), +0.049 4 (1971St12, 1989Ra17). Compilation: 2016St14. Others: +0.059 6 (1971Sv02), 0.056 3 (1970Sc33), +0.053 8 (atomic beam, 1968Sp03), 1972Jo09, 1971Ch61, 1970Fi17, 1969Ne03, 1967Ba64, 1967Da04, 1964Ya03, 1963Ma42, 1962Ko22, 1961Fo11, 1960Bl15, 1957Bu19, 1957Ri37. Additional information 1.
2522.75 25	1/2 ⁺	63 fs 6	B D	K MNOPQRSTUVWXYZ	XREF: Others: AA, AB, AC, AD, AE, AF, AG, AI, AJ B(E2)↑=0.00205 11 XREF: aa(2800)ab(2600). J^π: L(d,n)=L(³He,d)=L(p,α)=L(d,³He)=L(t,α)=0 from 0⁺; also L(d,d')=L(α,α')=L(p,t)=2 from 3/2⁺. T_{1/2}: weighted average of 64 fs 9 from (³⁹K,αγ), 62 fs 21 from (α,pγ), 59 fs 14 from (p,γ):resonances, 64 fs 6 from (n,n'γ), 57 fs 12 from (p,p'γ). B(E2)↑ from (e,e'). Other: 0.0034 from (α,α').
2814.17 16	7/2 ⁻	47 ps 4	B DEFGHIJK	MNOPQRSTUVWXYZ	Additional information 2. XREF: Others: AA, AB, AC, AD, AF, AG, AI, AJ μ=4.0 4 (1981Le19) B(E3)↑=0.0025 5 XREF: aa(2800)ab(2600). J^π: L(d,n)=L(³He,d)=L(p,α)=L(d,³He)=L(t,α)=3 from 0⁺ and 2814.24γ M2+E3 to 3/2⁺; also L(d,d')=L(α,α')=L(p,t)=3 from 3/2⁺. T_{1/2}: weighted average of 56 ps 6 from (³⁵Cl,dγ), 43 ps 4 from (²⁸Si,αpγ), 48 ps 6 from (¹⁸O,2npγ), 44 ps 7 from (α,pγ) and 49.2 ps 35 from (p,p'γ). μ: time-dependent recoil into gas method in heavy-ion reaction (1981Le19). Compilation: 2014StZZ. B(E3)↑ from (e,e'). Other: 0.00086 from (α,α').
3018.7 3	3/2 ⁻	15 fs 3	B D	K MNOPQRSTUVWXYZ	Additional information 3. XREF: Others: AA, AC, AD, AF, AG, AI, AJ B(E3)↑=0.0034 6 XREF: aa(2800). J^π: L(d,n)=L(³He,d)=L(d,³He)=1 from 0⁺; 3018.8γ E1(+M2) to 3/2⁺; J=3/2 from γ(θ,pol) in (α,pγ). T_{1/2}: weighted average of 14 fs 3 from (³⁹K,αγ), 15.2 fs 35 from (p,γ):resonances, 17 fs 6 from (p,p'γ). Other: 15 fs 3 from Γ=0.030 eV 5 from (γ,γ'). B(E3)↑ from (e,e'). Other: 0.00186 from (α,α').
3597.41 17	9/2 ⁻	38 ps 3	B EFGHIJK MNO QR	TUVWX Z	Additional information 4. XREF: Others: AC, AD, AF, AG, AH, AJ μ=2.43 23 (1981Le19) B(E3)↑=0.0085 8 XREF: N(?). J^π: L(d,d')=L(α,α')=L(p,t)=3 from 3/2⁺; 783.36γ M1+E2 to 7/2⁻ and 3597.25γ E3 to 3/2⁺; L(p,α)=5 from 0⁺. But L(t,α)=(2) is inconsistent with 9/2⁻. T_{1/2}: weighted average of 41 ps 3 from (³⁵Cl,dγ), 35 ps 3 from (²⁸Si,αpγ), 34 ps 4 from (¹⁸O,2npγ), 42 ps 6 from (α,pγ). Other: 63 ps 19 from (p,p'γ).

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Adopted Levels, Gammas (continued) **^{39}K Levels (continued)**

E(level) [†]	J ^π	T _{1/2} [‡]	XREF		Comments
3883.2 9	5/2 ⁻	7.4 fs 15	B D	K MnOPqR TUVWX Z	μ: time-dependent recoil into gas method in heavy-ion reaction (1981Le19). Compilation: 2014StZZ. B(E3)↑ from (e,e'). Other: 0.00517 from (α,α'). XREF: Others: AB, AC, AD, AF, AG J^π: L(d,d')=L(α,α')=L(p,t)=3 from 3/2⁺; 3883.0γ E1(+M2) to 3/2⁺; J=5/2 from γ(θ,pol) in (α,pγ). But L(d,³He)=1 and L(t,α)=(2) are inconsistent with 5/2⁻. T_{1/2}: weighted average of 8 fs 4 from (³⁹K,αγ), 14 fs 5 from (α,pγ), 6.2 fs 14 from (p,γ):resonances, 18 fs 7 from (n,n'γ), and 15 fs 8 from (p,p'γ). Other: 7.2 fs +14-10 from Γ=0.063 eV 10 from (γ,γ'). B(E3)↑=0.0066 7 from (e,e') for 3883+3939 doublet. Other: 0.00336 from (α,α').
3938.9 5	3/2 ⁺	73 fs 14	B	K Mn Pq tU X Z	XREF: Others: AC, AD, AG, AJ J^π: L(p,t)=0(+2) from 3/2⁺; 1416.2γ M1+E2 to 1/2⁺; J=3/2 from γ(θ,pol) in (α,pγ). T_{1/2}: weighted average of 87 fs 21 from (α,pγ) and 66 fs 14 from (p,p'γ). Other: 23 fs +5-8 from Γ=0.020 eV 5 from (γ,γ').
3944.13 17	11/2 ⁻	8.5 ps 10	B	FGHIJK M tUVW Z	XREF: Others: AH, AJ B(E5)↑=0.000078 XREF: V(3935)W(3940)AJ(3940). J^π: L(p,α)=5 from 0⁺; 1129.93γ E2 to 7/2⁻ and 346.72γ M1(+E2) to 9/2⁻. Also L(d,d')=L(α,α')=5 from 3/2⁺; L(d,α)=4 from 7/2⁻. T_{1/2}: weighted average of 7.9 ps 11 from (²⁸Si,αpγ) and 9.0 ps 10 from (¹⁸O,2npγ). Others: >4.2 ps from (α,pγ), 0.83 ps 29 from (p,p'γ) is discrepant.
4081.9 4	3/2 ⁻	21 fs 7	B	K MnOPqR tUv X Z	B(E5)↑ from (α,α'). XREF: Others: AD, AJ XREF: n(?). J^π: L(³He,d)=L(d,n)=1 from 0⁺; J=3/2 from γ(θ,pol) in (α,pγ). T_{1/2}: weighted average of 14 fs 7 from (α,pγ), 50 fs 30 from (n,n'γ), 13 fs +26-9 from (p,γ):resonances and 35 fs 10 from (p,p'γ). Other: 23 fs +12-6 from Γ=0.020 eV 7 from (γ,γ').
4095.6 4	1/2 ⁺	60 fs 10	B	K Mn qR TUvW Z	XREF: Others: AC, AD, AF, AJ XREF: n(?). J^π: L(d,³He)=0 from 0⁺. T_{1/2}: weighted average of 80 fs 21 from (α,pγ), 62 fs 50 from (n,n'γ), 55 fs 10 from (p,p'γ).
4126.50 20	7/2 ⁻	45 fs 10	B	K Mn qR TUVW Z	XREF: Others: AC, AD, AG, AJ XREF: n(?). J^π: L(d,d')=L(α,α')=L(p,t)=3 from 3/2⁺; J=7/2 from γ(θ,pol) in (α,pγ). T_{1/2}: weighted average of 59 fs 14 from (α,pγ), 59 fs 35 from (n,n'γ), 37 fs 10 from (p,p'γ). B(E3)↑=0.0076 10 from (e,e') for triplet of 4082, 4095, and 4126. Other: 0.00331 from (α,α').
4474.3 13	1/2 ⁻ , 3/2 ⁻	0.23 ps 3	B	K MNO R TUV Z	XREF: Others: AD, AJ XREF: N(?). J^π: L(³He,d)=1 from 0⁺. 877γ to 9/2⁻ and 1660γ to 7/2⁻ observed only in (p,p'γ) would rule out 1/2⁻ but these placements are uncertain. T_{1/2}: weighted average of 0.243 ps 21 from (n,n'γ) and 0.15 ps 6 from (p,p'γ).

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Adopted Levels, Gammas (continued)

³⁹ K Levels (continued)								
E(level) [†]	J ^π	T _{1/2} [‡]	XREF				Comments	
4514.3 13	5/2 ⁺	19 fs 7	K	M	P	TU	XREF: Others: AC , AD J ^π : 4514.0γ M1+E2 to 3/2 ⁺ ; 3586γ from the proton-unbound level at 8100 with J=9/2. But L(d, ³ He)=(3) is inconsistent with 5/2 ⁺ . T _{1/2} : weighted average of 17 fs 7 from (α,pγ) and 28 fs 14 from (p,p'γ). Other: 29 fs +10-6 from Γ=0.016 eV 4 from (γ,γ').	
4520.41 19	9/2 ⁻	96 fs 25	F	K	M	R	UVW	XREF: Others: AC , AG , AH , AJ XREF: V(4510)AG(4513)AJ(4510). J ^π : 923.0γ M1 to 9/2 ⁻ , 576.20γ M1(+E2) to 11/2 ⁻ and 393.9γ M1(+E2) to 7/2 ⁻ ; also L(p,α)=5 from 0 ⁺ ; L(p,t)=5 from 3/2 ⁺ ; L(d,α)=4 from 7/2 ⁻ . T _{1/2} : weighted average of 0.20 ps 5 from (α,pγ), 0.12 ps 3 from (p,p'γ) and 76 fs 17 from (n,n'γ).
4678.99 22	7/2 ⁻	89 fs 21	K	MNO		TUV		XREF: Others: AC , AD , AG XREF: N(?). J ^π : L(³ He,d)=3 from 0 ⁺ ; 1864.5γ and 552.44γ M1+E2 to 7/2 ⁻ ; J=7/2 from γ(θ,pol) in (α,pγ). But L(p,t)=0(+2) is inconsistent. T _{1/2} : weighted average of 111 fs 28 from (α,pγ) and 76 fs 21 from (p,p'γ).
4737.7 4	5/2 ⁻ ,7/2 ⁻ ,9/2 ⁻	0.08 ps 4	K	M		tUv		XREF: Others: AC , AD , AG J ^π : L(p,t)=3 from 3/2 ⁺ ; 1923.5γ M1+E2 to 7/2 ⁻ .
4738.2 17	5/2 ⁺	22 fs 6	K	M	P	tUvW		XREF: Others: AC , AD J ^π : 4737.9γ E2(+M1) to 3/2 ⁺ ; 3361γ from the proton-unbound level at 8100 with J=9/2; L(α,α')=2. T _{1/2} : weighted average of 21 fs 6 from (α,pγ) and 24 fs 7 from (p,p'γ). Other: 27 fs +30-9 from Γ=0.017 eV 9 from (γ,γ').
4930.3 4	3/2 ⁺	21 fs 9	K	Mn		TU	X Z	XREF: Others: AC , AD , AG XREF: n(?). J ^π : L(p,t)=0 from 3/2 ⁺ ; 4931.4γ M1+E2 to 3/2 ⁺ and 2407.4γ M1+E2 to 1/2 ⁺ . But L(d,n)=1 from 0 ⁺ for unresolved 4928+5010 doublet is inconsistent. T _{1/2} : other: 64 fs 17 from (p,p'γ).
4977 15	5/2 ⁻ ,7/2 ⁻			n0				XREF: Others: AC XREF: n(?). J ^π : L(³ He,d)=3.
5009.59 25	7/2 ⁻	0.24 ps 6	K	Mn		tU		XREF: Others: AD XREF: n(?). J ^π : 883.08γ M1(+E2) to 7/2 ⁻ ; 7/2 from γ(θ,pol) in (α,pγ).
5010.9 5	(3/2,5/2 ⁻ ,7/2 ⁻)	35 fs 10	K	Mn		tU		T _{1/2} : other: 0.42 ps +17-10 from (p,p'γ). XREF: Others: AD XREF: n(?). J ^π : from γ(θ) in (α,pγ) and RUL. L(d,n)=1 for a 4928+5010 unresolved doublet suggests 1/2 ⁻ ,3/2 ⁻ ; which may correspond to a different or to the 5010.9 level.
5157 2				n		Uv		T _{1/2} : other: <35 fs from (p,p'γ). XREF: Others: AD XREF: n(?).
5164.22 20	9/2 ⁻	55 fs 14	K	Mn		tUvw	Z	E(level): from (p,p'γ). XREF: Others: AC , AD , AG

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Adopted Levels, Gammas (continued)

^{39}K Levels (continued)					
E(level) [†]	J ^π	T _{1/2} [‡]	XREF		Comments
					XREF: n(?). J ^π : 1220.1γ M1(+E2) to 11/2 ⁻ and 1037.7γ M1+E2 to 7/2 ⁻ . T _{1/2} : other: >1.4 ps from (p,p'γ). XREF: Others: AC , AD , AG
5165.7 4	5/2 ⁻ , 7/2 ⁻ , 9/2 ⁻	0.19 ps 5	K n	t vw Z	XREF: n(?). J ^π : 2351.5γ M1+E2 to 7/2 ⁻ . XREF: Others: AC
5174.1 13	(1/2, 3/2, 5/2)	15 fs 6	K Mn	tUvwX Z	XREF: n(?). J ^π : 5173.7γ to 3/2 ⁺ ; RUL. T _{1/2} : from (p,p'γ). Other: <14 fs from (α,py). XREF: Others: AC , AD , AG , AJ
5264.3 13	5/2 ⁺	1.3 fs 1	K MNoPq	UVWX Z	XREF: N(?)W(5270)AD(5280). J ^π : L(pol d, ³ He)=L(p,α)=L(p,t)=L(t,α)=2 and L+1/2 transfer from analyzing power. But L(α,α')=3 and L(e,e')=(3) from 3/2 ⁺ is inconsistent. T _{1/2} : deduced from Γ=0.35 eV 3 in (γ,γ'). Others: 14 fs 7 from (p,p'γ), <14 fs from (α,py), <3.5 fs from (p,γ); resonances.
5319.6 12	3/2 ⁺	1.4 fs 1	K M OPq	U WX Z	XREF: Others: AD , AF , AG XREF: O(?)W(5320)AD(5330). J ^π : L(p,t)=0. But L(α,α')=L(e,e')=(3) is inconsistent and 5/2 ⁺ from (⁷ Li, ⁸ Be). T _{1/2} : deduced from Γ=0.33 eV 3 in (γ,γ'). Others: <14 fs from (α,py), <28 fs from (p,p'γ).
5353.90 20	11/2 ⁻	90 fs 35	FGHIJK M	U	XREF: Others: AG J ^π : from γ(θ, pol) in (α,py) and (²⁸ Si, αpy) (also DCO). T _{1/2} : weighted average of 60 fs 40 from (α,py) and 113 fs 35 from (p,p'γ).
5370 20	(3/2 to 9/2) ⁻		N	W	XREF: Others: AD , AG XREF: N(?)W(5360). E(level): from (t,α), considered as a separate level from the 5354, 11/2 ⁻ level since J ^π =11/2 ⁻ would require L(t,α)=5. J ^π : L(α,α')=3.
5501	3/2 ⁺		n		XREF: Others: AD , AG XREF: n(?). E(level): from (p,t). J ^π : L(p,t)=0(+2).
5502.26 24	7/2 ⁻	35 fs 20	K Mn	U W	XREF: Others: AC , AD XREF: n(?). J ^π : from γ(θ, pol) in (α,py); also L(α,α')=3 from 3/2 ⁺ .
5599.0 12	5/2 ⁺	2.0 fs 2	K M P	U X Z	T _{1/2} : other: 0.31 ps 13 in (p,p'γ). XREF: Others: AC , AD , AG , AJ J ^π : L(pol d, ³ He)=L(t,α)=2 and L+1/2 transfer from analyzing power. T _{1/2} : deduced from Γ=0.23 eV 2 from (γ,γ'). Others: 14 fs 7 from (α,py), <14 fs from (p,p'γ).
5644.2 4	7/2 ⁻	0.07 ps 4	K MNO	U	XREF: Others: AD , AJ XREF: N(?)O(5626)AD(5670). J ^π : from γ(θ, pol) in (α,py); also L(³ He, d)=3 from 0 ⁺ . T _{1/2} : other: 0.67 ps +42-21 from (p,p'γ).

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Adopted Levels, Gammas (continued)

³⁹ K Levels (continued)										
E(level) [†]	J ^π	T _{1/2} [‡]	XREF			Comments				
5715.5 19	3/2 ⁺	49 fs 31	K	M	U	XREF: Others: AD , AG XREF: AD(5740). J ^π : L(p,t)=0. E(level): 5710.6 10 from (p,p'γ). T _{1/2} : from (p,p'γ). Other: <14 fs from (α,pγ). XREF: Others: AH				
5718.18 19	13/2 ⁻	0.19 ps 5	F	G	H	I	J	K	W	J ^π : from γ(θ,pol) in (α,pγ), (¹⁸ O,2npγ) and (²⁸ Si,αpγ) (also DCO). Also L(α,α')=5 from 3/2 ⁺ ; L(d,α)=4 from 7/2 ⁻ . T _{1/2} : other: <2.1 ps from (²⁸ Si,αpγ). XREF: Others: AC , AD , AF , AG E(level): 5787.6 10 from (p,p'γ). J ^π : 5788.4γ to 3/2 ⁺ , 2310γ from proton-unbound level at 8100 with J ^π =9/2 ⁺ , γ(θ) in (p,γ); negative parity is ruled out by RUL. T _{1/2} : weighted average of 35 fs 17 from (α,pγ) and 28 fs 14 from (p,p'γ). Other: (2J+1)×(0.82 12) fs from (2J+1)×Γ/4=0.140 eV 20 in (γ,γ').
5788.9 19	(5/2,7/2) ⁺	31 fs 14	K	M	P	U				XREF: Others: AC , AD , AF , AG E(level): 5787.6 10 from (p,p'γ). J ^π : 5788.4γ to 3/2 ⁺ , 2310γ from proton-unbound level at 8100 with J ^π =9/2 ⁺ , γ(θ) in (p,γ); negative parity is ruled out by RUL. T _{1/2} : weighted average of 35 fs 17 from (α,pγ) and 28 fs 14 from (p,p'γ). Other: (2J+1)×(0.82 12) fs from (2J+1)×Γ/4=0.140 eV 20 in (γ,γ').
5801.5 3	7/2 ⁻	14 fs 7	K	M	N	T	U			XREF: Others: AC , AD , AG XREF: N(?)AG(5788). J ^π : 2987.3γ and 1676γ to 7/2 ⁻ , 1280.7γ and 637.5γ to 9/2 ⁻ , 2292γ from proton-unbound level at 8094 with J ^π =3/2 ⁻ ; L(p,t)=3+5 implies 7/2 ⁻ , 9/2 ⁻ . T _{1/2} : other: >0.52 ps from (p,p'γ). XREF: Others: AC , AD XREF: N(?)AD(5850). E(level): weighted average of 5827.0 10 from (p,γ):resonances and 5825.6 10 from (p,p'γ). J ^π : L(³ He,d)=L(d, ³ He)=1. T _{1/2} : from (p,p'γ). XREF: Others: AD , AG XREF: W(5880)AG(5875). E(level): from (p,p'γ). J ^π : L(α,α')=L(p,t)=3 from 3/2 ⁺ ; 2203γ from proton-unbound 8094, 3/2 ⁻ ; 1371γ and 727γ to 9/2 ⁻ . XREF: Others: AD E(level): from (³ He,d). J ^π : L(³ He,d)=1. XREF: Others: AC , AD , AG E(level): 5936.9 10 from (p,p'γ). J ^π : L(d, ³ He)=2 from 3/2 ⁺ ; J=5/2 from γ(θ) in (α,pγ). But L(p,t)=3 is inconsistent. T _{1/2} : deduced from Γ=0.173 eV 20 in (γ,γ'). Others: <24 fs from (α,pγ), <14 fs from (p,p'γ).
5826.3 10	1/2 ⁻ , 3/2 ⁻	<14 fs	M	N	O	U	X	Z		XREF: Others: AC , AD XREF: N(?)AD(5850). E(level): weighted average of 5827.0 10 from (p,γ):resonances and 5825.6 10 from (p,p'γ). J ^π : L(³ He,d)=L(d, ³ He)=1. T _{1/2} : from (p,p'γ). XREF: Others: AD , AG XREF: W(5880)AG(5875). E(level): from (p,p'γ). J ^π : L(α,α')=L(p,t)=3 from 3/2 ⁺ ; 2203γ from proton-unbound 8094, 3/2 ⁻ ; 1371γ and 727γ to 9/2 ⁻ . XREF: Others: AD E(level): from (³ He,d). J ^π : L(³ He,d)=1. XREF: Others: AC , AD , AG E(level): 5936.9 10 from (p,p'γ). J ^π : L(d, ³ He)=2 from 3/2 ⁺ ; J=5/2 from γ(θ) in (α,pγ). But L(p,t)=3 is inconsistent. T _{1/2} : deduced from Γ=0.173 eV 20 in (γ,γ'). Others: <24 fs from (α,pγ), <14 fs from (p,p'γ).
5891 2	(5/2,7/2) ⁻		M			U	W	Z		XREF: Others: AD , AG XREF: W(5880)AG(5875). E(level): from (p,p'γ). J ^π : L(α,α')=L(p,t)=3 from 3/2 ⁺ ; 2203γ from proton-unbound 8094, 3/2 ⁻ ; 1371γ and 727γ to 9/2 ⁻ . XREF: Others: AD E(level): from (³ He,d). J ^π : L(³ He,d)=1. XREF: Others: AC , AD , AG E(level): 5936.9 10 from (p,p'γ). J ^π : L(d, ³ He)=2 from 3/2 ⁺ ; J=5/2 from γ(θ) in (α,pγ). But L(p,t)=3 is inconsistent. T _{1/2} : deduced from Γ=0.173 eV 20 in (γ,γ'). Others: <24 fs from (α,pγ), <14 fs from (p,p'γ).
5899 20	1/2 ⁻ , 3/2 ⁻				O					XREF: Others: AD E(level): from (³ He,d). J ^π : L(³ He,d)=1. XREF: Others: AC , AD , AG E(level): 5936.9 10 from (p,p'γ). J ^π : L(d, ³ He)=2 from 3/2 ⁺ ; J=5/2 from γ(θ) in (α,pγ). But L(p,t)=3 is inconsistent. T _{1/2} : deduced from Γ=0.173 eV 20 in (γ,γ'). Others: <24 fs from (α,pγ), <14 fs from (p,p'γ).
5939.4 21	5/2 ⁺	2.6 fs 3	K	M	P	U	W	Z		XREF: Others: AC , AD , AG E(level): 5936.9 10 from (p,p'γ). J ^π : L(d, ³ He)=2 from 3/2 ⁺ ; J=5/2 from γ(θ) in (α,pγ). But L(p,t)=3 is inconsistent. T _{1/2} : deduced from Γ=0.173 eV 20 in (γ,γ'). Others: <24 fs from (α,pγ), <14 fs from (p,p'γ).
5960 20	(1/2 ⁻ , 3/2 ⁻)				N			X		XREF: Others: AD XREF: N(?). E(level): from (t,α). J ^π : L(t,α)=(1) from 0 ⁺ . J ^π : from γ(θ,pol) in (α,pγ). XREF: Others: AG E(level): from (p,p'γ).
6005.8 4	11/2 ⁻	76 fs 28	F		K					J ^π : from γ(θ,pol) in (α,pγ). XREF: Others: AG E(level): from (p,p'γ).
6041.0 10	(1/2 ⁺ to 7/2 ⁺)	35 fs 15			M			U		

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Adopted Levels, Gammas (continued) ^{39}K Levels (continued)

E(level) [†]	J ^π	T _{1/2} [‡]	XREF				Comments
6054 3		24 fs 14	K				J ^π : 6041γ to 3/2 ⁺ , 1527γ to 5/2 ⁺ , γ to 3/2 ⁺ ; L(p,t)=(0+2) from 3/2 ⁺ for a group at 6050. T _{1/2} : from (p,p'γ). XREF: Others: AG
6093.3 7	5/2 ⁻ , 7/2 ⁻	<14 fs	K M	U	Y		J ^π : L(p,t)=(0+2) from 3/2 ⁺ for a group at 6050. XREF: Others: AC
6110.5 10	1/2 ⁻ , 3/2 ⁻	76 fs 28	NO	U			J ^π : L(d, ³ He)=3 from 0 ⁺ . XREF: Others: AD XREF: N(?).
6186 2	(1/2 ⁺ to 7/2 ⁺)			U			E(level), T _{1/2} : from (p,p'γ). J ^π : L(³ He,d)=1 from 0 ⁺ . XREF: Others: AC , AG
6192 2	(7/2 ⁻)		Mn	U			E(level): from (p,p'γ). J ^π : 6185γ to 3/2 ⁺ and 923γ to 5/2 ⁺ . XREF: Others: AC , AD , AG
6246 2	(1/2 ⁺)		Mn				XREF: n(?)AD(6210). E(level): from (p,p'γ). J ^π : 1672γ to 9/2 ⁻ and 2248γ to 11/2 ⁻ ; L(t,α)=(3) from 0 ⁺ . XREF: Others: AC , AD , AG XREF: n(?)AC(6263).
6248.5 7		21 fs 14	K n	U			E(level): from (p,γ):resonances. The evaluator has considered this level as a separate level from the 6248.5 level in (α,pγ) and (p,p'γ) based on non-observation of the 6246γ in the latter. It is also possible that the level in (p,γ):resonances is a doublet because of the observations of the same γ branches as from the 6248.5 level. J ^π : L(d, ³ He)=0 from 0 ⁺ for a group at 6263. XREF: Others: AD , AG XREF: n(?).
6330.7 10	3/2 ⁺	24 fs 14	K M P	U	Z		E(level): See comments for 6246 level. 6244.0 10 from (p,p'γ). J ^π : (3/2 ⁻ to 11/2 ⁻) from 3434.2γ and 1568.2γ to 7/2 ⁻ . T _{1/2} : from (p,p'γ). Other: <35 fs from (α,pγ). XREF: Others: AD
6331 20	1/2 ⁻ , 3/2 ⁻		O	W			E(level): from (p,p'γ). Others: 6331.6 20 from (α,pγ), 6332 2 from (γ,γ'). J ^π : L(p,t)=0 from 3/2 ⁺ . T _{1/2} : others: <55 fs from (p,p'γ), 0.178 fs 14 deduced from Γ=2.56 eV 20 from (γ,γ'). XREF: W(6310).
6356 2	5/2 ⁺		N	U	X Z		E(level): from (³ He,d). J ^π : L(³ He,d)=1 from 0 ⁺ . XREF: Others: AC , AD XREF: N(?)AC(6334). E(level): from (p,p'γ).
6396 2				U			J ^π : L(pol d, ³ He)=2 and L+1 transfer from analyzing power.
6410.6 20	(1/2 to 7/2 ⁺)	<14 fs	K M P				E(level): from (p,p'γ). J ^π : γ to 3/2 ⁺ . T _{1/2} : other: (2J+1)×(0.41 9) fs from (2J+1)×Γ/4=0.28 eV 6 in (γ,γ').
6434.28 21	13/2 ⁺	128 fs 35	FGHI K				J ^π : from γ(θ,pol) in (α,pγ) and (²⁸ Si,αpγ) (also

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{39}K Levels (continued)					
E(level) [†]	J ^π	T _{1/2} [‡]	XREF		Comments
6458.6 20	(1/2,3/2,5/2) ⁺	<14 fs	K	P	DCO). T _{1/2} : other: <7 ns from $\gamma\gamma(t)$ in ($^{28}\text{Si},\alpha p\gamma$). XREF: Others: AG J ^π : L(p,t)=2 from 3/2 ⁺ ; 6458 γ to 3/2 ⁺ ; RUL. T _{1/2} : other: (2J+1)(0.9 2) fs from (2J+1) $\times\Gamma/4=0.14$ eV 3 in (γ,γ'). E(level): from (p,p' γ). J ^π : from $\gamma(\theta,\text{pol})$ in ($\alpha,p\gamma$), ($^{18}\text{O},2n p\gamma$), ($^{18}\text{O},\alpha 2n\gamma$), and ($^{28}\text{Si},\alpha p\gamma$) (also DCO). T _{1/2} : weighted average of 8.3 ps 4 from ($^{28}\text{Si},\alpha p\gamma$) and 11.8 ps 21 from ($^{18}\text{O},\alpha 2n\gamma$). Other: >4.2 ps from ($\alpha,p\gamma$).
6465 2	15/2 ⁺	8.4 ps 4	FGHIJK	U	XREF: Others: AC , AD , AJ J ^π : L(d, ^3He)=2 from 0 ⁺ for a group at 6500. T _{1/2} : other: (2J+1)(1.0 3) fs from (2J+1) $\times\Gamma/4=0.11$ eV 3 in (γ,γ'). XREF: Others: AD , AG , AJ J ^π : γ to 3/2 ⁺ ; L(t, α)=(1) suggests (1/2 ⁻ ,3/2 ⁻) for 6500 20 group. T _{1/2} : other:(2J+1)(0.42 8) fs from (2J+1) $\times\Gamma/4=0.27$ eV 5 in (γ,γ'). XREF: Others: AG T=3/2 J ^π : analog of ^{39}Sc g.s.; L($^3\text{He},d$)=3 from 0 ⁺ . XREF: N(?). E(level): level in (γ,γ') is not the same as 6546, 7/2 ⁻ .
6475.10 21					
6501.6 20	(3/2,5/2) ⁺	59 fs 21	K	P	U
6529 3	(1/2 to 7/2 ⁺)	0.09 ps 6	K	M	P
6546.4 19	7/2 ⁻	<14 fs	K	M	O
6551? 3				N	P
6653.6 20	3/2 ⁺ ,5/2 ⁺	24 fs 14	K		U
6686.6 20	(3/2 ⁺ ,5/2 ⁺)	<35 fs	K		T
6740.6 19		<14 fs	K	P	U
6819 3	3/2 ⁺ ,5/2 ⁺			P	
6828.6 20	3/2 ⁺ ,5/2 ⁺	<49 fs	K	P	U
6915.7 20					
6943 2	3/2 ⁺ ,5/2 ⁺				U
7021 2	(3/2,5/2) ⁻		G		U
7051 2					
7092.4 5	(9/2 ⁻ ,13/2 ⁺)	59 fs 21	K		

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Adopted Levels, Gammas (continued) ^{39}K Levels (continued)

E(level) [†]	J ^π	T _{1/2} [‡]	XREF		Comments
7122	(3/2 to 9/2) ⁻				XREF: Others: AG E(level): from (p,t). J ^π : L(p,t)=3 from 3/2 ⁺ .
7141.61 20	15/2 ⁻	0.29 ps 8	FGHI JK		J ^π : 1787.65γ and 3197.23γ stretched E2 to 11/2 ⁻ , 1423.41γ D+Q to 13/2 ⁻ .
7170 2	(1/2 to 7/2)		M	U	XREF: Others: AC E(level): from (p,p'γ). J ^π : L(d, ³ He)=(3) suggests (5/2 ⁻ ,7/2 ⁻) for 7170 and/or 7200 levels; γ to 3/2 ⁺ disfavors 7/2 ⁻ .
7200 2	(3/2 ⁻ ,5/2,7/2 ⁺)			U	XREF: Others: AC E(level): from (p,p'γ). J ^π : 7199γ to 3/2 ⁺ and 4385γ to 7/2 ⁻ ; see also comment for 7170 level.
7254.7 8			M		
7260 2	(3/2 ⁺)			U	XREF: Others: AG XREF: AG (7269). E(level): from (p,p'γ). J ^π : L(p,t)=(0+2) from 3/2 ⁺ ; but 4445γ to 7/2 ⁻ seems to disfavor 3/2 ⁺ .
7278.8 6			M		
7286.7 8			M		
7336.5 8	(3/2 to 9/2) ⁻		M		XREF: Others: AC , AG J ^π : L(p,t)=3 from 3/2 ⁺ .
7381.5 6			M		
7439.1 7			M		XREF: Others: AC J ^π : L(d, ³ He)=2 gives 3/2 ⁺ ,5/2 ⁺ for 7439.1 and/or 7448.5 levels.
7448.5 8			M		XREF: Others: AC J ^π : see comment for 7439.1 level.
7461.5 7	(3/2 ⁻ ,5/2,7/2 ⁺)		M		XREF: Others: AF J ^π : 7461γ and 3523γ to 3/2 ⁺ , 2785γ to 7/2 ⁻ .
7481.9 7			M		
7502 20	3/2 ⁺ ,5/2 ⁺				XREF: Others: AC E(level): from (³ He,d). J ^π : L(d, ³ He)=2 from 0 ⁺ . J ^π : 5013γ and 3440γ to 1/2 ⁺ .
7535.8 8	(1/2,3/2,5/2 ⁺)		M		
7540.6 8			M		
7551.9 8			M		
7560.4 8			M		
7569.0 3	15/2 ⁽⁺⁾	0.24 ps 7	F	K	J ^π : 1094.3γ ΔJ=0 to 15/2 ⁺ , 1850.0γ ΔJ=1 to 13/2 ⁻ .
7588.1 21		<0.21 ps	K		XREF: Others: AC J ^π : L(d, ³ He)=2 gives 3/2 ⁺ ,5/2 ⁺ for a 7606 25 group.
7602.4 8	(3/2 ⁻ ,5/2,7/2 ⁺)		Mn		XREF: Others: AC J ^π : 3663γ and 7602γ to 3/2 ⁺ , 3476γ and 4788γ to 7/2 ⁻ . See also comment for 7588 level.
7605.1 8			Mn		XREF: Others: AC J ^π : see comment for 7588 level.
7633.3 6	(3/2 ⁻ ,5/2 ⁺)		Mn	P	XREF: Others: AC E(level): from (p,γ):resonances, 7631.9 22 from Eγ fit. J ^π : 5110γ to 1/2 ⁺ and 4819γ to 7/2 ⁻ . See also comment for 7588 level.
7699.7 8	(3/2 ⁻ ,5/2,7/2 ⁻)		Mn		J ^π : 4681γ to 3/2 ⁻ and 4885γ 7/2 ⁻ ; L(d,n)=1 for a group at 7720 20.

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Adopted Levels, Gammas (continued)

^{39}K Levels (continued)				
E(level) [†]	J ^π	T _{1/2} [‡]	XREF	Comments
7714.4 8	(5/2 ⁻)		M	E(level): possible doublet in (p,γ):resonances. J ^π : 2395γ to 3/2 ⁺ , 4695γ to 3/2 ⁻ and 2550γ to 9/2 ⁻ ; but (5/2 ⁻) is disfavored by 3620γ to 1/2 ⁺ . T=3/2
7738.0 5	3/2 ⁻	1.1 keV 2	Mn	E(level): 7738.8 5 from (p,γ):resonances. J ^π : 3/2 from γ(θ) in (p,γ); L(d,n)=1 for a group at 7720 20.
7755.8 8	(3/2 ⁻ ,5/2 ⁺)		Mn	T _{1/2} : proton width from (p,γ):resonances. XREF: Others: AC J ^π : 5233γ to 1/2 ⁺ and 4941γ to 7/2 ⁻ . L(d, ³ He)=2 gives 3/2 ⁺ ,5/2 ⁺ for a 7780 30 group.
7766.2 8			Mn	XREF: Others: AC
7773.0 8	(3/2 ⁻ ,5/2 ⁺)		Mn	J ^π : see comment for 7756 level. XREF: Others: AC
7776.31 22	17/2 ⁺	1.0 ps 3	F HI K	J ^π : 5250γ to 1/2 ⁺ and 3646γ to 7/2 ⁻ . See also comment for 7756 level. E(level): two levels near this energy suggested in (α,pγ) (1981No05), but there is no evidence for a doublet in other (HI,xnγ) studies such as in 1982VaZH in (²⁸ Si,αpγ). Only one level is included here with 1301γ and 1341γ from the same level. J ^π : 1341.7γ stretched E2 to 13/2 ⁺ , 1301.18γ M1+E2 to 15/2 ⁺ . T _{1/2} : weighted average of 2.3 ps I2 from (²⁸ Si,αpγ) and 0.94 ps 28 from (α,pγ).
7784.8 8	(1/2,3/2,5/2 ⁺)		Mn	XREF: Others: AC J ^π : 3689γ to 1/2 ⁺ . See also comment for 7756 level.
7797.4 8	(3/2 ⁻ ,5/2 ⁺)		Mn	XREF: Others: AC E(level): possible doublet in (p,γ):resonances. J ^π : 5274γ to 1/2 ⁺ , 4983γ to 7/2 ⁻ ; but 3277γ to 9/2 ⁻ favors 5/2 ⁻ ; possible doublet suggested in (p,γ):resonances. See also comment for 7756 level.
7802.4 9	(5/2 ⁻)		M	J ^π : Strong 4205γ and 3282γ to 9/2 ⁻ , weak 2483γ and strong 7802γ to 3/2 ⁺ , weak 4782γ to 3/2 ⁻ .
7804.8 8	(5/2 ⁻)		M	J ^π : 2641γ, 3284γ and 4207γ to 9/2 ⁻ ; weak 5282γ to 1/2 ⁺ .
7820.7 8	(1/2 ⁻ ,3/2,5/2 ⁺)		M	J ^π : 3725γ to 1/2 ⁺ and 3937γ to 5/2 ⁻ .
7846.8 12	(3/2,5/2 ⁺)		M	E(level): possible doublet in (p,γ):resonances. J ^π : 5324γ and 3751γ to 1/2 ⁺ , 3963γ to 5/2 ⁻ and 3332γ to 5/2 ⁺ .
7867.1 21		<0.17 ps	K	J ^π : 1392γ to 15/2 ⁺ .
7868.2 10	5/2 ⁺		M	J ^π : 5/2 from γ(θ) in (p,γ):resonances; negative parity is ruled out by RUL since it would require an unreasonably large M2 strength for 7867γ, estimated based on the large mixing ratio and resonance strength in (p,γ):resonances.
7900			I	
7957.9 8	(1/2,3/2,5/2 ⁺)		M	J ^π : 5435γ to 1/2 ⁺ .
7978.6 8	(3/2 ⁻ ,5/2)		M P	XREF: Others: AC

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Adopted Levels, Gammas (continued)

^{39}K Levels (continued)				
E(level) [†]	J ^π	T _{1/2} [‡]	XREF	Comments
				E(level): from (p,γ):resonances. 7978.7 21 from E _γ fit.
				J ^π : 7978γ to 3/2 ⁺ , 4960γ to 3/2 ⁻ and 5164γ to 7/2 ⁻ . L(d, ³ He)=3 gives 5/2 ⁻ , 7/2 ⁻ for a 8004 30 group.
7981.7 10			M	XREF: Others: AC
				J ^π : see comment for 7979 level.
7983.4 8	(3/2,5/2 ⁺)		M	XREF: Others: AC
				J ^π : 1653γ to 3/2 ⁺ , 4964γ to 3/2 ⁻ , 3469γ to 5/2 ⁺ , 4100γ to 5/2 ⁻ , 1737γ to (1/2 ⁺). See also comment for 7979 level.
7986.3 8			M	J ^π : see comment for 7979 level.
7992.4 8	3/2 ⁽⁻⁾		M	J ^π : 3/2 from γ(θ) in (p,γ):resonances; 3866γ to 7/2 ⁻ . See also comment for 7979 level.
7995.5 8			M	XREF: Others: AC
				J ^π : see comment for 7979 level.
7998.5 8			M	XREF: Others: AC
				J ^π : see comment for 7979 level.
8010.1 8	(15/2 ⁻)		F	J ^π : 4066.1γ (Q) to 11/2 ⁻ .
8018.6? 12			F	E(level): from (²⁸ Si,αpγ).
8028.35 22	19/2 ⁻	13.8 ps 70	FGHIJK	μ=+3.3 3 (1992Pa01)
				J ^π : 886.64γ stretched E2 to 15/2 ⁻ and 252.10γ E1 to 17/2 ⁺ .
				T _{1/2} : weighted average of 13.7 ps 7 from (²⁸ Si,αpγ), 13.9 ps 10 from (¹⁸ O,α2nγ).
				μ: transient-field method in heavy-ion fusion reaction (1992Pa01). Compilation: 2014StZZ.
8031.0 8	(1/2,3/2,5/2)		M	XREF: Others: AC
				J ^π : 1700γ and 8030γ to 3/2 ⁺ , 5012γ to 3/2 ⁻ . See also comment for 7979 level.
8034.0 10	(1/2,3/2,5/2)		M	XREF: Others: AC
				J ^π : 8033γ and 1702γ to 3/2 ⁺ , 5011γ to 3/2 ⁻ . See also comment for 7979 level.
8038.5 8	(3/2 ⁻ ,5/2)		M	XREF: Others: AC
				J ^π : 8038γ to 3/2 ⁺ , 5020γ to 3/2 ⁻ , 5224γ to 7/2 ⁻ . See also comment for 7979 level.
8079.6 12	(1/2 ⁻ ,3/2,5/2 ⁺)		M	J ^π : 5556γ to 1/2 ⁺ and 4196γ to 5/2 ⁻ .
8081.5 12	(1/2 ⁻ ,3/2,5/2 ⁺)		M	J ^π : 5558γ to 1/2 ⁺ and 4198γ to 5/2 ⁻ .
8087.1 10			M	
8093.8 9	3/2 ⁻		M	J ^π : 3/2 from γ(θ) in 1986Zi02 in (p,γ):resonances; 1547γ, 2203γ, 2591γ, 3083γ, 3967γ, 5279γ to 7/2 ⁻ ; positive parity would require an unreasonably large B(M2) for the 1547γ to 7/2 ⁻ .
8099.2 10	9/2 ⁺		M	J ^π : 3/2 and 9/2 from γ(θ) in 1986Zi02 in (p,γ):resonances; 4155γ to 11/2 ⁻ rules out 3/2; J=9/2 implies l _p =4 or 5 proton capture with l _p =4 favored due to an improbably high value of reduced proton width for l _p =5 deduced using the resonance strength in 1970Ma31; negative parity would also require an unreasonably large B(M2) for the 3355γ to 5/2 ⁺ .
8107.8 10	(3/2,5/2 ⁺)		M	J ^π : 5585γ to 1/2 ⁺ , 2168γ to 5/2 ⁺ and 4224γ to 5/2 ⁻ .
8118.0 8	(3/2 ⁻ ,5/2 ⁺)		M	J ^π : 5595γ to 1/2 ⁺ , 5303γ and 3439γ to 7/2 ⁻ .
8128.7 10			M	

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Adopted Levels, Gammas (continued) ^{39}K Levels (continued)

E(level) [†]	J ^π	T _{1/2} [‡]	XREF	Comments
8138.4 10	(3/2 ⁻ , 5/2)		M	J ^π : 4199γ and 3208γ to 3/2 ⁺ , 5119γ and 4056γ to 3/2 ⁻ , 3127γ to 7/2 ⁻ .
8170.2 10			M	XREF: Others: AC
8185.0 10			M	J ^π : see comment for 8198.3 level.
8189.2 10			M	XREF: Others: AC
8191.3 10			M	J ^π : see comment for 8198.3 level.
8198.3 10	(3/2 ⁻ , 5/2, 7/2 ⁺)		M	XREF: Others: AC
8203.1 12			M	J ^π : 8197γ and 4259γ to 3/2 ⁺ , 5384γ to 7/2 ⁻ . L(d, ³ He)=2 gives 3/2 ⁺ , 5/2 ⁺ for a 8187 30 group.
8252.9 8	(1/2 to 7/2 ⁺)		M P	XREF: Others: AC J ^π : see comment for 8198.3 level. E(level): from (p,γ):resonances, 8253.9 20 from Ey fit.
8262.4 10	(1/2 to 7/2 ⁺)		M	J ^π : 8253γ to 3/2 ⁺ . T _{1/2} =(2J+1)(0.13 3) fs from (2J+1)×Γ/4=0.90 eV 22 in (γ,γ').
8271.0 10			M	XREF: Others: AC
8279.7 10	(1/2 to 7/2 ⁺)		M	J ^π : 8262γ to 3/2 ⁺ . See also comment for 8305.0 level.
8285.2 10			M	XREF: Others: AC
8294.3 10			M	J ^π : see comment for 8305.0 level.
8305.0 10	(3/2 ⁻ , 5/2 ⁺)		M	XREF: Others: AC
8314.7 10			M	J ^π : 4209γ to 1/2 ⁺ and 5490γ to 7/2 ⁻ . L(d, ³ He)=2 gives 3/2 ⁺ , 5/2 ⁺ for a 8292 30 group.
8326.0 10			M	XREF: Others: AC
8340.9 10			M	J ^π : see comment for 8305.0 level.
8347.1 10			M	XREF: Others: AC
8370.2 5	(1/2 to 7/2 ⁺)	35 fs 17	K	J ^π : 1895.1γ to 3/2 ⁺ .
8379.8 10			M	XREF: Others: AC
8386.4 10			M	J ^π : see comment for 8391 level.
8391.0 20	(1/2 to 7/2 ⁺)		P	XREF: Others: AC
8395.3 15			M	J ^π : 8390γ to 3/2 ⁺ . L(d, ³ He)=2 gives 3/2 ⁺ , 5/2 ⁺ for a 8411 30 group.
8414.0 12			M	T _{1/2} =(2J+1)(0.41 10) fs from (2J+1)×Γ/4=0.28 eV 7 in (γ,γ').
8427.0 12			M	XREF: Others: AC
8429.7 12			M	J ^π : see comment for 8391 level.
				XREF: Others: AC

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Adopted Levels, Gammas (continued) ^{39}K Levels (continued)

E(level) [†]	J ^π	XREF	Comments
8465.6 12		M	J ^π : see comment for 8391 level.
8476.2 15		M	
8484.3 12		M	
8509.4 12		M	XREF: Others: AC
8513.8 12		M	J ^π : see comment for 8530.6 level. XREF: Others: AC
8524.4 12		M	J ^π : see comment for 8530.6 level. XREF: Others: AC
8530.6 12	(3/2 ⁻ ,5/2)	M	J ^π : see comment for 8530.6 level. XREF: Others: AC
8547.7 12		M	J ^π : 8530γ to 3/2 ⁺ , 5512γ to 3/2 ⁻ and 5716γ to 7/2 ⁻ . L(d, ³ He)=2 gives 3/2 ⁺ ,5/2 ⁺ for a 8534 30 group.
8559.5 15		M	XREF: Others: AC
8567.3 13		M	J ^π : see comment for 8530.6 level. XREF: Others: AC
8583.8 13	(3/2 ⁻ ,5/2,7/2 ⁺)	M	J ^π : see comment for 8530.6 level.
8592.4 15		M	J ^π : 8583γ to 3/2 ⁺ and 5769γ and 4457γ to 7/2 ⁻ .
8598.2 15		M	
8611		M	
8625.0 15	(3/2,5/2,7/2 ⁺)	M	J ^π : 8624γ and 4686γ to 3/2 ⁺ , 2686γ and 4111γ to 5/2 ⁺ , 4742γ to 5/2 ⁻ .
8627.1 15	(3/2 ⁻ ,5/2)	M	J ^π : 8626γ and 4689γ to 3/2 ⁺ , 4544γ to 3/2 ⁻ and 5813γ to 7/2 ⁻ .
8638.5 15		M	
8655.1 15		M	
8666.9 15		M	
8672.4 15		M	XREF: Others: AC
8674.4 15		M	J ^π : see comment for 8704.0 level. XREF: Others: AC
8682.7 5	(15/2 ⁺)	F	J ^π : see comment for 8704.0 level.
8683.5 15		M	J ^π : proposed in (²⁸ Si,αpγ). XREF: Others: AC
8688.1 15		M	J ^π : see comment for 8704.0 level.
8693.3 15		M	XREF: Others: AC
8704.0 15		M	J ^π : see comment for 8704.0 level. XREF: Others: AC
8709.2 15		M	J ^π : see comment for 8704.0 level. XREF: Others: AC
8714.4 15		M	J ^π : L(d, ³ He)=2 gives 3/2 ⁺ ,5/2 ⁺ for a 8703 30 group.
8719.8 15		M	XREF: Others: AC
8893 30	3/2 ⁺ ,5/2 ⁺		J ^π : see comment for 8704.0 level.
9012 50	3/2 ⁺ ,5/2 ⁺		XREF: Others: AC
9107 30	(3/2 ⁺ ,5/2 ⁺)		J ^π : L(d, ³ He)=2 from 0 ⁺ . XREF: Others: AC
9272.1 6	(19/2 ⁻)	F	J ^π : L(d, ³ He)=(2) from 0 ⁺ .
9300		T	J ^π : 2130.4γ Q to 15/2 ⁻ . XREF: Others: AC

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Adopted Levels, Gammas (continued) ^{39}K Levels (continued)

E(level) [†]	J ^π	T _{1/2} [‡]	XREF	Comments
9365.0 5	(17/2 ⁺)		F	XREF: AC(9265). J ^π : 2891.2γ D+Q ΔJ=1 to 15/2 ⁺ and 682.3γ D+Q ΔJ=1 to (15/2 ⁺).
9405 50				XREF: Others: AC
9616 20			M	XREF: Others: AC
9665 20			M	XREF: AC(9586).
9694 20			M	XREF: Others: AC
9704 20	(3/2 ⁺ , 5/2 ⁺)		M	J ^π : see comment for 9704 level. XREF: Others: AC
9772 20			M	J ^π : L(d, ³ He)=(2) gives (3/2 ⁺ , 5/2 ⁺) for a 9736 50 group. XREF: Others: AC
9808 50				J ^π : see comment for 9704 level.
9908.8 5	(21/2 ⁺)	<1.4 ps	F HI	XREF: Others: AC J ^π : 1880.9γ D+Q ΔJ=1 to 19/2 ⁻ , 2131.6γ to 17/2 ⁺ . T _{1/2} : from (²⁸ Si, αpγ).
9928 20			M	XREF: Others: AC
9987 20			M	XREF: Others: AC
9996 20			M	XREF: Others: AC
10265.5 7	(19/2 ⁻)		F	J ^π : 3123.5γ Q to 15 ⁻ and 2255.5γ Q to (15/2 ⁻).
10278.5 9	(19/2 ⁺)		F	E(level): from (²⁸ Si, αpγ).
10304.7 5	(19/2 ⁺)		F	J ^π : 914γ D+Q ΔJ=1 to (17/2 ⁺), 2709γ to 15/2 ⁽⁺⁾ . J ^π : 939.8γ D+Q ΔJ=1 to (17/2 ⁺), 2527.2γ D+Q ΔJ=1 to 17/2 ⁺ .
10384.6 6	(19/2 ⁺)		F	J ^π : 3909γ Q ΔJ=2 to 15/2 ⁺ , 2607.8γ D+Q ΔJ=1 to 17/2 ⁺ .
10704 50			Y	XREF: Others: AC XREF: Y(10700). XREF: Others: AC
10864 50				
10884.4 7			F	
10998.0 5	(23/2 ⁻)		F	J ^π : 2969.9γ Q ΔJ=2 to 19/2 ⁻ . XREF: Others: AC
11034 50				XREF: Others: AC
11156 50				
11590.6 13	(19/2 ⁺)		F	E(level): from (²⁸ Si, αpγ). J ^π : 2909γ Q ΔJ=2 to (15/2 ⁺).
11692.4 5	(21/2 ⁺)		F	J ^π : 3914.8γ Q ΔJ=2 to 17/2 ⁺ .
12070.7 5	(23/2 ⁺)		F	J ^π : 1685.9γ Q ΔJ=2 to (19/2 ⁺), 378.3γ D+Q ΔJ=1 to (21/2 ⁺).
12210.3 5	(23/2 ⁻)		F	J ^π : 2301.8γ D+Q ΔJ=1 to (21/2 ⁺), 4181.2γ to 19/2 ⁻ , 1212.3γ to (23/2 ⁻).
12356.7 10			F	
12617.4 14			F	
12895.0 9			F	
13011.1 10			F	
13267.3 5	(25/2)		F	J ^π : 1057.1γ D to (23/2 ⁻), 1196.3γ D+Q ΔJ=1 to (23/2 ⁺).
13506.9 12	(23/2)		F	E(level): from (²⁸ Si, αpγ). J ^π : 3598γ D+Q to (21/2 ⁺).
13777.0 5			F	
14062.2 5	(27/2 ⁺)		F	J ^π : 794.9γ D+Q ΔJ=1 to (25/2), 1991.7γ Q to (23/2 ⁺).
14866.3 11			F	
16140.2 15			F	E(level): from (²⁸ Si, αpγ).
18532.8 13			F	
18612.0 15			F	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{39}K Levels (continued)

[†] From a least-squares fit to γ -ray energies with uncertainties for levels connected by these γ transitions; for other levels, values are from (p, γ):resonances where available up to 9996 level, unless otherwise noted.

[‡] From Doppler-shift attenuation method (DSAM) in (α ,p γ), unless otherwise noted. Selected lifetimes are also measured in (p,p' γ) (DSAM), (^{39}K , $\alpha\gamma$) (DSAM), (^{35}Cl ,d γ) (RDM), (^{18}O ,2np γ) (RDM), (^{18}O , α 2n γ) (RDM), ^{28}Si (^{16}O ,p $\alpha\gamma$) (RDM), (p, γ):resonances (DSAM), (n,n' γ) (DSAM). Deduced half-lives (from widths) are from cross section measurements in $^{39}\text{K}(\gamma,\gamma')$.

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$								Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult.#	$\delta^\#$	
2522.75	1/2 ⁺	2522.4 3	100	0	3/2 ⁺	M1+E2	0.93 +15-12	B(M1)(W.u.)=0.012 3; B(E2)(W.u.)=5.2 +15-12 E _γ : weighted average of 2522.2 3 from ³⁹ Ca ε decay (860.3 ms) and 2522.6 3 from (α,pγ). Others: 2523 1 from (γ,γ'), and 2519 3 from (n,n'γ). δ: deduced by the evaluator from B(E2)↑=0.00205 11 in (e,e') and adopted T _{1/2} =63 fs 6.
2814.17	7/2 ⁻	291.4 @ 2814.06 20	<6 100	2522.75 0	1/2 ⁺ 3/2 ⁺	M2+E3	+0.16 2	E _γ , I _γ : from (p,αγ) only. B(M2)(W.u.)=0.31 +5-4; B(E3)(W.u.)=5.0 +21-16 E _γ : weighted average of 2813.0 7 from (²⁸ Si,αpγ), 2814.24 20 from (¹⁸ O,2npγ), 2813.6 5 from (¹⁶ O,npγ), 2814.0 4 from (α,pγ). Others: 2815 1 from (³⁵ Cl,dγ) and (γ,γ'). Mult.: from γ(θ,pol) in (α,pγ), (¹⁸ O,α2nγ), (¹⁸ O,2npγ) and (²⁸ Si,αpγ) (also γ(DCO)). δ: weighted average of +0.16 2 from (²⁸ Si,αpγ), +0.24 5 from (¹⁸ O,2npγ), +0.14 2 from (α,pγ), +0.19 10 from (p,αγ). Others: 0.27 4 from B(E3)↑ in (e,e') and adopted T _{1/2} , 0.15 from B(E3)↑ in (α,α').
3018.7	3/2 ⁻	205 @ 496 @ 3018.8 4	<14 <6 100	2814.17 2522.75 0	7/2 ⁻ 1/2 ⁺ 3/2 ⁺	E1(+M2)	+0.04 4	E _γ , I _γ : from (p,αγ) only. E _γ , I _γ : from (p,αγ) only. B(E1)(W.u.)=0.0013 +5-4 E _γ : other: 3019 1 from (γ,γ'). Mult.: from γ(θ,pol) in (α,pγ) and γ(θ) in (p,γ):resonances and (p,αγ). δ: weighted average of +0.05 4 from (α,pγ), +0.02 4 from (p,γ):resonances and +0.03 15 from (p,αγ).
3597.41	9/2 ⁻	783.30 11	80.5 18	2814.17	7/2 ⁻	M1+E2	+0.59 2	B(M1)(W.u.)=0.00039 +7-5; B(E2)(W.u.)=0.73 +15-12 E _γ : weighted average of 783 1 from (³⁵ Cl,dγ), 783.22 11 from (²⁸ Si,αpγ), 783.50 15 from (¹⁸ O,2npγ), 783.5 8 from (¹⁶ O,npγ), and 783.2 2 from (α,pγ). I _γ : from (p,p'γ). Others: 81 3 from (α,pγ), 100 3 from (²⁸ Si,αpγ). Mult.: from γ(θ,pol) in (α,pγ), (¹⁸ O,α2nγ), (¹⁸ O,2npγ) and (²⁸ Si,αpγ) (also DCO), γ(θ) in (p,p'γ). δ: weighted average of +0.69 8 from (²⁸ Si,αpγ), +0.58 2 from (α,pγ), and +0.85 35 from (p,p'γ). Other: +1.5 8 from (¹⁸ O,2npγ).
		1075 @	<7	2522.75	1/2 ⁺			E _γ , I _γ : from (p,p'γ) only. This transition is less likely since it requires Mult=M4.
		3597.26 25	100.0 20	0	3/2 ⁺	E3		B(E3)(W.u.)=25 +4-3 E _γ : weighted average of 3598 1 from (³⁵ Cl,dγ), 3597.0 9 from (²⁸ Si,αpγ), 3597.25 25 from (¹⁸ O,2npγ), 3597.0 7 from (¹⁶ O,npγ), and 3597.3 4 from (α,pγ). I _γ : from (p,p'γ). Other: 98 4 from (²⁸ Si,αpγ). Mult.: from γ(θ,pol) in (α,pγ), (¹⁸ O,2npγ) and (²⁸ Si,αpγ), γ(θ) in (p,p'γ) and (n,n'γ).

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. #	$\delta^\#$	Comments
3883.2	5/2 ⁻	286 @ 865 @ 1069 @ 1360 @ 3883.0 10	<2 <2 <2 <2 100	3597.41 3018.7 2814.17 2522.75 0	9/2 ⁻ 3/2 ⁻ 7/2 ⁻ 1/2 ⁺ 3/2 ⁺	E1(+M2)	-0.02 2	E_γ, I_γ : from (p,p' γ) only. E_γ, I_γ : from (p,p' γ) only. E_γ, I_γ : from (p,p' γ) only. E_γ, I_γ : from (p,p' γ) only. B(E1)(W.u.)=0.0013 +5-3 E_γ : other: 3884 1 from (γ, γ'). Mult.: from $\gamma(\theta, \text{pol})$ in ($\alpha, p\gamma$) and $\gamma(\theta)$ in (p, γ):resonances and (p,p' γ). δ : from (p, γ):resonances. Other: -0.06 7 from ($\alpha, p\gamma$). B(M1)(W.u.)=0.0063 +34-22; B(E2)(W.u.)=3.8 +30-19 I_γ : weighted average of 8.9 13 from ($\alpha, p\gamma$) and 8.7 11 from (p,p' γ). B(M1)(W.u.)=0.0019 +24-14; B(E2)(W.u.)=0.6 +5-4 I_γ : from (p,p' γ). B(M1)(W.u.)=0.023 +4-3
3938.9	3/2 ⁺	1416.2 4 3938.3 10	8.8 11 100.0 11	2522.75 0	1/2 ⁺ 3/2 ⁺	M1+E2 M1+E2	+0.61 12 -1.2 +6-15	E_γ : weighted average of 346.7 1 from (²⁸ Si, $\alpha p\gamma$), 346.69 10 from (¹⁸ O,2np γ), 346.6 5 from (¹⁶ O,np γ), and 346.85 12 from ($\alpha, p\gamma$). I_γ : weighted average of 58.3 13 from (²⁸ Si, $\alpha p\gamma$), 59.0 28 from (¹⁶ O,np γ), 53.4 26 from ($\alpha, p\gamma$), and 52 5 from (p,p' γ). Mult.: from $\gamma(\theta, \text{pol})$ in (¹⁸ O, $\alpha, 2n\gamma$), (¹⁸ O,2np γ) and (²⁸ Si, $\alpha p\gamma$) (also DCO), $\gamma(\theta)$ in ($\alpha, p\gamma$). δ : from $\gamma(\theta)$ in ($\alpha, p\gamma$). Others: +0.006 12 from (²⁸ Si, $\alpha p\gamma$), -0.16 2 from (¹⁸ O,2np γ). B(E2)(W.u.)=2.9 +5-4 E_γ : weighted average of 1129.88 11 from (²⁸ Si, $\alpha p\gamma$), 1130.03 12 from (¹⁸ O,2np γ), 1129.9 9 from (¹⁶ O,np γ), and 1129.8 2 from ($\alpha, p\gamma$). I_γ : from ($\alpha, p\gamma$). Mult.: from $\gamma(\theta, \text{pol})$ in ($\alpha, p\gamma$), (¹⁸ O,2np γ), (¹⁸ O, $\alpha 2n\gamma$) and (²⁸ Si, $\alpha p\gamma$) (also DCO). B(M1)(W.u.)=0.12 +10-5; B(E2)(W.u.)<50 I_γ : weighted average of 18.7 21 from ($\alpha, p\gamma$), 18 4 from (p, γ):resonances, and 28 3 from (p,p' γ). B(E1)(W.u.)=0.0015 +11-6 I_γ : weighted average of 29 3 from ($\alpha, p\gamma$), 23 4 from (p, γ):resonances, 36 3 from (p,p' γ). B(E1)(W.u.)=0.00027 +17-9 E_γ : other: 4084 2 from (γ, γ'). I_γ : from (p,p' γ). δ : from (p, γ):resonances. Other: -0.05 7 from ($\alpha, p\gamma$). B(E1)(W.u.)=0.00119 +35-25 I_γ : weighted average of 18.2 13 from ($\alpha, p\gamma$), 21 5 from (p, γ):resonances, and 16.3 23 from (p,p' γ). B(M1)(W.u.)=0.080 +18-13 I_γ : from ($\alpha, p\gamma$).
3944.13	11/2 ⁻	346.73 10 1129.93 11	57.3 13 100.0 26	3597.41 2814.17	9/2 ⁻ 7/2 ⁻	M1(+E2) E2	-0.01 1	
4081.9	3/2 ⁻	1063.1 3 1559.1 4 4082.4 13	21 3 30 4 100 5	3018.7 2522.75 0	3/2 ⁻ 1/2 ⁺ 3/2 ⁺	M1+E2 E1(+M2) E1(+M2)	+0.16 13 -0.02 6 -0.01 2	
4095.6	1/2 ⁺	1077.4 4 1572.5 3	17.9 13 100.0 13	3018.7 2522.75	3/2 ⁻ 1/2 ⁺	[E1] [M1]		

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult.#	$\delta^\#$	Comments
4126.50	7/2 ⁻	1312.2 2	100	2814.17	7/2 ⁻	M1+E2	-0.11 1	B(M1)(W.u.)=0.21 +7-4; B(E2)(W.u.)=4.9 +26-16
4474.3	1/2 ⁻ , 3/2 ⁻	591 @		3883.2	5/2 ⁻			E_γ : from (p,p' γ) only.
		877 @		3597.41	9/2 ⁻			E_γ : from (p,p' γ) only.
		1455.6	34 11	3018.7	3/2 ⁻			E_γ, I_γ : from (p,p' γ). Also observed in ($\alpha, p\gamma$), ($\mu, \nu n\gamma$).
		1660 @		2814.17	7/2 ⁻			E_γ : from (p,p' γ) only.
		1951.5	100 11	2522.75	1/2 ⁺	[E1]		B(E1)(W.u.)=0.00016 +6-4
		4474.0 14	79 11	0	3/2 ⁺			E_γ, I_γ : from (p,p' γ). Also observed in ($\alpha, p\gamma$), ($\mu, \nu n\gamma$), (n,n' γ).
4514.3	5/2 ⁺	4514.0 14	100	0	3/2 ⁺	M1+E2	-1.0 2	I_γ : from (p,p' γ).
4520.41	9/2 ⁻	393.9 2	2.3 6	4126.50	7/2 ⁻	M1(+E2)	+0.04 4	B(M1)(W.u.)=0.006 +6-3; B(E2)(W.u.)=1.0 +9-5
		576.20 13	10.4 8	3944.13	11/2 ⁻	M1(+E2)	+0.05 5	B(M1)(W.u.)=0.08 +6-4
		923.0 2	100 1	3597.41	9/2 ⁻	M1		B(M1)(W.u.)=0.11 +6-3
4678.99	7/2 ⁻	552.44 14	8.1 10	4126.50	7/2 ⁻	M1(+E2)	-0.1 2	B(M1)(W.u.)=0.26 +10-6
		796 @	<10	3883.2	5/2 ⁻			B(M1)(W.u.)=0.09 +8-4
		1082 @	<10	3597.41	9/2 ⁻			E_γ, I_γ : from (p,p' γ) only.
		1660 @	<10	3018.7	3/2 ⁻			E_γ, I_γ : from (p,p' γ) only.
		1864.5 4	100.0 10	2814.17	7/2 ⁻	M1+E2	-0.42 4	E_γ, I_γ : from (p,p' γ) only.
		2156 @	<10	2522.75	1/2 ⁺			B(M1)(W.u.)=0.025 +16-9; B(E2)(W.u.)=4.1 +36-18
		4679 @	<5	0	3/2 ⁺			E_γ, I_γ : from (p,p' γ) only.
4737.7	5/2 ⁻ , 7/2 ⁻ , 9/2 ⁻	1923.5 3	100	2814.17	7/2 ⁻	M1+E2		E_γ, I_γ : from (p,p' γ) only.
4738.2	5/2 ⁺	4737.9 19	100	0	3/2 ⁺	E2(+M1)	<-50	δ : +0.27 9 or +6 2 for J=5/2, -1.2 5 for J=7/2, -0.06 3 for J=9/2
4930.3	3/2 ⁺	848		4081.9	3/2 ⁻			from ($\alpha, p\gamma$).
		2407.4 3	32 3	2522.75	1/2 ⁺	M1+E2	>+0.6	B(M1)(W.u.)>3.8 $\times 10^{-6}$; B(E2)(W.u.)<1.4
		4931.4 12	100 3	0	3/2 ⁺	M1+E2	-1.3 6	E_γ : from (p,p' γ) only.
5009.59	7/2 ⁻	883.08 15	100 7	4126.50	7/2 ⁻	M1(+E2)	-0.04 4	B(M1)(W.u.)<0.013; B(E2)(W.u.)>2.7
		1412.2	30 7	3597.41	9/2 ⁻			B(M1)(W.u.)=0.0025 +58-15; B(E2)(W.u.)=0.6 +8-4
5010.9	(3/2, 5/2 ⁻ , 7/2 ⁻)	1127.7	100 8	3883.2	5/2 ⁻			B(M1)(W.u.)=0.10 +5-3
		1992.2 3	56 8	3018.7	3/2 ⁻			I_γ : from (p,p' γ).
5157		2343		2814.17	7/2 ⁻			I_γ : from (p,p' γ).
5164.22	9/2 ⁻	643.73 15	38.7 18	4520.41	9/2 ⁻	M1(+E2)	-0.02 5	I_γ : from (p,p' γ).
		1037.7 2	42.1 22	4126.50	7/2 ⁻	M1+E2	-0.03 2	E_γ : observed in (p,p' γ) only.
		1220.1 2	100 3	3944.13	11/2 ⁻	M1(+E2)	-0.01 1	B(M1)(W.u.)=0.32 +14-9
5165.7	5/2 ⁻ , 7/2 ⁻ , 9/2 ⁻	2351.5 3	100	2814.17	7/2 ⁻	M1+E2		B(M1)(W.u.)=0.083 +36-22; B(E2)(W.u.)=0.23 +68-21
								B(M1)(W.u.)=0.12 +5-3
5174.1	(1/2, 3/2, 5/2)	5173.7 13	100	0	3/2 ⁺			δ : -0.6 3 for J=5/2; +0.75 15 for J=7/2; +0.38 4 for J=9/2 from
5264.3	5/2 ⁺	5263.8 13	100	0	3/2 ⁺	M1+E2	-0.7 3	($\alpha, p\gamma$).
								B(M1)(W.u.)=0.078 +31-25; B(E2)(W.u.)=5 3
								E_γ : other: 5263 2 from (γ, γ').
								Mult.: D+Q from $\gamma(\theta)$ in ($\alpha, p\gamma$) and polarity from no level-parity
								change determined from L-transfer data.

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. [#]	$\delta^\#$	Comments
5319.6	3/2 ⁺	5319.2 13	100	0	3/2 ⁺	M1,E2		E_γ : other: 5321.2 from (γ,γ') . Mult.: D,Q from $\gamma(\theta)$ in (α,py) and polarity from no level-parity change determined from L-transfer data.
5353.90	11/2 ⁻	1409.77 11	100	3944.13	11/2 ⁻	M1(+E2)	+0.03 7	B(M1)(W.u.)=0.09 +6-3 E_γ : from ($^{28}\text{Si},\alpha\text{py}$). Others: 1409.6 9 from ($^{16}\text{O},\text{npy}$), and 1409.8 6 from (α,py) . Mult.: from $\gamma(\theta,\text{pol})$ in (α,py) and ($^{28}\text{Si},\alpha\text{py}$) (also DCO). δ : from (α,py) . Other: +0.2 2 from ($^{28}\text{Si},\alpha\text{py}$).
5502.26	7/2 ⁻	823.1 2 981.9 3 1905.5 4	100 5 14 6 64 4	4678.99 7/2 ⁻ 4520.41 9/2 ⁻ 3597.41 9/2 ⁻	7/2 ⁻ 9/2 ⁻ 9/2 ⁻	M1(+E2) M1+E2	-0.02 6 -0.26 6	B(M1)(W.u.)=0.56 +89-24 I_γ : other: 16 8 from $(\text{p},\text{p}'\gamma)$. B(M1)(W.u.)=0.027 +46-13; B(E2)(W.u.)=1.7 +48-11 I_γ : other: 62 14 from $(\text{p},\text{p}'\gamma)$. I_γ : other: 92 14 from $(\text{p},\text{p}'\gamma)$. E_γ, I_γ : from $(\text{p},\text{p}'\gamma)$ only.
5599.0	5/2 ⁺	2687.4 7 1472.5 2580@ 2784.7 5598.3 13	23 5 10 4 33 7 100 10	2814.17 7/2 ⁻ 4126.50 7/2 ⁻ 3018.7 3/2 ⁻ 2814.17 7/2 ⁻ 0 3/2 ⁺	7/2 ⁻ 7/2 ⁻ 3/2 ⁻ 7/2 ⁻ 3/2 ⁺	M1+E2	-1.1 9	E_γ : observed in (γ,py') only. E_γ, I_γ : from $(\text{p},\text{p}'\gamma)$ only. B(M1)(W.u.)=0.020 +32-13; B(E2)(W.u.)=2.5 +20-24 E_γ : other: 5600.2 from (γ,γ') . I_γ : from $(\text{p},\text{p}'\gamma)$. Mult.: D+Q from (α,py) and polarity from no level-parity change determined from L-transfer data.
5644.2	7/2 ⁻	906.5 965.2 3 1518	33 13 100 13	4737.7 5/2 ⁻ , 7/2 ⁻ , 9/2 ⁻ 4678.99 7/2 ⁻ 4126.50 7/2 ⁻	5/2 ⁻ , 7/2 ⁻ , 9/2 ⁻ 7/2 ⁻ 7/2 ⁻	M1(+E2)	+0.12 13	B(M1)(W.u.)=0.26 +44-13
5715.5	3/2 ⁺	5715.3 20	100	0	3/2 ⁺			E_γ : discrepant with 5710.2 from $(\text{p},\text{p}'\gamma)$.
5718.18	13/2 ⁻	364.5 4	1.77 20	5353.90	11/2 ⁻	(M1+E2)		E_γ : unweighted average of 364.1 1 from ($^{28}\text{Si},\alpha\text{py}$) and 364.9 2 from (α,py) . E_γ : weighted average of 1.90 20 from ($^{28}\text{Si},\alpha\text{py}$) and 1.63 20 from (α,py) . Mult.: D+Q from $\gamma(\text{DCO})$ in ($^{28}\text{Si},\alpha\text{py}$). B(M1)(W.u.)=0.019 +8-5; B(E2)(W.u.)=1.2 +8-4 E_γ : weighted average of 1773.98 11 from ($^{28}\text{Si},\alpha\text{py}$), 1774.07 12 from ($^{18}\text{O},2\text{npy}$), and 1773.4 10 from ($^{16}\text{O},\text{npy}$).
		1774.02 10	100.0 2	3944.13	11/2 ⁻	M1+E2	-0.25 2	
5788.9	(5/2,7/2) ⁺	5788.4 20	100	0	3/2 ⁺			
5801.5	7/2 ⁻	637.5 3 1280.7 4	82 5 88 6	5164.22 9/2 ⁻ 4520.41 9/2 ⁻	9/2 ⁻ 9/2 ⁻	[M1] [M1]		B(M1)(W.u.)=1.5 +20-7 B(M1)(W.u.)=0.20 +26-9 I_γ : other: 90 13 from $(\text{p},\text{p}'\gamma)$. I_γ : other: 60 13 from $(\text{p},\text{p}'\gamma)$. I_γ : other: 100 13 from $(\text{p},\text{p}'\gamma)$. B(E1)(W.u.)>0.00021
5826.3	1/2 ⁻ , 3/2 ⁻	1675.0 2987.3 7 5825.8	59 13 100 7 100	4126.50 7/2 ⁻ 2814.17 7/2 ⁻ 0 3/2 ⁺	7/2 ⁻ 7/2 ⁻ 3/2 ⁺	[E1]		
5891	(5/2,7/2) ⁻	727 1371 1765	4 3 20 7 17 7	5164.22 9/2 ⁻ 4520.41 9/2 ⁻ 4126.50 7/2 ⁻	9/2 ⁻ 9/2 ⁻ 7/2 ⁻			I_γ : from $(\text{p},\text{p}'\gamma)$. I_γ : from $(\text{p},\text{p}'\gamma)$. I_γ : from $(\text{p},\text{p}'\gamma)$.

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. [#]	$\delta^\#$	Comments
5891 5939.4	(5/2,7/2) ⁻ 5/2 ⁺	3077 5938.8 24	100 10 100	2814.17 0	7/2 ⁻ 3/2 ⁺	M1+E2	-0.6 2	I _γ : from (p,p'γ). B(M1)(W.u.)=0.030 +10-8; B(E2)(W.u.)=1.0 +7-6 Mult.: D+Q from γ(θ) in (α,pγ) and polarity from no level-parity change determined from L-transfer data.
6005.8 6041.0	11/2 ⁻ (1/2 ⁺ to 7/2 ⁺)	2061.6 3 1526.7	100 92 19	3944.13 4514.3	11/2 ⁻ 5/2 ⁺	M1(+E2)	+0.02 4	B(M1)(W.u.)=0.033 +20-9 I _γ : from (p,γ):resonances. I _γ : from (p,γ):resonances.
6054 6093.3 6110.5	5/2 ⁻ ,7/2 ⁻ 1/2 ⁻ ,3/2 ⁻	6040.5 6053 3 3279.0 6 3587.6	100 19 100 100 7	0 0 2814.17 2522.75	3/2 ⁺ 3/2 ⁺ 7/2 ⁻ 1/2 ⁺	[E1]		B(E1)(W.u.)=0.00013 +10-5 I _γ : from (p,p'γ). I _γ : from (p,p'γ).
6186 6192	(1/2 ⁺ to 7/2 ⁺) (7/2 ⁻)	6110.0 922 6186 1672 2248	28 7 100 8 64 8 100 6 27 6	0 5264.3 0 4520.41 3944.13	3/2 ⁺ 5/2 ⁺ 3/2 ⁺ 9/2 ⁻ 11/2 ⁻			
6246 6248.5 6330.7	(1/2 ⁺) 3/2 ⁺	6246 1569.5 3434.2 6 6332 2	100 54 8 100 8 100	0 4678.99 2814.17 0	3/2 ⁺ 7/2 ⁻ 7/2 ⁻ 3/2 ⁺			I _γ : from (p,p'γ). I _γ : from (p,p'γ). E _γ : weighted average of 6331 2 from (α,pγ) and 6332 2 from (γ,γ').
6356 6396	5/2 ⁺	2473 6355 2269 3582	<40 <100	3883.2 0 4126.50 2814.17	5/2 ⁻ 3/2 ⁺ 7/2 ⁻ 7/2 ⁻			I _γ : from (μ-,νnγ). I _γ : from (μ-,νnγ).
6410.6	(1/2 to 7/2 ⁺)	1896 6410 2	8 4 100 4	4514.3 0	5/2 ⁺ 3/2 ⁺			I _γ : from (p,γ):resonances. E _γ : weighted average of 6411 2 from (α,pγ) and 6409 2 from (γ,γ').
6434.28	13/2 ⁺	2490.03 13	100	3944.13	11/2 ⁻	E1(+M2)	+0.02 2	I _γ : from (p,γ):resonances. B(E1)(W.u.)=0.00030 +12-7 E _γ : weighted average of 2490.06 11 from (²⁸ Si,αpγ), 2490.3 4 from (¹⁸ O,2npγ), and 2489.4 4 from (α,pγ). Mult.: from γ(θ,pol) in (α,pγ) and (²⁸ Si,αpγ) (also DCO). E _γ : 6458 2 from (γ,γ'), 6457 2 from (α,pγ).
6458.6 6465 6475.10	(1/2,3/2,5/2) ⁺ 15/2 ⁺	6458 2 750 6465 756.99 11	100	0 5715.5 0 5718.18	3/2 ⁺ 3/2 ⁺ 3/2 ⁺ 13/2 ⁻	E1(+M2)	+0.002 15	B(E1)(W.u.)=0.000161 8 E _γ : weighted average of 756.84 11 from (²⁸ Si,αpγ), 757.19 12 from (¹⁸ O,2npγ), 757.2 8 from (¹⁶ O,npγ), and 756.7 4 from (α,pγ). Mult.: from γ(θ,pol) in (α,pγ), (¹⁸ O,2npγ), (¹⁸ O,α2nγ), and

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. [#]	Comments
							(²⁸ Si, αpy) (also DCO). δ : from (²⁸ Si, αpy). Others: +0.08 19 from (¹⁸ O,2npy), -0.02 2 from (α,py).
6501.6	(3/2,5/2) ⁺	2618		3883.2	5/2 ⁻		
		6501 2		0	3/2 ⁺		E_γ : weighted average of 6502 2 from (α,py) and 6499 2 from (γ,γ').
6529	(1/2 to 7/2 ⁺)	6528 3	100	0	3/2 ⁺		E_γ : weighted average of 6531 2 from (α,py) and 6525 2 from (γ,γ').
6546.4	7/2 ⁻	3732 2	100	2814.17	7/2 ⁻		
6551?		6550 3		0	3/2 ⁺		E_γ : from (γ,γ').
6653.6	3/2 ⁺ ,5/2 ⁺	2179		4474.3	1/2 ⁻ ,3/2 ⁻		
		6653 2		0	3/2 ⁺		
6686.6		6686 2		0	3/2 ⁺		
6740.6	(3/2 ⁺ ,5/2 ⁺)	1567		5174.1	(1/2,3/2,5/2)		
		2002		4738.2	5/2 ⁺		
		2857		3883.2	5/2 ⁻		
		6740 2		0	3/2 ⁺		E_γ : other: 6740 3 from (γ,γ').
6819	3/2 ⁺ ,5/2 ⁺	6818 3		0	3/2 ⁺		E_γ : from (γ,γ').
6828.6		1898		4930.3	3/2 ⁺		
		6828 2		0	3/2 ⁺		
6915.7	3/2 ⁺ ,5/2 ⁺	6915 2	100	0	3/2 ⁺		E_γ : from (γ,γ').
6943	3/2 ⁺ ,5/2 ⁺	6942	100	0	3/2 ⁺		
7021		7020	100	0	3/2 ⁺		
7051	(3/2,5/2) ⁻	4237		2814.17	7/2 ⁻		
		7050		0	3/2 ⁺		
7092.4	(9/2 ⁻ ,13/2 ⁺)	3148.1 4	100	3944.13	11/2 ⁻	D+Q	δ : +0.12 3 for J=9/2, -0.03 3 for J=13/2.
7141.61	15/2 ⁻	1135.8		6005.8	11/2 ⁻		E_γ : observed in (²⁸ Si, αpy) only.
		1423.41 14	12.0 3	5718.18	13/2 ⁻	M1+E2	E_γ, I_γ : from (²⁸ Si, αpy). Other: $E_\gamma=1423.4$ 3 from (¹⁶ O,npy).
							Mult.: D+Q from $\gamma(\text{DCO})$ in (²⁸ Si, αpy), polarity from no level-parity change determined from other experimental evidence.
		1787.69 14	77 3	5353.90	11/2 ⁻	E2	B(E2)(W.u.)=5.5 +26-14 E_γ, I_γ : from (²⁸ Si, αpy). Other: $E_\gamma=1787.7$ 5 from (¹⁸ O, αny).
							Mult.: from $\gamma(\theta,\text{pol})$ and $\gamma(\text{DCO})$ in (²⁸ Si, αpy).
		3197.2 3	100 3	3944.13	11/2 ⁻	E2	B(E2)(W.u.)=0.39 +18-10 E_γ : weighted average of 3197.18 26 from (²⁸ Si, αpy), 3197.3 3 from (¹⁸ O,2npy), 3198 2 from (¹⁶ O,npy), and 3196.9 5 from (α,py).
							Mult.: from $\gamma(\theta,\text{pol})$ in (α,py), (¹⁸ O,2npy), (¹⁸ O, $\alpha 2\text{ny}$), and (²⁸ Si, αpy) (also DCO).
7170	(1/2 to 7/2)	7169	100	0	3/2 ⁺		
7200	(3/2 ⁻ ,5/2,7/2 ⁺)	4386		2814.17	7/2 ⁻		
		7199		0	3/2 ⁺		
7260	(3/2 ⁺)	4446		2814.17	7/2 ⁻		
		7259		0	3/2 ⁺		
7461.5	(3/2 ⁻ ,5/2,7/2 ⁺)	2197	3.1	5264.3	5/2 ⁺		
		2782	1.2	4678.99	7/2 ⁻		
		3522	1.8	3938.9	3/2 ⁺		

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)							
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. #	Comments
7461.5	$(3/2^-, 5/2, 7/2^+)$	3578	1.6	3883.2	$5/2^-$		
		7461	100	0	$3/2^+$		
7535.8	$(1/2, 3/2, 5/2^+)$	1820	5.1	5715.5	$3/2^+$		
		2216	2.0	5319.6	$3/2^+$		
		2362	1.9	5174.1	$(1/2, 3/2, 5/2)$		
		3440	5.3	4095.6	$1/2^+$		
		3454	6.4	4081.9	$3/2^-$		
		3597	3.7	3938.9	$3/2^+$		
		4517	3.2	3018.7	$3/2^-$		
		5013	5.5	2522.75	$1/2^+$		
		7535	100	0	$3/2^+$		
7569.0	$15/2^{(+)}$	1094.3 3	100 4	6475.10	$15/2^+$	D	$E_\gamma, I_\gamma, \text{Mult.}$: from $(^{28}\text{Si}, \alpha p \gamma)$, $\Delta J=0$.
		1850.0 4	69.0 20	5718.18	$13/2^-$	D	E_γ : weighted average of 1849.8 5 from $(^{28}\text{Si}, \alpha p \gamma)$, and 1850.2 4 from $(\alpha, p \gamma)$. I_γ : from $(^{28}\text{Si}, \alpha p \gamma)$. Mult.: from $\gamma(\text{DCO})$ in $(^{28}\text{Si}, \alpha p \gamma)$ and $\gamma(\theta)$ in $(\alpha, p \gamma)$ ($\Delta J=1$).
7588.1	$(3/2^-, 5/2, 7/2^+)$	1113 2	100	6475.10	$15/2^+$		
7602.4		2003	9	5599.0	$5/2^+$		
		2864	23	4738.2	$5/2^+$		
		2865	7	4737.7	$5/2^-, 7/2^-, 9/2^-$		
		3088	52	4514.3	$5/2^+$		
		3476	11	4126.50	$7/2^-$		
		3663	11	3938.9	$3/2^+$		
		4788	14	2814.17	$7/2^-$		
		7602	100	0	$3/2^+$		
7633.3	$(3/2^-, 5/2^+)$	1807	5.0	5826.3	$1/2^-, 3/2^-$		
		2034	4.0	5599.0	$5/2^+$		
		2314	11.5	5319.6	$3/2^+$		
		2369	5.4	5264.3	$5/2^+$		
		3159	6.0	4474.3	$1/2^-, 3/2^-$		
		3551	21	4081.9	$3/2^-$		
		3750	3.8	3883.2	$5/2^-$		
		4614	23	3018.7	$3/2^-$		
		4819	637	2814.17	$7/2^-$		
		5110	6.0	2522.75	$1/2^+$		
	$(3/2^-, 5/2, 7/2^-)$	7631 3	100	0	$3/2^+$		E_γ : from (γ, γ') .
7699.7		2962	11	4737.7	$5/2^-, 7/2^-, 9/2^-$		
		3021	18	4678.99	$7/2^-$		
		3573	59	4126.50	$7/2^-$		
		3816	20	3883.2	$5/2^-$		
		4681	18	3018.7	$3/2^-$		
7714.4	$(5/2^-)$	4885	100	2814.17	$7/2^-$		
		1999	7.2	5715.5	$3/2^+$		

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult. [#]	δ [#]	Comments
7714.4	(5/2 ⁻)	2395	32	5319.6	3/2 ⁺			
		2450	16	5264.3	5/2 ⁺			
		2540	18	5174.1	(1/2,3/2,5/2)			
		2550	12	5164.22	9/2 ⁻			
		2703	5.2	5010.9	(3/2,5/2 ⁻ ,7/2 ⁻)			
		3038	6.9	4678.99	7/2 ⁻			
		3200	76	4514.3	5/2 ⁺			
		3620	29	4095.6	1/2 ⁺			
		3776	9.3	3938.9	3/2 ⁺			
		3831	8.6	3883.2	5/2 ⁻			
		4117	9.0	3597.41	9/2 ⁻			
		4695	14	3018.7	3/2 ⁻			
		7714	100	0	3/2 ⁺			
7738.0	3/2 ⁻	1912	5.2	5826.3	1/2 ⁻ ,3/2 ⁻			
		2139	1.0	5599.0	5/2 ⁺			
		2418	2.1	5319.6	3/2 ⁺			
		2474	2.1	5264.3	5/2 ⁺			
		3264	1.3	4474.3	1/2 ⁻ ,3/2 ⁻			
		3655.9 10	27	4081.9	3/2 ⁻	D(+Q)	+0.06 9	E_γ ,Mult., δ : from (p, γ):resonances.
		3855	2.1	3883.2	5/2 ⁻			
		4718.8 5	100	3018.7	3/2 ⁻	D+Q	-0.16 6	E_γ ,Mult., δ : from (p, γ):resonances. δ : or -1.23 15.
		5215.2 7	33	2522.75	1/2 ⁺	D+Q	-0.08 3	E_γ ,Mult., δ : from (p, γ):resonances.
		7737	33	0	3/2 ⁺	D+Q	-0.08 3	Mult., δ : from (p, γ):resonances.
7755.8	(3/2 ⁻ ,5/2 ⁺)	1929	3.8	5826.3	1/2 ⁻ ,3/2 ⁻			
		1967	4.0	5788.9	(5/2,7/2) ⁺			
		3018	7.7	4737.7	5/2 ⁻ ,7/2 ⁻ ,9/2 ⁻			
		3281	2.3	4474.3	1/2 ⁻ ,3/2 ⁻			
		3674	10.0	4081.9	3/2 ⁻			
		4737	33	3018.7	3/2 ⁻			
		4941	6.2	2814.17	7/2 ⁻			
		5233	100	2522.75	1/2 ⁺			
7773.0	(3/2 ⁻ ,5/2 ⁺)	1732	7.0	6041.0	(1/2 ⁺ to 7/2 ⁺)			
		1834	5.0	5939.4	5/2 ⁺			
		2174	5.9	5599.0	5/2 ⁺			
		2453	14	5319.6	3/2 ⁺			
		3035	3.6	4737.7	5/2 ⁻ ,7/2 ⁻ ,9/2 ⁻			
		3259	14.5	4514.3	5/2 ⁺			
		3646	8.6	4126.50	7/2 ⁻			
		3677	5.9	4095.6	1/2 ⁺			
		3890	21	3883.2	5/2 ⁻			
		5250	43	2522.75	1/2 ⁺			
		7772	100	0	3/2 ⁺			

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. #	$\delta^\#$	Comments
7776.31	17/2 ⁺	635.8 2	3.3 4	7141.61	15/2 ⁻	E1		B(E1)(W.u.)= 4.1×10^{-5} +27-15 E _{γ} , I _{γ} : from (²⁸ Si, α p γ). Additional information 5. Mult.: D from $\gamma(\text{DCO})$ in (²⁸ Si, α p γ), polarity from level-parity change determined from other experimental evidence.
		1301.18 11	83 4	6475.10	15/2 ⁺	M1+E2	-0.9 3	B(M1)(W.u.)= 0.0025 +26-12; B(E2)(W.u.)= 3.9 +40-22 E _{γ} , I _{γ} : from (²⁸ Si, α p γ). Other: E γ =1301.3 6 from (¹⁶ O,np γ), 1300.7 5 from (α ,p γ).
		1341.7 4	100 4	6434.28	13/2 ⁺	E2		Mult., δ : from $\gamma(\theta, \text{pol})$ in (²⁸ Si, α p γ). B(E2)(W.u.)= 8.9 +47-23 E γ : unweighted average of 1341.8 3 from (²⁸ Si, α p γ), 1342.2 2 from (¹⁶ O,np γ), and 1341.0 3 from (α ,p γ). δ : Q from $\gamma(\text{DCO})$ in (²⁸ Si, α p γ); E2 ($\Delta J=2$) or M1+E2 ($\Delta J=0$) from $\gamma(\theta, \text{pol})$ in (α ,p γ).
7784.8	(1/2,3/2,5/2 ⁺)	1958	9	5826.3	1/2 ⁻ ,3/2 ⁻			
		3689	100	4095.6	1/2 ⁺			
		3846	24	3938.9	3/2 ⁺			
		4766	35	3018.7	3/2 ⁻			
		7784	50	0	3/2 ⁺			
7797.4	(3/2 ⁻ ,5/2 ⁺)	2008	3.1	5788.9	(5/2,7/2) ⁺			
		2082	3.6	5715.5	3/2 ⁺			
		2478	3.8	5319.6	3/2 ⁺			
		2786	1.8	5010.9	(3/2,5/2 ⁻ ,7/2 ⁻)			
		3118	1.8	4678.99	7/2 ⁻			
		3277	1.5	4520.41	9/2 ⁻			
		3283	9.8	4514.3	5/2 ⁺			
		3671	12.4	4126.50	7/2 ⁻			
		3715	3.1	4081.9	3/2 ⁻			
		3858	2.2	3938.9	3/2 ⁺			
		4983	35	2814.17	7/2 ⁻			
		5274	3.8	2522.75	1/2 ⁺			
		7797	100	0	3/2 ⁺			
7802.4	(5/2 ⁻)	1256	4.5	6546.4	7/2 ⁻			
		1976	4.5	5826.3	1/2 ⁻ ,3/2 ⁻			
		2483	10	5319.6	3/2 ⁺			
		2638	5.8	5164.22	9/2 ⁻			
		3123	11	4678.99	7/2 ⁻			
		3282	24	4520.41	9/2 ⁻			
		3288	9.4	4514.3	5/2 ⁺			
		3676	45	4126.50	7/2 ⁻			
		3919	17	3883.2	5/2 ⁻			
		4205	25	3597.41	9/2 ⁻			
		4783	8.7	3018.7	3/2 ⁻			

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)							
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult.#	$\delta^\#$
7802.4	$(5/2^-)$	4988	58	2814.17	$7/2^-$		
		7802	100	0	$3/2^+$		
7804.8	$(5/2^-)$	1258	5.2	6546.4	$7/2^-$		
		1978	19	5826.3	$1/2^-, 3/2^-$		
		2485	5.9	5319.6	$3/2^+$		
		2641	9.0	5164.22	$9/2^-$		
		3126	17	4678.99	$7/2^-$		
		3284	30	4520.41	$9/2^-$		
		3290	3.4	4514.3	$5/2^+$		
		3678	33	4126.50	$7/2^-$		
		3921	11	3883.2	$5/2^-$		
		4207	29	3597.41	$9/2^-$		
		4786	100	3018.7	$3/2^-$		
		4990	34	2814.17	$7/2^-$		
		5282	10	2522.75	$1/2^+$		
		7804	38	0	$3/2^+$		
7820.7	$(1/2^-, 3/2, 5/2^+)$	1994	3.6	5826.3	$1/2^-, 3/2^-$		
		3346	16	4474.3	$1/2^-, 3/2^-$		
		3725	8.4	4095.6	$1/2^+$		
		3739	13	4081.9	$3/2^-$		
		3882	≈ 4	3938.9	$3/2^+$		
		3937	≈ 4	3883.2	$5/2^-$		
		7820	100	0	$3/2^+$		
7846.8	$(3/2, 5/2^+)$	3109	37	4738.2	$5/2^+$		
		3109	37	4737.7	$5/2^-, 7/2^-, 9/2^-$		
		3332	38	4514.3	$5/2^+$		
		3372	100	4474.3	$1/2^-, 3/2^-$		
		3751	11	4095.6	$1/2^+$		
		3765	14	4081.9	$3/2^-$		
		3963	50	3883.2	$5/2^-$		
		4828	86	3018.7	$3/2^-$		
		5324	29	2522.75	$1/2^+$		
		7846	45	0	$3/2^+$		
7867.1		1392 2	100	6475.10	$15/2^+$		
7868.2	$5/2^+$	1929	4.9	5939.4	$5/2^+$		
		2269	2.3	5599.0	$5/2^+$		
		2549	1.5	5319.6	$3/2^+$		
		2604	34	5264.3	$5/2^+$	D(+Q)	-0.05 5
		3130	2.1	4738.2	$5/2^+$		
		3131	1.7	4737.7	$5/2^-, 7/2^-, 9/2^-$		
		3189	2.3	4678.99	$7/2^-$		
		3929	13	3938.9	$3/2^+$		
		3985	36	3883.2	$5/2^-$	D(+Q)	-0.04 5

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. [#]	$\delta^\#$	Comments
7868.2	5/2 ⁺	5054	13	2814.17	7/2 ⁻			
		7867	100	0	3/2 ⁺	D+Q	-1.95 8	
7957.9	(1/2,3/2,5/2 ⁺)	2638	15	5319.6	3/2 ⁺			
		4939	7.0	3018.7	3/2 ⁻			
		5435	100	2522.75	1/2 ⁺			
		7957	37	0	3/2 ⁺			
7978.6	(3/2 ⁻ ,5/2)	1432	3.3	6546.4	7/2 ⁻			
		2334	3.1	5644.2	7/2 ⁻			
		2380	3.5	5599.0	5/2 ⁺			
		2476	6.0	5502.26	7/2 ⁻			
		2967	3.8	5010.9	(3/2,5/2 ⁻ ,7/2 ⁻)			
		2969	5.4	5009.59	7/2 ⁻			
		3241	2.7	4737.7	5/2 ⁻ ,7/2 ⁻ ,9/2 ⁻			
		3300	7.9	4678.99	7/2 ⁻			
		3852	3.3	4126.50	7/2 ⁻			
		4095	4.0	3883.2	5/2 ⁻			
		4960	12	3018.7	3/2 ⁻			
		5164	54	2814.17	7/2 ⁻			
		7978 3	100	0	3/2 ⁺			E_γ : from (γ,γ') .
7981.7		5167	56 16	2814.17	7/2 ⁻			
		7981	100 23	0	3/2 ⁺			
7983.4	(3/2,5/2 ⁺)	1454	61	6529	(1/2 to 7/2 ⁺)			
		1573	100	6410.6	(1/2 to 7/2 ⁺)			
		1653	70	6330.7	3/2 ⁺			
		1737	73	6246	(1/2 ⁺)			
		2044	51	5939.4	5/2 ⁺			
		2384	67	5599.0	5/2 ⁺			
		2719	61	5264.3	5/2 ⁺			
		2809	23	5174.1	(1/2,3/2,5/2)			
		3469	51	4514.3	5/2 ⁺			
		4100	34	3883.2	5/2 ⁻			
		4964	19	3018.7	3/2 ⁻			
		7983	50	0	3/2 ⁺			
7992.4	3/2 ⁽⁻⁾	3478 @	16	4514.3	5/2 ⁺			
		3866	3.7	4126.50	7/2 ⁻			
		4109	41	3883.2	5/2 ⁻	D+Q	+0.17 2	
		4973	100	3018.7	3/2 ⁻	D+Q	+0.09 1	δ : or +2.8 10.
		5469	23	2522.75	1/2 ⁺			
		7992	11	0	3/2 ⁺			
8010.1	(15/2 ⁻)	2004		6005.8	11/2 ⁻			
		2656		5353.90	11/2 ⁻			
		4066.1 10	100	3944.13	11/2 ⁻	(Q)		E_γ ,Mult.: from $(^{28}\text{Si},\alpha\gamma\gamma)$.
8018.6?		1544		6475.10	15/2 ⁺			

Adopted Levels, Gammas (continued) $\gamma(^{39}\text{K})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. #	Comments
8028.35	19/2 ⁻	252.10 8	12.5 5	7776.31	17/2 ⁺	E1	B(E1)(W.u.)=0.00030 +38-11 E _γ : weighted average of 252.08 8 from (²⁸ Si,αpγ), 251.9 6 from (¹⁶ O,npγ), and 252.4 3 from (α,pγ). I _γ : from (²⁸ Si,αpγ). Mult.: from γ(θ,pol) and γ(DCO) in (²⁸ Si,αpγ).
		886.64 11	100.0 20	7141.61	15/2 ⁻	E2	B(E2)(W.u.)=8 +9-3 E _γ : weighted average of 886.59 11 from (²⁸ Si,αpγ), 886.8 8 from (¹⁶ O,npγ), 886.81 20 from (¹⁸ O,α2nγ), and 886.5 4 from (α,pγ). I _γ : from (²⁸ Si,αpγ). Mult.: from γ(θ,pol) and γ(DCO) in (²⁸ Si,αpγ).
8031.0	(1/2,3/2,5/2)	1700	7	6330.7	3/2 ⁺		
		3517 @		4514.3	5/2 ⁺		
		5012	15	3018.7	3/2 ⁻		
		8030	100	0	3/2 ⁺		
8034.0	(1/2,3/2,5/2)	1703	2.1	6330.7	3/2 ⁺		
		5015	3.2	3018.7	3/2 ⁻		
		8033	100	0	3/2 ⁺		
8038.5	(3/2 ⁻ ,5/2)	2439	4	5599.0	5/2 ⁺		
		3524 @	15	4514.3	5/2 ⁺		
		3956	15	4081.9	3/2 ⁻		
		4155	7	3883.2	5/2 ⁻		
		5020	50	3018.7	3/2 ⁻		
		5224	24	2814.17	7/2 ⁻		
		8038	100	0	3/2 ⁺		
8079.6	(1/2 ⁻ ,3/2,5/2 ⁺)	910	9	7170	(1/2 to 7/2)		
		2253	14	5826.3	1/2 ⁻ ,3/2 ⁻		
		4196	57	3883.2	5/2 ⁻		
		5061	100	3018.7	3/2 ⁻		
		5556	14	2522.75	1/2 ⁺		
		8079	34	0	3/2 ⁺		
8081.5	(1/2 ⁻ ,3/2,5/2 ⁺)	4198	12	3883.2	5/2 ⁻		
		5062	45	3018.7	3/2 ⁻		
		5558	100	2522.75	1/2 ⁺		
		8081	47	0	3/2 ⁺		
8093.8	3/2 ⁻	1547	14 5	6546.4	7/2 ⁻		
		2000	7.7 18	6093.3	5/2 ⁻ ,7/2 ⁻		
		2203	36 14	5891	(5/2,7/2) ⁻		
		2292	16 3	5801.5	7/2 ⁻		
		2495	10.5 23	5599.0	5/2 ⁺		
		2591	10.9 23	5502.26	7/2 ⁻		
		2774	4.6 23	5319.6	3/2 ⁺		
		2829	4.1 18	5264.3	5/2 ⁺		

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. #	$\delta^\#$	Comments
8093.8	$3/2^-$	3083	27 9	5010.9	(3/2,5/2 ⁻ ,7/2 ⁻)			
		3084	27 9	5009.59	7/2 ⁻			
		3355	7.7 23	4738.2	5/2 ⁺			
		3579	10.0 23	4514.3	5/2 ⁺			
		3619	5.9 23	4474.3	1/2 ⁻ ,3/2 ⁻			
		3967	6.8 23	4126.50	7/2 ⁻			
		3998	10.0 23	4095.6	1/2 ⁺			
		4012	9.6 14	4081.9	3/2 ⁻			
		4155	55 5	3938.9	3/2 ⁺	D(+Q)	+0.07 4	
		4210	27 5	3883.2	5/2 ⁻			
		5075	12 3	3018.7	3/2 ⁻			
		5279	17 4	2814.17	7/2 ⁻			
		5571	27 5	2522.75	1/2 ⁺			
		8093	100 9	0	3/2 ⁺	D+Q	+0.26 3	δ : or +1.80 13.
		8099.2	9/2 ⁺	1907	4 4	6192	(7/2 ⁻)	
				2310	29 4	5788.9	(5/2,7/2) ⁺	
				2455	18 4	5644.2	7/2 ⁻	
				2745	4 4	5353.90	11/2 ⁻	
				2935	32 4	5164.22	9/2 ⁻	
8107.8	$(3/2,5/2^+)$	3361	21 4	4738.2	5/2 ⁺			
		3420	10.0 18	4678.99	7/2 ⁻			
		3579	54 4	4520.41	9/2 ⁻	D+Q	-0.18 5	
		3585	9.6 22	4514.3	5/2 ⁺			
		3973	100 7	4126.50	7/2 ⁻	D+Q	+0.05 2	
		4155	14 4	3944.13	11/2 ⁻			
		4502	21 4	3597.41	9/2 ⁻			
		5285	50 4	2814.17	7/2 ⁻	D(+Q)	+0.01 1	
		2168	37	5939.4	5/2 ⁺			
		2934	11	5174.1	(1/2,3/2,5/2)			
		3177	30	4930.3	3/2 ⁺			
		4026	15	4081.9	3/2 ⁻			
		4169	41	3938.9	3/2 ⁺			
8118.0	$(3/2^-,5/2^+)$	4224	52	3883.2	5/2 ⁻			
		5089	100	3018.7	3/2 ⁻			
		5585	63	2522.75	1/2 ⁺			
		8107	22	0	3/2 ⁺			
		2179	0.7	5939.4	5/2 ⁺			
		2402	2.6	5715.5	3/2 ⁺			
		3439	6	4678.99	7/2 ⁻			
		3604	7	4514.3	5/2 ⁺			
		4235	15	3883.2	5/2 ⁻			
		5099	19	3018.7	3/2 ⁻			
		5303	76	2814.17	7/2 ⁻			

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)						
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Comments
8118.0	$(3/2^-, 5/2^+)$	5595	10	2522.75	$1/2^+$	
		8117	100	0	$3/2^+$	
8138.4	$(3/2^-, 5/2)$	2199	23	5939.4	$5/2^+$	
		2874	27	5264.3	$5/2^+$	
		3127	14	5010.9	$(3/2, 5/2^-, 7/2^-)$	
		3129	14	5009.59	$7/2^-$	
		3208	45	4930.3	$3/2^+$	
		3400	36	4738.2	$5/2^+$	
		3624	55	4514.3	$5/2^+$	
		4056	27	4081.9	$3/2^-$	
		4199	86	3938.9	$3/2^+$	
		5119	100	3018.7	$3/2^-$	
		8138	27	0	$3/2^+$	
8198.3	$(3/2^-, 5/2, 7/2^+)$	4259	15 3	3938.9	$3/2^+$	
		5384	11 3	2814.17	$7/2^-$	
		8197	100 4	0	$3/2^+$	
8252.9	$(1/2 \text{ to } 7/2^+)$	8253 2	100	0	$3/2^+$	E_γ : from (γ, γ') .
8262.4	$(1/2 \text{ to } 7/2^+)$	8262	100	0	$3/2^+$	
8279.7	$(1/2 \text{ to } 7/2^+)$	8279	100	0	$3/2^+$	
8305.0	$(3/2^-, 5/2^+)$	4209	9 3	4095.6	$1/2^+$	
		4366	49 6	3938.9	$3/2^+$	
		4422	21 6	3883.2	$5/2^-$	
		5286	64 9	3018.7	$3/2^-$	
		5490	61 9	2814.17	$7/2^-$	
		8304	100 9	0	$3/2^+$	
8370.2	$(1/2 \text{ to } 7/2^+)$	1895.1 4	100	6475.10	$15/2^+$	
8391.0	$(1/2 \text{ to } 7/2^+)$	8390 2		0	$3/2^+$	E_γ : from (γ, γ') .
8530.6	$(3/2^-, 5/2)$	2932	27	5599.0	$5/2^+$	
		3792	18	4738.2	$5/2^+$	
		4448	15	4081.9	$3/2^-$	
		4647	58	3883.2	$5/2^-$	
		5512	33	3018.7	$3/2^-$	
		5716	52	2814.17	$7/2^-$	
		8530	100	0	$3/2^+$	
8583.8	$(3/2^-, 5/2, 7/2^+)$	2985	6	5599.0	$5/2^+$	
		3319	5	5264.3	$5/2^+$	
		4069	3.4	4514.3	$5/2^+$	
		4457	4	4126.50	$7/2^-$	
		4700	5	3883.2	$5/2^-$	
		5769	20	2814.17	$7/2^-$	
		8583	100	0	$3/2^+$	
8625.0	$(3/2, 5/2, 7/2^+)$	2686	24	5939.4	$5/2^+$	
		3887		4738.2	$5/2^+$	

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (continued)							Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. #	
8625.0	(3/2 ⁻ , 5/2 ⁻ , 7/2 ⁺)	4111	24	4514.3	5/2 ⁺		
		4686	100	3938.9	3/2 ⁺		
		4742	22	3883.2	5/2 ⁻		
		8624	41	0	3/2 ⁺		
8627.1	(3/2 ⁻ , 5/2 ⁻)	2534	7.7	6093.3	5/2 ⁻ , 7/2 ⁻		
		2983	3.5	5644.2	7/2 ⁻		
		3028	39	5599.0	5/2 ⁺		
		3125	4.2	5502.26	7/2 ⁻		
		3948	7.4	4678.99	7/2 ⁻		
		4544	4.8	4081.9	3/2 ⁻		
		4689	13	3938.9	3/2 ⁺		
		4747	100	3883.2	5/2 ⁻		
		5608	97	3018.7	3/2 ⁻		
		5813	26	2814.17	7/2 ⁻		
		8626	22	0	3/2 ⁺		
		1114		7569.0	15/2 ⁽⁺⁾		
		2207.6 6	100	6475.10	15/2 ⁺		
		2130.4 5	100	7141.61	15/2 ⁻	Q	
9272.1	(19/2 ⁻)	2130.4 5	100	7141.61	15/2 ⁻	Q	
9365.0	(17/2 ⁺)	682.3 2	25.0 17	8682.7	(15/2 ⁺)	D+Q	
		2891.2 7	100 3	6475.10	15/2 ⁺	D+Q	
9908.8	(21/2 ⁺)	1880.9 5	100 17	8028.35	19/2 ⁻	D+Q	E_γ : weighted average of 1880.6 5 from ($^{28}\text{Si}, \alpha p \gamma$), ($^{16}\text{O}, \alpha p \gamma$) and 1881.6 7 from ($^{16}\text{O}, n p \gamma$).
		2131.6 14	67 17	7776.31	17/2 ⁺		
10265.5	(19/2 ⁻)	2255.5 6	100 3	8010.1	(15/2 ⁻)	Q	
		3123.5 8	67.7 16	7141.61	15/2 ⁻	Q	
10278.5	(19/2 ⁺)	914		9365.0	(17/2 ⁺)	D+Q	
		2502		7776.31	17/2 ⁺		
		2709		7569.0	15/2 ⁽⁺⁾		
10304.7	(19/2 ⁺)	939.8 2	10.0 10	9365.0	(17/2 ⁺)	D+Q	
		2527.2 6	100 7	7776.31	17/2 ⁺	D+Q	
10384.6	(19/2 ⁺)	2607.8 7	100	7776.31	17/2 ⁺	D+Q	
		3909		6475.10	15/2 ⁺	Q	
10884.4		3315.1 8	100 6	7569.0	15/2 ⁽⁺⁾		
		4409.2 11	67 6	6475.10	15/2 ⁺		
10998.0	(23/2 ⁻)	1726		9272.1	(19/2 ⁻)		
		2969.9 7	100	8028.35	19/2 ⁻	Q	
11590.6	(19/2 ⁺)	2909		8682.7	(15/2 ⁺)	Q	
11692.4	(21/2 ⁺)	3914.8 10	100	7776.31	17/2 ⁺	Q	
12070.7	(23/2 ⁺)	378.3 1	13.6 12	11692.4	(21/2 ⁺)	D+Q	
		1685.9 4	100 3	10384.6	(19/2 ⁺)	Q	
		1766		10304.7	(19/2 ⁺)		
		1792		10278.5	(19/2 ⁺)		
		1212.3 3	37.2 23	10998.0	(23/2 ⁻)		

Adopted Levels, Gammas (continued)

$\gamma(^{39}\text{K})$ (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>	<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>
12210.3	(23/2 ⁻)	2301.8 6	100.0 20	9908.8	(21/2 ⁺)	D+Q	13506.9	(23/2)	3598		9908.8	(21/2 ⁺)	D+Q
		4181.2 10	74.4 23	8028.35	19/2 ⁻		13777.0		2186.3 5	100	11590.6	(19/2 ⁺)	
12356.7		3084.5 8	100	9272.1	(19/2 ⁻)		14062.2	(27/2 ⁺)	794.9 2	84 3	13267.3	(25/2)	D+Q
12617.4		4607.0 12	100	8010.1	(15/2 ⁻)				1991.7 5	100 3	12070.7	(23/2 ⁺)	Q
12895.0		2010.6 5	100	10884.4			14866.3		3868.0 10	100	10998.0	(23/2 ⁻)	
13011.1		2745.5 7	100	10265.5	(19/2 ⁻)		16140.2		3129		13011.1		
13267.3	(25/2)	1057.1 3	41.7 12	12210.3	(23/2 ⁻)	D	18532.8		4470.3 11	100	14062.2	(27/2 ⁺)	
		1196.3 3	100 4	12070.7	(23/2 ⁺)	D+Q	18612.0		3745.5 9	100 5	14866.3		
		2269		10998.0	(23/2 ⁻)				5105.2 13	32 5	13506.9	(23/2)	

† Values with uncertainties are from (α,γ) up to 8370 level and from (²⁸Si, $\alpha\gamma$) above that; and values without uncertainties are from level-energy differences and those transitions are reported in (p, γ):resonances where available up to 8627 level, unless otherwise noted.

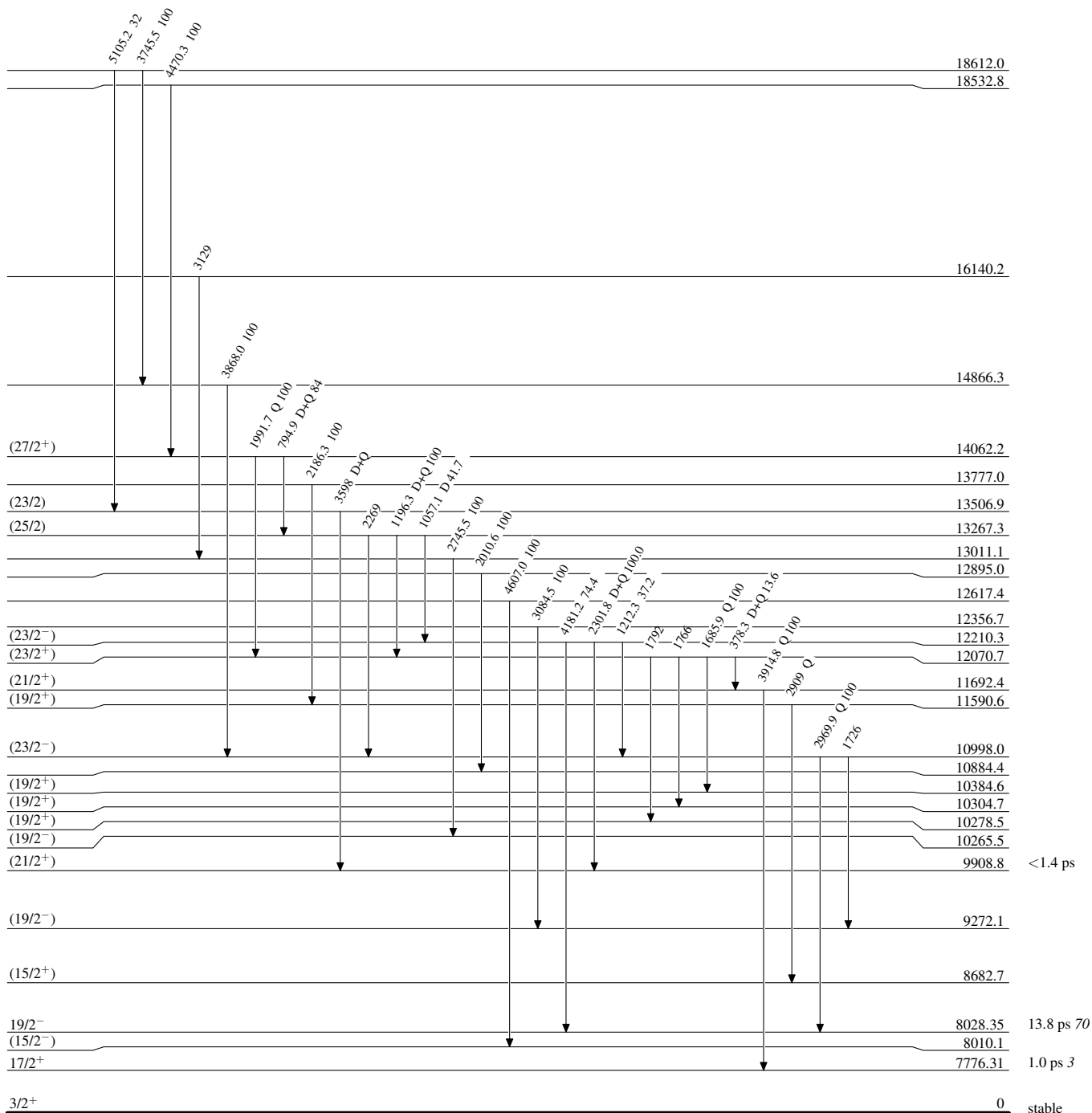
‡ From (α,γ) up to 7092 level, from (p, γ):resonances above 7092 up to 8627 level and from ((²⁸Si, $\alpha\gamma$) above 8627 level, unless otherwise noted.

From $\gamma(\theta,\text{pol})$ data in (α,γ) up to 7141 level and from $\gamma(\theta)$ from (p, γ):resonances or (²⁸Si, $\alpha\gamma$) above that, unless otherwise noted.

@ Placement of transition in the level scheme is uncertain.

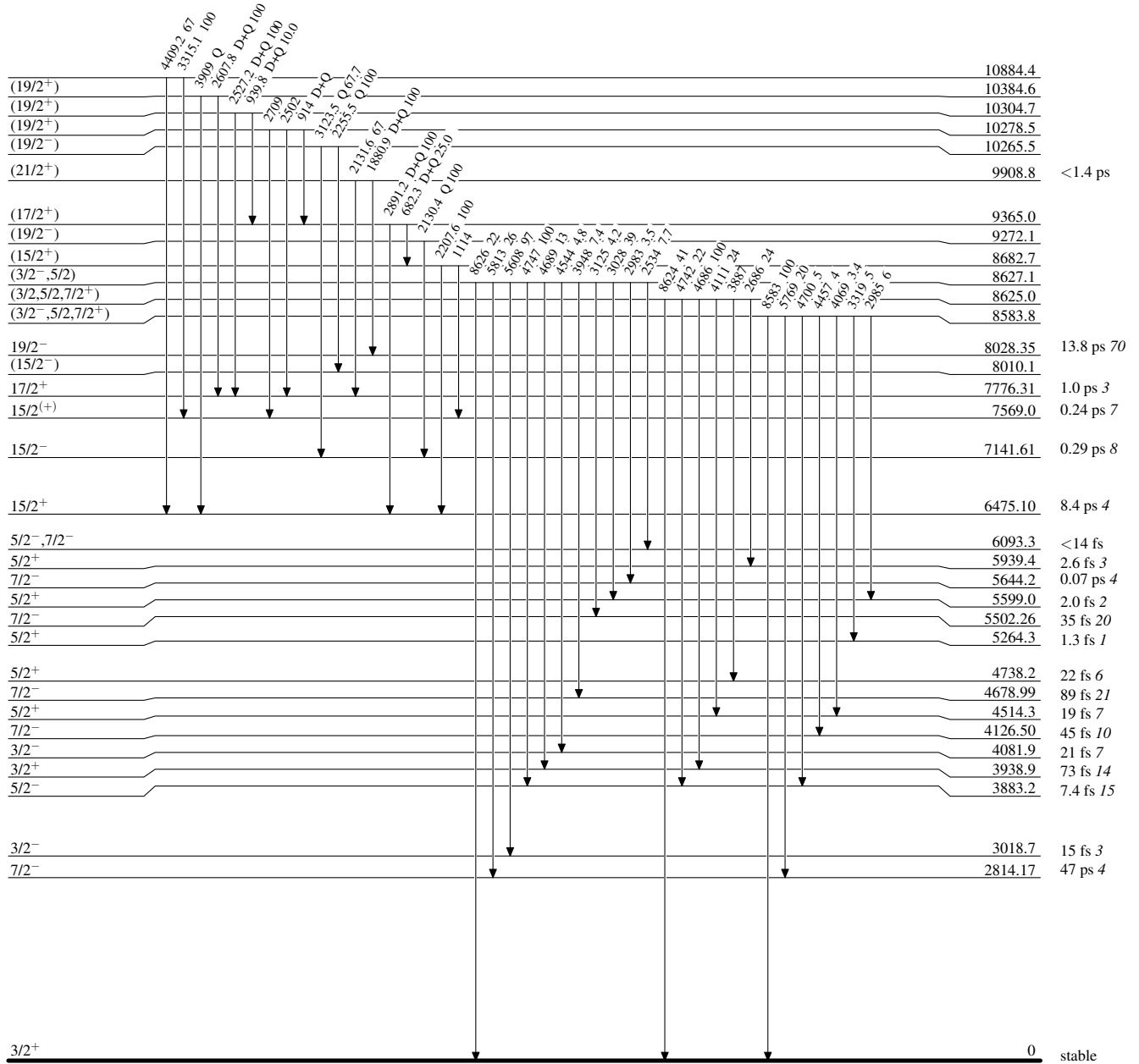
Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level



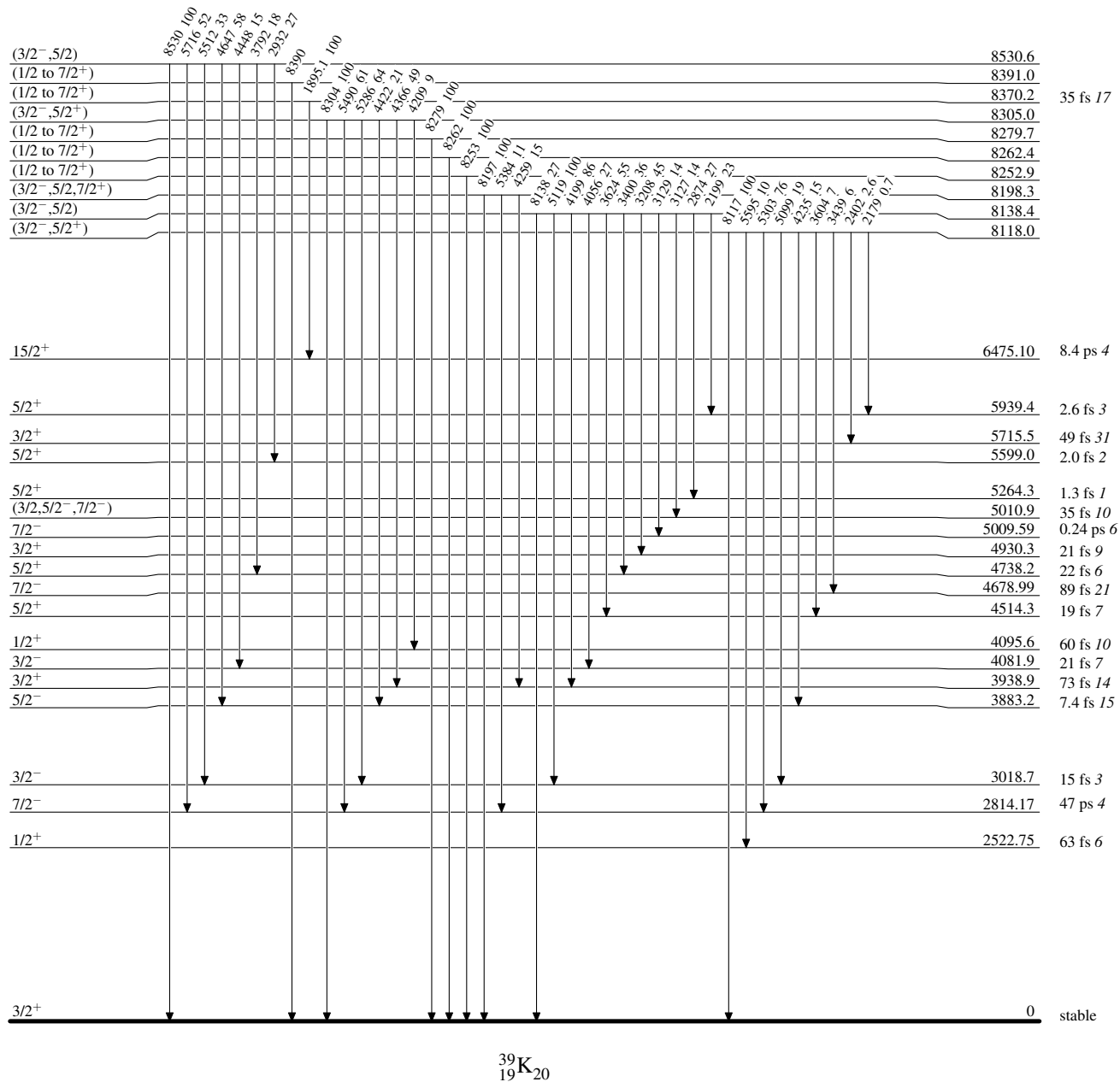
Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level



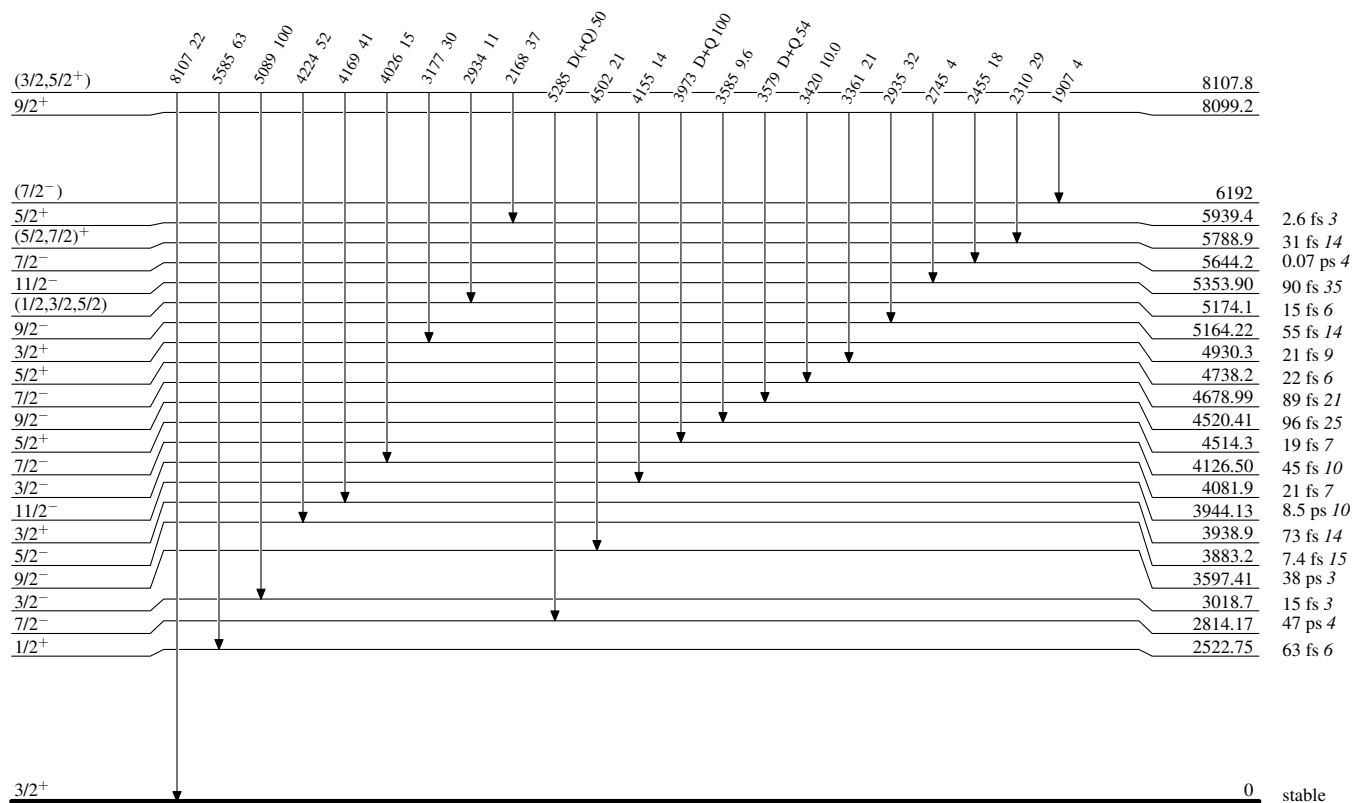
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



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

Intensities: Relative photon branching from each level

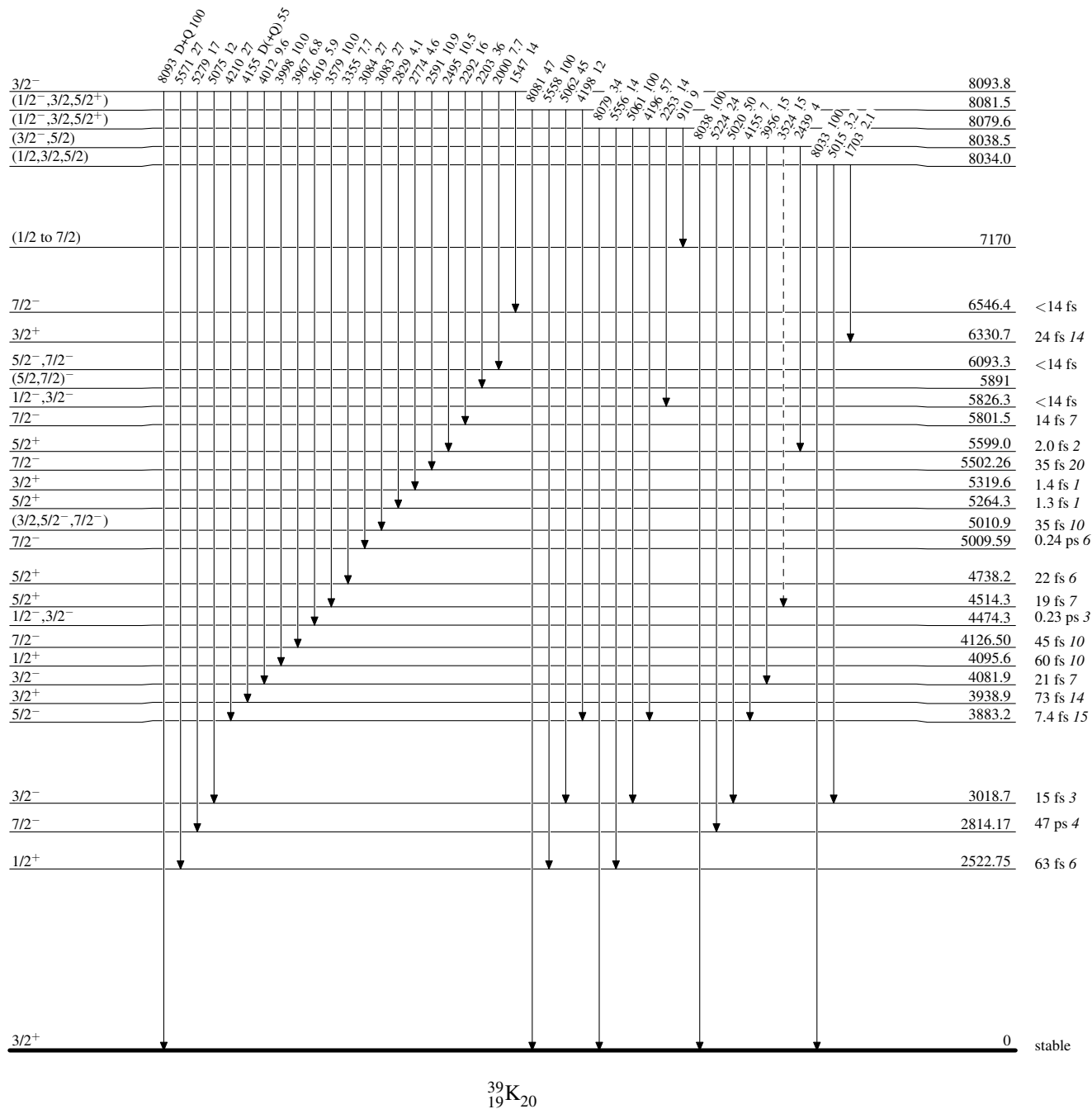
 $^{39}_{19}\text{K}_{20}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

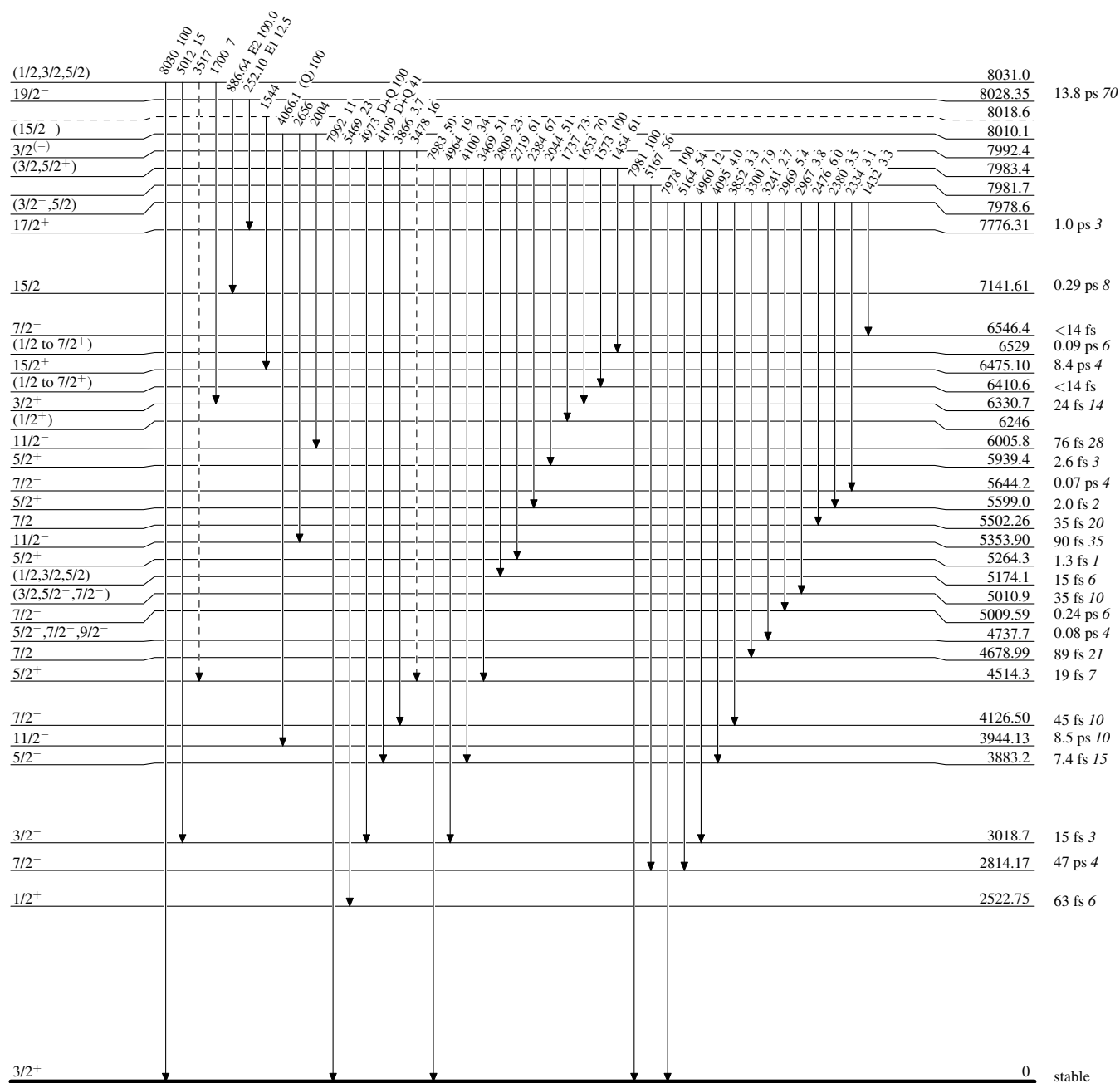
-----► γ Decay (Uncertain)

Adopted Levels, Gammas

Legend

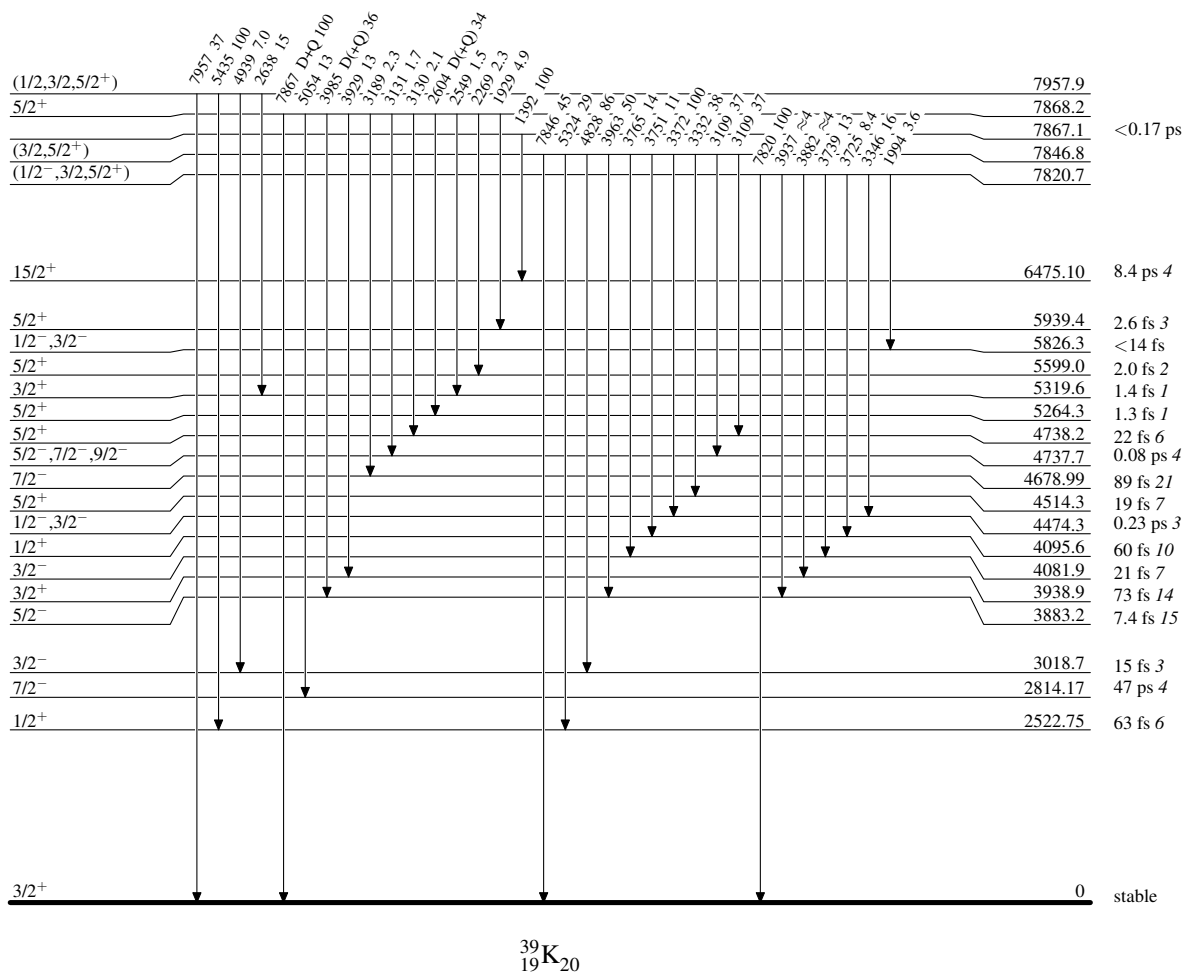
Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

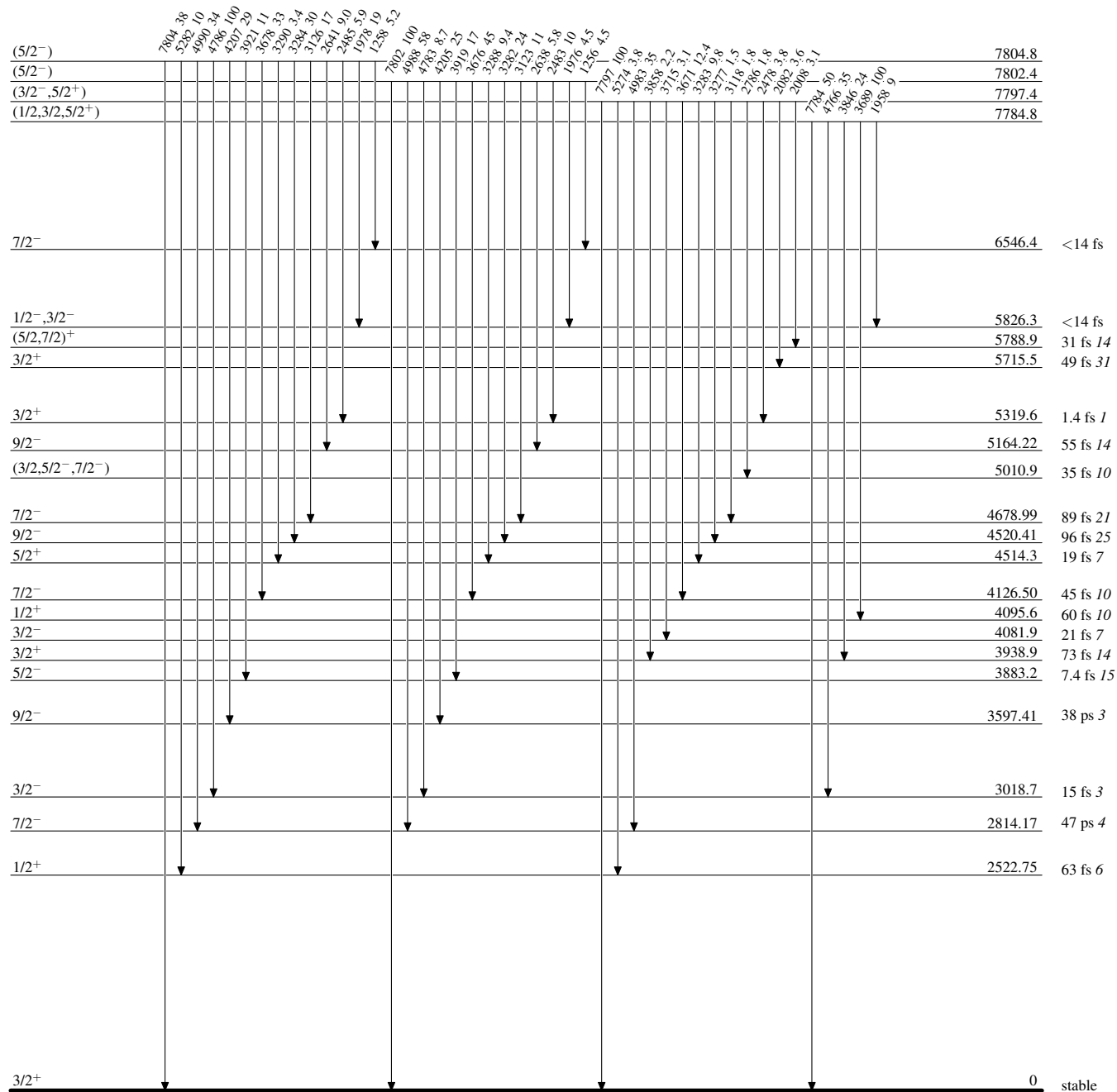
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



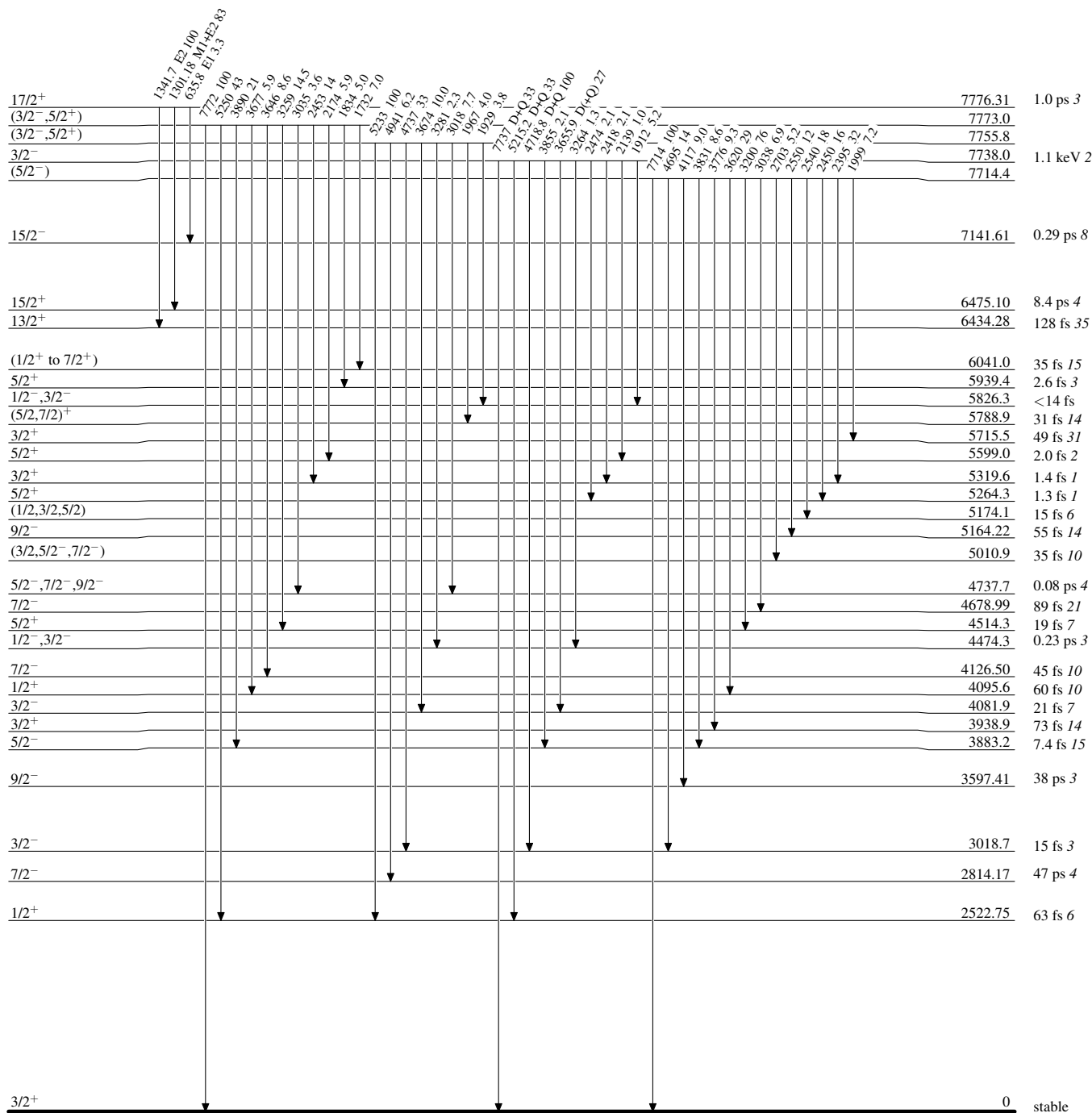
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



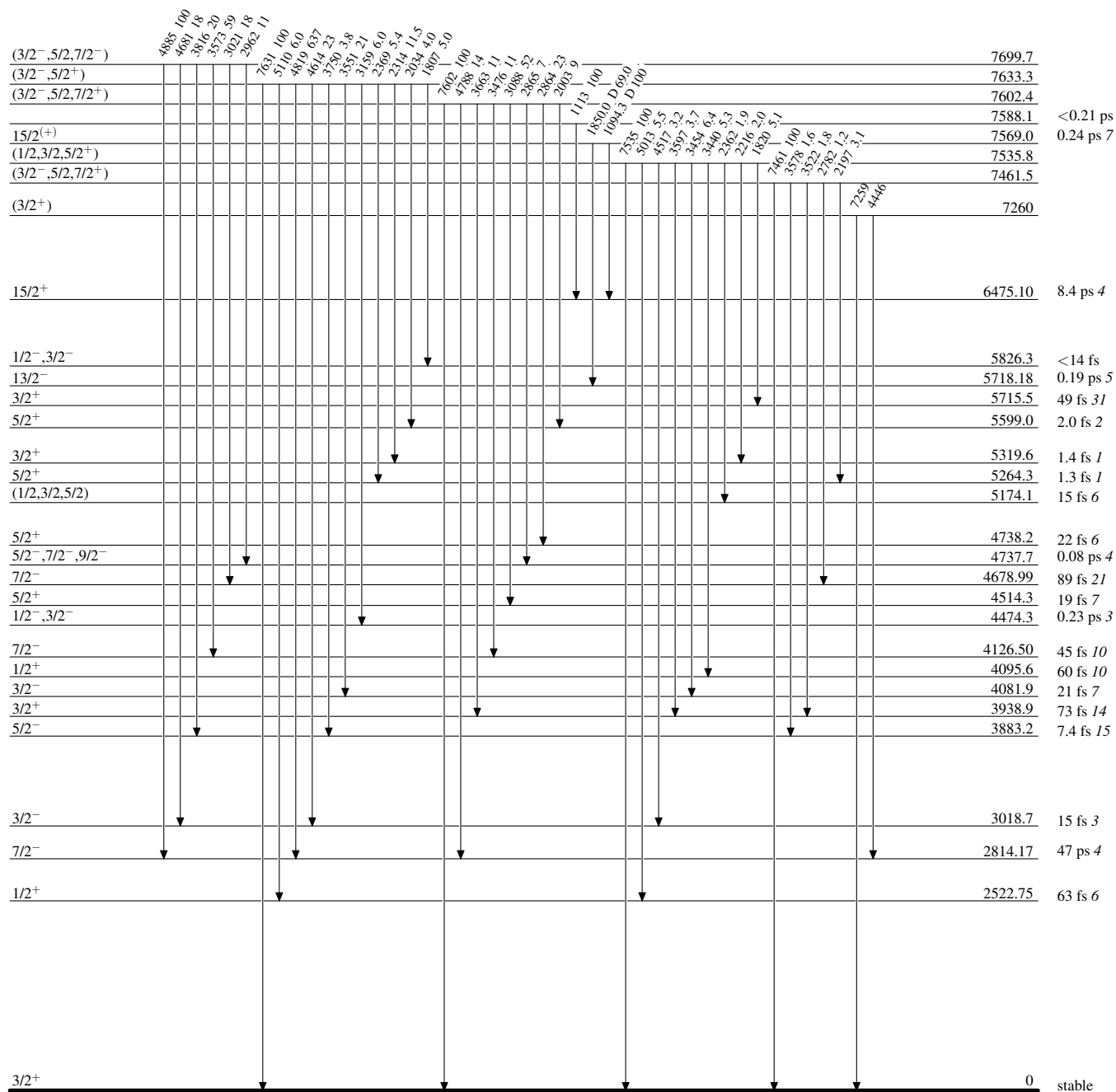
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



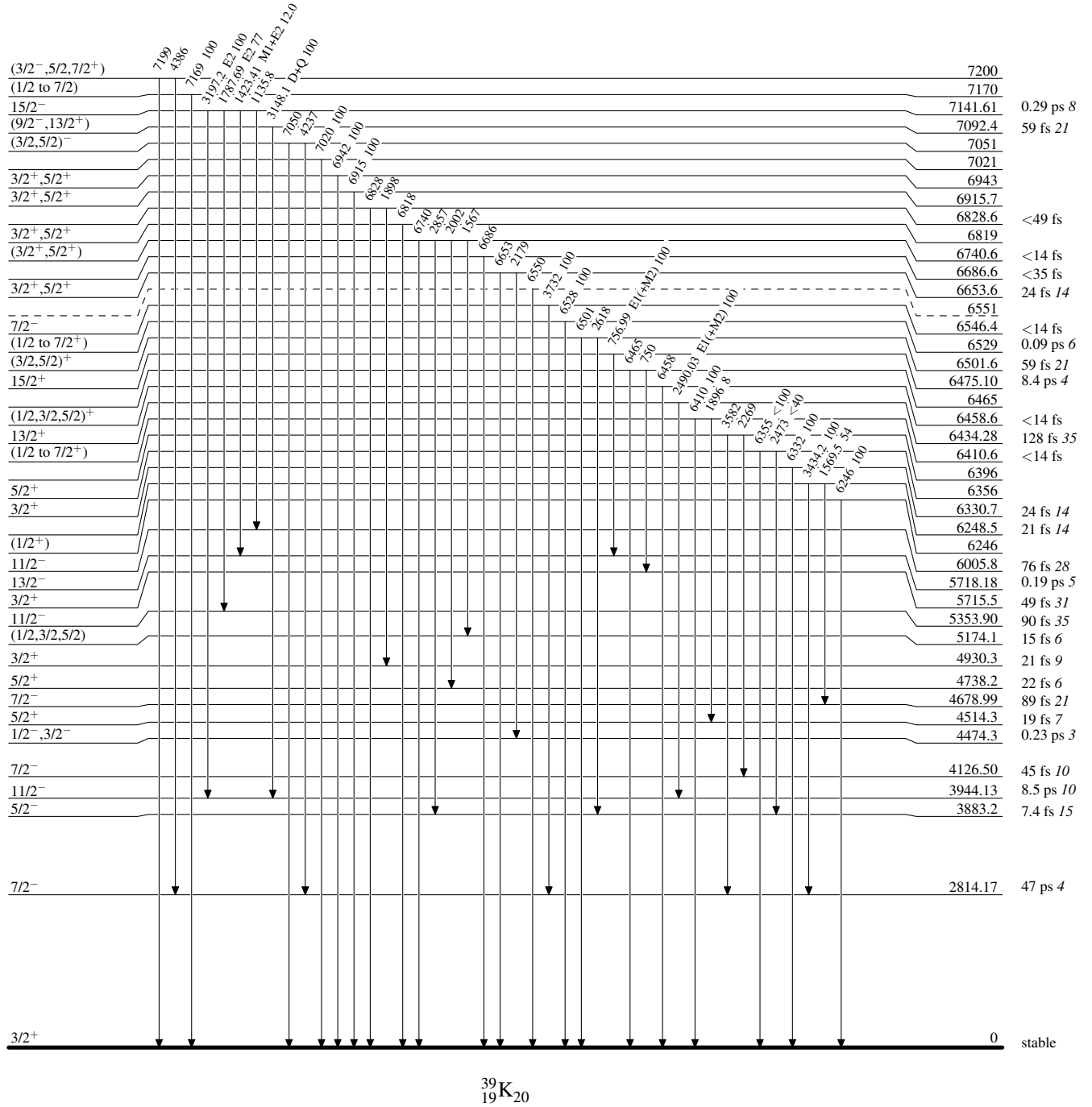
Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level



Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level

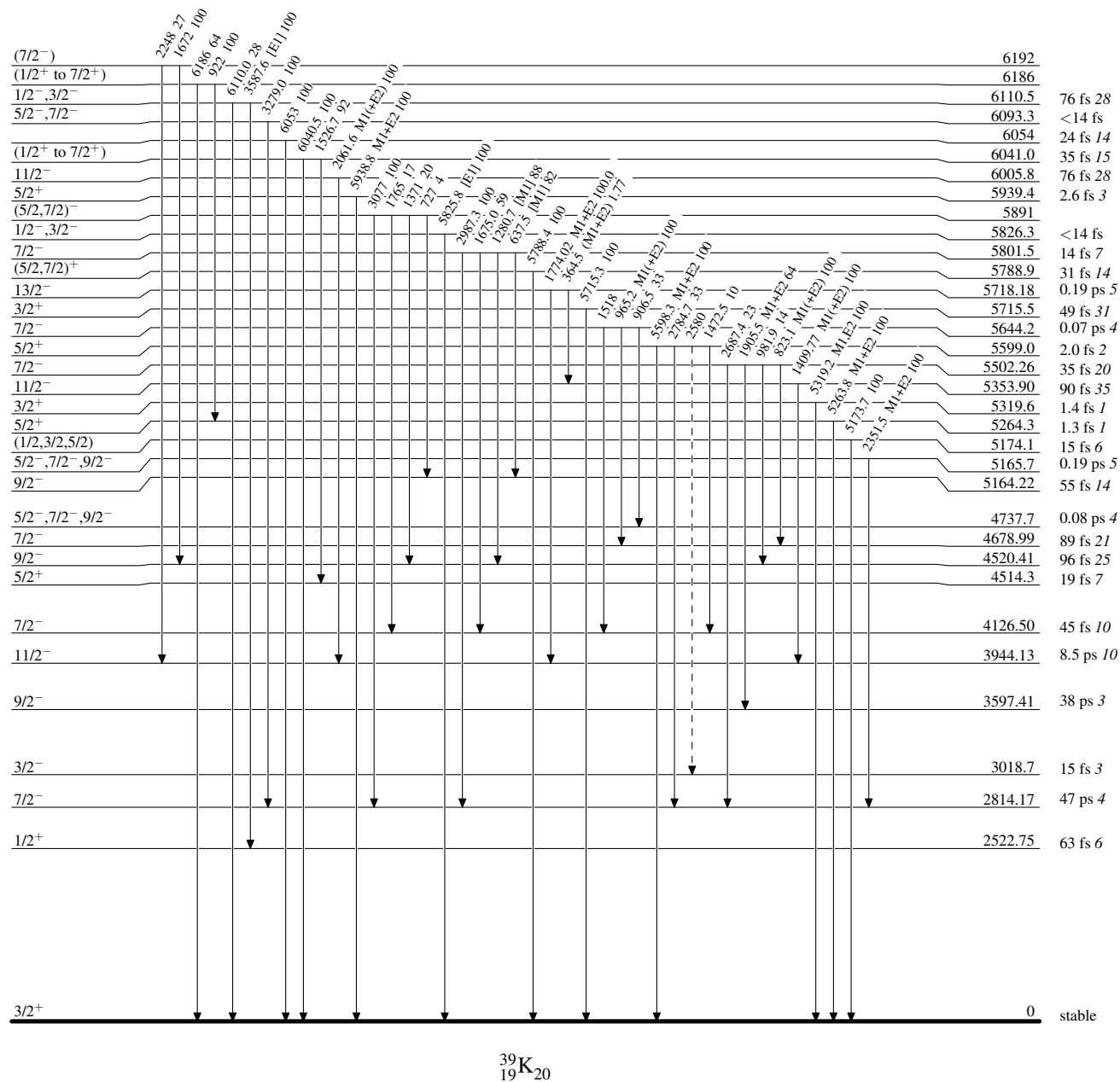


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

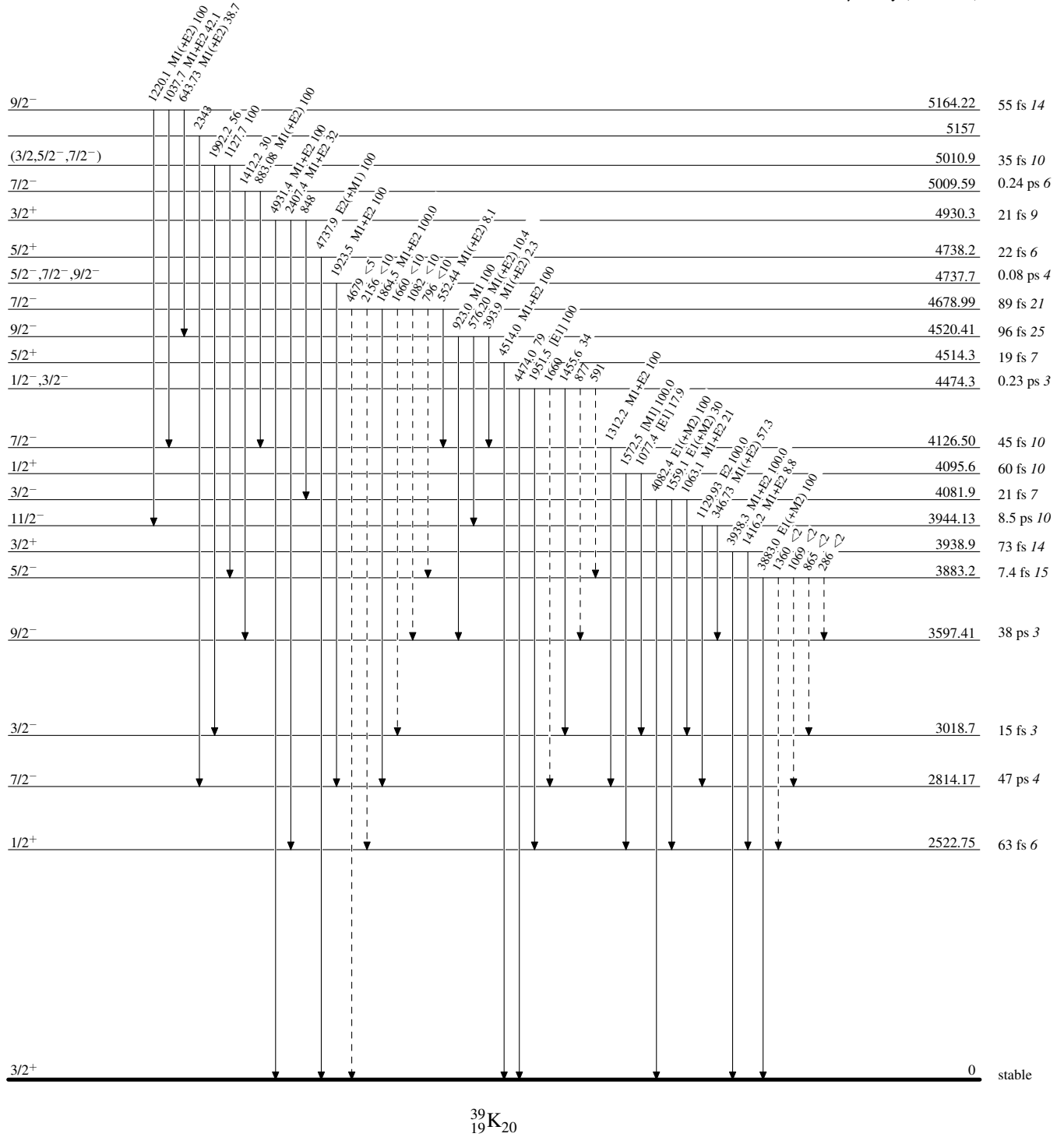
-----► γ Decay (Uncertain)

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

