Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 140,1 (2017)	30-Sep-2015

Q(β^-)=1310.89 *6*; S(n)=7799.62 *6*; S(p)=7582 *5*; Q(α)=−6438.39 *7* 2012Wa38
S(2n)=20877.37 *20*, S(2p)=18315.35 *11* (2012Wa38).
First identification of ^{40}K nuclide by 1935Ni01 with a mass spectrograph (2012Th10).
Additional information 1.
^{40}K(α,α') E=24, 29 MeV: 1972Oe01, measured $\sigma(\theta)$.
^{41}K(^{3}He,α) E=24 MeV: 1973DeWO.
^{41}K(^{3}He,$\alpha\gamma$) E=12.5 MeV: 1977McZQ: measured $\alpha\gamma$ coin, deduced three levels in ^{40}K near 4384 with T=2, IAS.
^{45}Sc(p,^{6}Li) E=45 MeV: 1970BeYK: measured $\sigma(\theta)$ for g.s. and some other unresolved structures which are strongly forward peaked.
Hyperfine structure, isotope-shifts, moments, etc. (measurements): 2014Pa45, 2014Kr04, 1997Si24, 1982Pe14, 1982Du19, 1981Le19, 1976Bo21, 1974Sa24, 1974Br12, 1972Jo09, 1969Jo06, 1968Ne05.

^{40}K Levels

See ^{39}K(n,γ),(n,n): resonances dataset for neutron resonant states in the excitation region: 7800.7 to 7987.8.

Cross Reference (XREF) Flags

A	^{12}C(^{30}Si,npγ)	I	^{40}Ar(p,nγ)	Q	^{40}Ca(^{12}C,^{12}N),(^{13}C,^{13}N)
B	^{26}Mg(^{16}O,npγ),^{27}Al(^{19}F,αpnγ)	J	^{40}Ar(^{3}He,t)	R	^{41}K(n,2n),(n,2nγ)
C	^{37}Cl(α,nγ)	K	^{40}K(γ,γ):Mossbauer	S	^{41}K(p,d)
D	^{38}Ar(α,d)	L	^{40}Ca($\mu^-,\nu\gamma$)	T	^{41}K(d,t)
E	^{39}K(n,γ),(pol n,γ) E=thermal	M	^{40}Ca(n,pγ),(n,p)	U	^{41}Ca(d,^{3}He)
F	^{39}K(d,p)	N	^{40}Ca(pol d,2p),(d,2p)	V	^{42}Ca(p,^{3}He)
G	^{39}K(d,pγ)	O	^{40}Ca(t,^{3}He)	W	^{42}Ca(pol d,α),(d,α)
H	^{40}Ar(p,n)	P	^{40}Ca(^{7}Li,^{7}Be),(^{7}Li,^{7}Beγ)	X	^{39}K(n,γ),(n,n):resonances

E(level)†	J$^\pi$‡	T$_{1/2}$#	XREF	Comments
0	4$^-$	1.248×10^9 y *3*	ABCDEFG IjKLMNOpQRSTUVW	%β^-=89.28 *11*; %ε+%β^+=10.72 *11* μ=−1.298100 *3* (1974Sa24,2014StZZ) Q=−0.061 *5* (1972Jo09,1971St12,2013StZZ) J$^\pi$: spin from fitting of hyperfine structure (2014Pa45,2014Kr04); unnatural parity in (pol d,α); unique 3rd forbidden β decays to 0$^+$ in ^{40}Ar and ^{40}Ca; L(d,p)=L(p,d)=L(d,t)=3. μ: measured using nuclear magnetic resonance method in 1974Sa24. Others: −1.2982 *4* (1952Ei09), 1.291 *5* (1949Da01), with atomic beam magnetic resonance method. Q: measured using quadrupole resonance/optical level crossing in 1972Jo09 and 1971St12. Others: −0.073 *1* (2008Py02,1998Ke05), −0.075 *2* (1993Su36), with both re-evaluated data from 2013StZZ. See data also in 1962Bu10, 1968Ne05. %β^-, %ε+%β^+: deduced from γ/β^- (=I(electron capture to 1460.9 level in ^{40}Ar)/I(β^- to ^{40}Ca g.s.))=0.1195 *14*, and I(β^+)/I(β^-)=1.12×10^{-5} *14* from evaluation of 1973EnVA, and ε/β^+(to ^{40}Ar g.s.)=45.2 *14* (3U theory), with all β^+) decay proceeding to ^{40}Ar ground state.

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Adopted Levels, Gammas (continued)

^{40}K Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
				$T_{1/2}$: from 2004Ko09 and 2002Gr01 from measurements of specific activity of natural potassium salts using liquid-scintillation counting (LSC) technique. (2002Gr01 reported a value of 1.248×10^9 y *2*, later adjusted to 1.248×10^9 y *3* by 2004Ko09 to correct the quoted uncertainty on measured isotopic abundance of ^{40}K). Both papers used natural abundance of ^{40}K as 0.01167% *2* (1975Ga24). The natural abundance of ^{40}K=0.0117% *1* (as recommended in the International Union of Pure and Applied Chemistry 70, 217 (1998), based on the measured value of 1975Ga24) would give about four times larger uncertainty on $T_{1/2}$. The earlier recommended values of 1.265×10^9 y *13* (1999BeZS,1999BeZQ) based on recomputation of 1.277×10^9 y *8* (evaluation by 1973EnVA); and 1.26×10^9 y *1* (evaluation by 1990Ho28 from 14 different measurements out of a total of 34 measurements listed) are in good agreement. Variation of $T_{1/2}$ due to environmental conditions has been studied by 2001No10, where no significant effect has been reported. Earlier (pre-1977) measurements of partial (β^- and ce) and/or total $T_{1/2}$ of ^{40}K: 1977Ce04, 1972Go21, 1966Fe09, 1965Le15, 1965Br25, 1962Fl05, 1961Gl07, 1960Sa31, 1960Eg01, 1959Ke26, 1957We43, 1956Mc20, 1955Ba25, 1955Ko21, 1955Su38, 1953Bu58, 1950Sa52, 1947Gl07. Another 16 references (from 1931 to 1971) are listed by 1990Ho28 and in the 1978 Table of Isotopes (1978LeZA); but are not present in the NSR database. Additional information 2. Evaluated rms charge radius=3.4381 fm *28* (2013An02). $\delta\langle r^2\rangle(^{47}K,^{40}K)=-0.066$ fm^2 *16*(stat) *129*(syst) (2014Kr04) for $\delta\nu(^{39}K,^{40}K)=+125.6$ MHz *3* from literature. Dominant configuration=$\pi 1d_{3/2}^{-1}\otimes\nu(1f_{7/2}$ or $2p_{3/2})$ (2014Pa45) from comparison with shell-model calculations.
29.8299 *5*	3⁻	4.25 ns *6*	BC EFG IjKLMNOpQ STU W	$\mu=-1.29$ *9* (1974Br12,2014StZZ) Jπ: L(t,^{3}He)=L(p,d)=L(d,t)=3, L(d,^{3}He)=2; π=natural in (pol d, α), γ(circ pol) in (n,γ) E=thermal. $T_{1/2}$: weighted average of 4.30 ns *6* from (α,nγ), 4.24 ns *9* from (n,γ) E=thermal, 4.13 ns *12* from (γ,γ) and 3.88 ns *35* from (p,nγ). μ: using TDPAD method (1974Br12). Additional information 3.
800.1431 *19*	2⁻	0.26 ps *5*	CDEFG Ij MNOPQ STU W	Jπ: L(d,^{3}He)=2, L(d,p)=L(p,d)=L(d,t)=1+3; γ(θ,pol) in (p,nγ), γ(circ pol) in (n,γ) thermal; π=unnatural in (pol d,α). $T_{1/2}$: weighted average of 0.28 ps *7* from (α,nγ), 0.40 ps *8* from (d,pγ) and 0.22 ps *4* from (p,nγ). Additional information 4.
891.394 *19*	5⁻	0.83 ps *18*	ABCDEFG Ij LM OpQ STU W	Jπ: L(α,d)=L(t,^{3}He)=5, L(d,p)=L(p,d)=L(d,t)=3, L(d,^{3}He)=2; γ(θ,pol) in ^{26}Mg(^{16}O,npγ). $T_{1/2}$: weighted average of 0.78 ps *18* from (α,nγ), 1.07 ps *23* from (d,pγ) and 0.73 ps *18* from (p,nγ). Other: 2.3 ps *10* from ^{26}Mg(^{16}O,npγ). Additional information 5.

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Adopted Levels, Gammas (continued)

^{40}K Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
1643.638 *11*	0^+	0.336 μs *13*	C EFG IJ LM O R T V	Jπ: L(p,^{3}He)=0; γ(θ) in (p,nγ); anti-analog state. $T_{1/2}$: weighted average of 0.340 μs *7* in (p,nγ) and 0.294 υs *23* in (n,2nγ). Additional information 6.
1959.071 *11*	2^+	0.54 ps *8*	C EFG IJ LM OP T W	Jπ: L(t,^{3}He)=2; γ(θ,pol) in (p,nγ). $T_{1/2}$: weighted average of 0.69 ps *18* from (α,nγ), 0.51 ps *8* from (p,nγ). Other: 0.42 ps *+29−15* from (d,pγ). Additional information 7.
2047.338 *16*	2^-	0.32 ps *5*	C EFG I M o W	Jπ: L(d,p)=1; γ(θ,pol) in (p,nγ) and γ(circ pol) in (n,γ) E=thermal; unnatural parity in (pol d,α). Additional information 8. $T_{1/2}$: weighted average of 0.37 ps *11* from (α,nγ), 0.31 ps *7* from (d,pγ) and 0.32 ps *5* from (p,nγ).
2069.802 *20*	3^-	0.43 ps *12*	CDEFG I LM o U	Jπ: L(d,^{3}He)=0, L(α,d)=3; γ(θ,pol) in (p,nγ) and also γ(circ pol) in (n,γ). $T_{1/2}$: from (α,nγ). Others: 0.26 ps *+15−10* from (d,pγ), 0.73 ps *+26−19* from (p,nγ). Additional information 9.
2103.68 *3*	1^-	0.46 ps *9*	C EFG I LM O	XREF: O(2091). Jπ: L(t,^{3}He)=L(d,p)=1; γ(θ) in (p,nγ) and also γγ(θ) in in (n,γ) E=thermal. $T_{1/2}$: weighted average of 0.53 ps *14* from (α,nγ), 0.36 ps *9* from (d,pγ) and 0.58 ps *12* from (p,nγ).
2260.48 *3*	3^+	65 fs *14*	C EFG I LMnOp T W	Jπ: L(d,t)=2; π=unnatural in (pol d,α); γ(θ,pol) in (p,nγ). $T_{1/2}$: weighted average of 59 fs *17* from (α,nγ) and 69 fs *14* from (p,nγ). Other: 49 fs *+55−29* from (d,pγ). Additional information 10.
2289.868 *11*	1^+	86 fs *19*	C EfGHIJ LMnOp T vw	XREF: H(2333). Jπ: L(t,^{3}He)=0+2; L(d,t)=2(+0); 646.223γ D to 0^+. $T_{1/2}$: weighted average of 76 fs *21* from (α,nγ) and 94 fs *19* from (p,nγ). Other: 0.23 ps *+24−13* from (d,pγ).
2290.551 *22*	3^-	0.15 ps *3*	CDEfG I LMn p vw	Jπ: L(α,d)=3; γ(θ,pol) in (α,nγ). $T_{1/2}$: weighted average of 0.15 ps *3* from (α,nγ) and 0.155 ps *29* from (p,nγ). Other: 0.22 ps *+14−9* from (d,pγ).
2385? *10*	+		T	Jπ: L(d,t)=2.
2397.190 *25*	4^-	35 fs *14*	C EFG I LM O U W	Jπ: L(d,^{3}He)=0; π=unnatural in (pol d,α). $T_{1/2}$: from (α,nγ). Other: <38 fs in (p,nγ).
2419.160 *15*	2^-	0.55 ps *+16−11*	C EFG I LM O W	Jπ: L(d,p)=1; γγ(θ) in (n,γ) E=thermal; γ(θ) in (p,nγ); π=unnatural in (pol d,α). $T_{1/2}$: weighted average of 0.0.46 ps *+30−18* from (α,nγ), and 0.73 ps *16* from (p,nγ), and 0.28 ps *+28−11* from (d,pγ).
2423.7? *8*			E	E(level): this level is proposed in 2013Fi01 in (n,γ) E=thermal only based on the placement of a 2688.1γ from the 5111.9 level. But this level was neither observed in other work nor listed in Table 3 of populated levels in 2013Fi01. The evaluator have considered this level as questionable.
2542.79 *11*	7^+	1.09 ns *7*	ABCD I O W	μ=+4.1 *7* (1976Bo21,2014StZZ) Jπ: γ(θ,pol) in (α,nγ); π=unnatural in (pol d,α). $T_{1/2}$: weighted average of 1.10 ns *7* from (^{16}O,npγ) and 1.05 ns *17* from (α,nγ). μ: using IPAD method (1976Bo21). Other: +4.4 *11* (recoil into gas, 1981Le19).

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Adopted Levels, Gammas (continued)

^{40}K Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
2558.1 *10*			M o t	
2575.93 *3*	2^+	0.155 ps *26*	C EFG I M o t W	Jπ: γ(θ) in (p,nγ); L(d,p)=2. $T_{1/2}$: from (p,nγ). Other: 0.14 ps *+8−5* in (d,pγ), 0.078 ps *25* in (α,nγ).
2626.00 *3*	0^-	0.22 ps *5*	C EFG I LM O W	Jπ: analyzing power in (pol d,α); L(d,p)=1; isotropic γ(θ) in (p,nγ). $T_{1/2}$: from (p,nγ). Other: 0.22 ps *+15−10* in (d,pγ).
2730.357 *19*	1	<28 fs	C E GHIJ L O w	XREF: H(2775). Jπ: spin from γ(θ) in (p,nγ); L(t,^{3}He)=1 for a weak peak at 2724 indicates parity=−, while probable analog of the 10319, 1^+ level in ^{40}Ca according to 1979Gr09 in (e,e′) suggests parity=+. $T_{1/2}$: from (p,nγ). Others: <50 fs in (α,nγ), <83 fs in (d,pγ).
2746.91 *5*	3^-	0.128 ps *31*	C EF I w	Jπ: L(d,p)=1 from $3/2^+$; 789γ to 2^+, 2747.00γ D+Q to 4^-; γ(θ) in (p,nγ). Additional information 11. $T_{1/2}$: weighted average of 0.19 ps *11* in (α,nγ) and 0.123 ps *31* in (p,nγ).
2756.62 *3*	2^+	<21 fs	C E Ij M o w	Jπ: γ(θ) in (p,nγ); J=2^- is ruled out by 1113.3γ to 0^+ and RUL. $T_{1/2}$: from (α,nγ). Other: <24 fs from (p,nγ).
2786.645 *16*	3^+	<38 fs	CDEfg Ij o w	Jπ: γ(θ,pol) in (α,nγ). $T_{1/2}$: from (p,nγ). Other: <0.69 ps from (d,pγ).
2787.32 *21*	3^-,4^-	55 fs *21*	C fg I o U w	XREF: U(2800). Jπ: L(d,^{3}He)=0 from $7/2^-$. $T_{1/2}$: from (α,nγ). Other: <28 fs in (p,nγ).
2807.88 *7*	$(1,2)^-$	0.14 ps *5*	C EFG I LM O W	Jπ: L(d,p)=1 from $3/2^+$; γ(θ) in (p,nγ). $T_{1/2}$: weighted average of 0.10 ps *7* in (α,nγ) and 0.16 ps *5* in (p,nγ).
2878.99 *12*	6^+	0.27 ps *10*	ABC I O	XREF: O(2865). Jπ: γ(θ,pol) in (α,nγ) and (^{16}O,npγ). $T_{1/2}$: from (α,nγ).
2950.9 *6*		35 fs *21*	C F O	XREF: O(2938). $T_{1/2}$: from (α,nγ).
2985.84 *3*	$(2^-,3^+)$	69 fs *28*	C EF O W	XREF: O(3017). Jπ: 1027.09γ to 2^+, 2185.70γ to 2^-, 695.31γ and 2955.94γ to 3^-; π=unnatural in (pol d,α). $T_{1/2}$: from (α,nγ).
3027.976 *23*	$(2^-,3^+)$	<50 fs	C EF O W	XREF: O(3017). Jπ: 1068.87γ to 2^+, and 3027.7γ to 4^-; π=unnatural in (pol d,α). $T_{1/2}$: from (α,nγ).
3100.1 *6*	$(4,5)^+$	69 fs *21*	CDE j o w	XREF: E(?). Jπ: L(α,d)=4; 2208.7γ to 5^-. $T_{1/2}$: from (α,nγ).
3109.56 *4*	1^+,2^+	<97 fs	EFG j o w	Jπ: L(d,p)=0 from $3/2^+$. $T_{1/2}$: from (d,pγ).
3128.41 *3*	$(2^-,3^+)$	<21 fs	C EF O W	XREF: O(3120). Jπ: 838.8γ to 1^+, 3128.06γ to 4^-; RUL for γ to 1^+. $T_{1/2}$: from (α,nγ).
3146.50 *5*	$1^{(-)}$		C EF HI w	XREF: H(3204). Jπ: γ(θ) in (p,nγ); L(d,p)=(1) from $3/2^+$.
3153.82 *7*	$(2^-,3)$	<21 fs	C E w	Jπ: 3153.5γ to 4^- and 397.28γ to 2^+; 1100.13γ from $(1,2)^-$.

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Adopted Levels, Gammas (continued)

^{40}K Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
				$T_{1/2}$: from (α,nγ).
3228.62 *5*	2^-	28 fs *22*	C EFG L O u W	XREF: O(3216)W(3236). Jπ: L(t,^{3}He)=1+3 from 0^+; π=unnatural in (pol d,α)). $T_{1/2}$: from (d,pγ).
3293 *10*	UNNATURAL		O u W	XREF: O(3272). Jπ: L(t,^{3}He)=(0+2); π=unnatural, $J^\pi \neq 0^-$ in (pol d,α).
3353.46 *22*	(6^+)		A o	Jπ: tentative assignment in (^{30}Si,npγ).
3367.94 *10*	$(2,3)^-$		EFG o W	Jπ: L(d,p)=1 from $3/2^+$; 3368.0γ to 4^-.
3393.65 *5*	2^-		EF o W	Jπ: L(d,p)=1 from $3/2^+$; π=unnatural, $J^\pi \neq 0^-$ in (pol d,α).
3414.34 *3*	2^+		EF o W	Jπ: L(d,p)=0+2 from $3/2^+$; 3384.66γ to 3^-.
3439.18 *3*	(2^+)		E j o	Jπ: 1795.45γ to 0^+; J=2^+ favored by γγ(θ) and γ(circ pol) in (n,γ).
3448 *10*	$(3,5)^+$		D j o W	XREF: D(3445). E(level): from (pol d,α). Other: 3445 *50* from (α,d). Jπ: L(α,d)=4 from 0^+; π=unnatural in (pol d,α).
3486.09 *4*	2^-		EF o W	Jπ: L(d,p)=1 from $3/2^+$; π=unnatural, $J^\pi \neq 0^-$ in (pol d,α).
3517 *15*			H O	XREF: H(3503).
3557.41 *8*	$(1^-,2^+,3^-,4^+)$		E W	XREF: W(3568). Jπ: 3526.99γ to 3^- and 981.03γ to 2^+; $J^\pi=1^-,2^+,3^-,4^+$ preferred from π=(natural) in (pol d,α).
3599.20 *3*	2^-		EF o w	Jπ: L(d,p)=1 from $3/2^+$; 1201.86γ to 4^-, 1308.9γ to 1^+.
3629.97 *4*	$2^-,3^-$	<69 fs	EFG o w	Jπ: L(d,p)=1 from $3/2^+$; $J^\pi=0^-,1^-$ ruled out by RUL for 1232.74γ and 3629.94γ to 4^-. Additional information 12.
3663.88 *4*	$(1^-,2,3,4^+)$		EF O W	$T_{1/2}$: from (d,pγ). XREF: O(3653)W(3682). Jπ: 1373.227γ and 3633.88γ to 3^-, 249.54γ and 1704.73γ to 2^+. Additional information 13.
3712.98 *9*	$(2)^-$		EF j o W	XREF: F(3719). Jπ: L(d,p)=1 from $3/2^+$; 1452.39γ to 3^+, π=(unnatural) in (pol d,α).
3738.49 *3*	1^+		dEF j o W	Jπ: 1478.01γ to 3^+, 2094.61γ to 0^+; π=unnatural in (pol d,α). L(α,d)=4 from 0^+ is inconsistent.
3768.4 *3*	$(2)^-$		dEF o W	Jπ: L(d,p)=1 from $3/2^+$; $J^\pi=2^-$ preferred from π=(unnatural) in (pol d,α)).
3797.48 *3*	1^+		EF o W	XREF: F(3791). Jπ: 2153.81γ to 0^+, 1536.84γ to 3^+; L(d,p)=0,1 from $3/2^+$; π=unnatural in (pol d,α).
3821.45 *4*	2^-		EF W	Jπ: L(d,p)=1 from $3/2^+$; π=unnatural in (pol d,α); 1424.229γ and 3822.17γ to 4^-.
3840.27 *3*	$(1,2^+)$		EF H J o	XREF: H(3870). Jπ: 2196.61γ to 0^+.
3868.65 *5*	2^-		EFG L o W	Jπ: L(d,p)=1 from $3/2^+$; π=unnatural in (pol d,α); 3868.3γ to 4^-, 1765.24γ to 1^-, 1578.97γ to 1^+.
3872.33 *20*	(7^+)		A	Jπ: tentative assignment in (^{30}Si,npγ).
3887.81 *4*	$(1^-,2^-)$		dEF L o w	Jπ: 1262.1γ to 0^-, 3857.97γ to 3^-.
3898 *8*			d F o w	E(level): from (d,p).
3924.07 *7*	$(2^-,3^+)$		dEF L W	Jπ: 3895.7γ to 3^-, 1634.26γ to 1^+; π=(unnatural)

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Adopted Levels, Gammas (continued)

^{40}K Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
				in (pol d,α).
3996 *10*	UNNATURAL		O W	E(level): from (pol d,α). 3995 *15* from t,^{3}He). Jπ: π=unnatural, $J^\pi \neq 0^-$ in (pol d,α).
4020.39 *4*	(2)$^-$		EF o W	XREF: W(4033). Jπ: L(d,p)=1 from 3/2$^+$; $J^\pi=2^-$ preferred from π=(unnatural) in (pol d,α).
4080 *5*			F o W	XREF: W(4071). E(level): from (d,p), 4071 *10* from (pol d,α).
4104.49 *4*	(1$^-$,2,3$^-$)		Ef o w	Jπ: 2001.24γ to 1$^-$, 1813.94γ to 3$^-$. $J^\pi=2^-$ preferred from π=unnatural in (pol d,α) for a level at 4118 *10* if it is the same level.
4110.79 *3*	2		Ef w	Jπ: 2467.31γ to 0$^+$, 4110.39γ to 4$^-$. $J^\pi=2^-$ preferred from π=unnatural in (pol d,α) for a level at 4118 *10* if it is the same level.
4149.04 *4*	(2$^-$,3$^+$)		E W	XREF: W(4154). Jπ: 1751.76γ and 4148.4γ to 4$^-$, 3348.91γ to 2$^-$; primary 3650.34γ from 1$^+$,2$^+$; π=(unnatural) in (pol d,α).
4180.15 *4*	(3$^-$)		E o W	Jπ: 3286.4γ to 5$^-$, 951.16γ to 2$^-$, 2221.27γ to 2$^+$.
4213.08 *7*	(2$^-$,3$^+$)		EF o W	Jπ: 2143.37γ to 3$^-$; primary 3586.53γ from 1$^+$,2$^+$; π=unnatural in (pol d,α).
4251.70 *15*	(1,2$^-$)		E o w	Jπ: 1625.67γ to 0$^-$. $J^\pi=1^+,2^-$ preferred from π=(unnatural) in (pol d,α) for a level at 4255 *10* if it is the same level.
4253.70 *4*	(1,2)$^-$		EF o w	Jπ: L(d,p)=1; 2149.93γ to 1$^-$, 2183.70γ and 4223.66γ to 3$^-$; $J^\pi=(1,2)^-$ from γ(circ pol) in (n,γ) E=thermal. $J^\pi=2^-$ preferred from π=(unnatural) in (pol d,α) for a level at 4255 *10* if it is the same level.
4280.42 *17*	2$^-$		E O	XREF: O(4277). Jπ: L(t,^{3}He)=1+3 from 0$^+$; 4280.35γ to 4$^-$, 2233.0γ and 3480.6γ to 2$^-$, 1704.70γ to 2$^+$.
4313.94 *11*	2$^-$		EF W	XREF: F(4298)W(4310). Jπ: L(d,p)=1 from 3/2$^+$; π=unnatural, $J^\pi \neq 0^-$ in (pol d,α). Additional information 14.
4350.47 *18*	(2$^-$)		EF O W	XREF: O(4335)W(4362). Jπ: 2246.3γ to 1$^-$, 4319.6γ to 3$^-$; π=unnatural in (pol d,α).
4365.77 *18*	8$^+$	0.36 ps *14*	AB	Jπ: 1486.7γ stretched E2 to 6$^+$, 1822.9γ to 7$^+$. $T_{1/2}$: from (^{16}O,npγ). The uncertainty may be larger since the lifetime is comparable to the stopping time in the tantalum stopper (1991Ja11).
4383.7 *7*	0$^+$		IJ O V	T=2 Jπ: L(^{3}He,t)=L(p,^{3}He)=0 from 0$^+$; γγ(θ) in (p,nγ). T: from (p,nγ).
4395.88 *3*	(2)$^-$		EF H W	XREF: H(4421). Jπ: L(d,p)=1 from 3/2$^+$; 657.39γ to 1$^+$; $J^\pi=2^-$ preferred from π=(unnatural) in (pol d,α).
4419.37 *7*	(2$^-$,3,4$^+$)		E	Jπ: 2022.32 γ to 4$^-$, 1843.33γ to 2$^+$; primary 3380.3γ from 1$^+$,2$^+$.
4463.61 *6*	(1$^-$,2,3,4$^-$)		Ef o w	Jπ: 2416.06γ and 3663.32γ to 2$^-$, 2393.84γ to 3$^-$. $J^\pi=(1^-,2^-,3^-)$ preferred from L(d,p)=1 from 3/2$^+$ for a level at 4466 *5* if it is the same level.
4473.08 *9*	(2$^-$,3,4$^-$)		Ef o w	Jπ: 4472.80γ to 4$^-$, 1079.44γ to 2$^-$. $J^\pi=(2^-,3^-)$

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Adopted Levels, Gammas (continued)

^{40}K Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
				preferred from L(d,p)=1 from $3/2^+$ for a level at 4466 *5* if it is the same level.
4508 *15*			O	
4537.07 *4*	$(1^-,2,3)$		Ef L o w	Jπ: 1961.11γ and 2577.63γ to 2^+, 3737.01γ to 2^-, 4506.96γ to 3^-. $J^\pi=2^-$ preferred from L(d,p)=1 from $3/2^+$ for a level at 4544 *5* and π=unnatural for a level at 4535 *10* in (pol d,α) if they are the same level.
4544.13 *6*	$(0^-$ to $4^-)$		Ef o w	Jπ: 1058.03γ and 3743.2γ to 2^-. $J^\pi=2^-$ preferred from L(d,p)=1 from $3/2^+$ for a level at 4544 *5* and π=unnatural for a level at 4535 *10* in (pol d,α) if they are the same level.
4589 *5*	(2^-)		F W	E(level): from (d,p), 4590 *10* from (pol d,α). Jπ: L(d,p)=1; π=unnatural, $J^\pi\neq0^-$ in (pol d,α).
4662.4 *3*	$(2^-$ to $6^-)$		Ef w	Jπ: 4662.1γ to 4^-. $J^\pi=2^-$ preferred from L(d,p)=1 from $3/2^+$ for a level at 4662 *5* and π=unnatural for a level at 4663 *10* in (pol d,α).
4666.49 *6*	$(2^-$ to $5^-)$		Ef w	Jπ: 4667.0γ to 4^-, 2375.85γ to 3^-. $J^\pi=2^-$ preferred from L(d,p)=1 from $3/2^+$ for a level at 4662 *5* and π=unnatural for a level at 4663 *10* in (pol d,α).
4697 *10*	UNNATURAL		W	Jπ: π=unnatural in (pol d,α).
4744.14 *3*	(2^+)		E W	Jπ: 3100.42γ to 0^+, 2483.8γ to 3^+, 563.86γ to (3^-).
4765 *5*	$(1)^+$		F H W	E(level): from (d,p). Others: 4763 *30* from (p,n), 4762 *10* from (pol d,α). Jπ: L(d,p)=0 from $3/2^+$; $J^\pi=1^+$ preferred from π=unnatural in (pol d,α).
4788.92 *10*	2^-		EF O W	Jπ: L(d,p)=1; 2162.16γ to 0^-, 2528.44γ to 3^+; π=(unnatural) in (pol d,α).
4807.92 *12*	$(0$ to $3)^-$		EF	Jπ: L(d,p)=1; 2007.41γ to $J^\pi=1$, 4008.1γ to 2^-.
4812.01 *25*	(8^+)		A	Jπ: tentative assignment in (^{30}Si,npγ).
4827 *10*	UNNATURAL		W	Jπ: π=unnatural in (pol d,α).
4851.40 *13*	$(2^-,3,4^+)$		E W	Jπ: 4851.16γ to 4^-, 2892.19γ to 2^+.
4872.56 *7*	$(2,3)^-$		EF w	Jπ: L(d,p)=1; 4872.47γ to 4^-.
4875.57 *20*	9^+	<0.7 ps	AB w	Jπ: γ(θ,pol) in (^{16}O,npγ). $T_{1/2}$: from (^{16}O,npγ).
4909 *5*	$(0$ to $3)^-$		F	Jπ: L(d,p)=1.
4930 *10*	UNNATURAL		W	Jπ: π=unnatural in (pol d,α).
4948 *4*	$(2)^-$		F W	E(level): from (d,p), 4942 *10* from (pol d,α). Jπ: L(d,p)=1; $J^\pi=2^-$ preferred from π=(unnatural) in (pol d,α).
4960.36 *5*	$(2,3^-)$		E	Jπ: 2857.15γ to 1^-, 2173.67γ to 3^+, 4929.3γ and 2668.8γ to 3^-.
4993.26 *5*	(2^-)		EF W	Jπ: 2702.60γ, 2922.91γ and 4962.2γ to 3^-, 1846.72γ to $1^{(-)}$; π=unnatural in (pol d,α).
5023.7 *3*	$(2^-,3,4^-)$		EF W	Jπ: 1255.29γ to $(2)^-$, 2627.7γ to 4^-.
5063.37 *7*	$(2^-,3^+)$		E w	Jπ: 2644.0γ to 2^-, 1953.74γ to $1^+,2^+$, 5062.9γ to 4^-. $J^\pi=2^-,3^+$ preferred from π=unnatural for a level at 5068 *10* in (pol d,α) if it is the same level.
5080 *5*	$(0$ to $3)^-$		F w	E(level): from (d,p). Jπ: L(d,p)=1. $J^\pi=2^-$ preferred from π=unnatural for a level at 5068 *10* in (pol d,α) if it is the same level.
5111.9 *7*	$(2,3)^-$		EF w	Jπ: L(d,p)=1 from $3/2^+$; 5111.5γ to 4^-. $J^\pi=2^-$ preferred from π=unnatural for a possible 5112+5132 doublet at 5111 *10* in (pol d,α).
5136 *5*	$(0$ to $3)^-$		F h w	Jπ: L(d,p)=1. $J^\pi=2^-$ preferred from π=unnatural for a possible 5112+5132 doublet at 5111 *10* in (pol d,α).

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Adopted Levels, Gammas (continued)

^{40}K Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
5158 *5*	(0 to 3)$^-$		F h W	XREF: W(5169). Jπ: L(d,p)=1.
5189.89 *5*	(2$^-$)		E	Jπ: 5188.8γ to 4$^-$, 1393.16γ to 1$^+$, 2459.48γ to 1$^{(-)}$.
5214.23 *20*	2$^-$		EF W	Jπ: L(d,p)=1 from 3/2$^+$; π=unnatural in (pol d,α); 3144.30γ to 3$^-$.
5247.1 *6*			E	
5332.91 *24*	(9$^+$)		A F	XREF: F(?). Jπ: tentative assignment in (^{30}Si,npγ).
5488.65 *17*	(2$^-$,3,4$^-$)		E	Jπ: 5488.5γ to 4$^-$, 2680.4γ to (1,2)$^-$.
5681 *32*			H	
5870 *20*			J	
5891.90 *22*	(9$^-$)		A	Jπ: tentative assignment in (^{30}Si,npγ).
6098.22 *7*	(1$^-$,2,3,4$^-$)		E	Jπ: 1702.35γ to (2)$^-$, 6067.6γ to 3$^-$.
6118 *30*			H	
6227.01 *25*	(8,10)$^-$	<1.4 ps	B	Jπ: from γ(θ,pol) in (^{16}O,npγ). $T_{1/2}$: from (^{16}O,npγ).
6790 *30*			H	
≈7000			P	
7033.0 *4*	(9$^-$)		A	Jπ: tentative assignment in (^{30}Si,npγ).
7468 *37*			H	
7472.2 *3*	(9$^-$,11$^-$)		AB	Jπ: from γ(θ) in (^{16}O,npγ).
7748.0 *4*	(9$^-$,10$^-$)		A	Jπ: tentative assignment in (^{30}Si,npγ).
7795 *33*			H	
7799			E	
7800.70 *6*	(0 to 3)$^-$		X	
7802.82 *6*	(0 to 3)$^-$		X	
7808.77 *6*	1$^+$	73 eV *8*	X	
7811.47 *6*			X	
7811.93 *6*	3$^-$	1.2 eV *2*	X	
7813.56 *6*	(2)$^-$		X	
7815.18 *6*	2$^-$	1.64 eV *24*	X	
7815.91 *6*	(3$^-$)		X	
7823.96 *7*			X	
7824.53 *7*	2$^+$	95 eV *3*	X	
7827.26 *7*			X	
7830.98 *7*	3$^-$	3 eV	X	
7832.10 *7*	2$^-$	13 eV *1*	X	
7836.23 *8*	(2$^-$)		X	
7836.33 *8*	(2$^-$)		X	
7841.26 *7*	2$^+$	0.54 keV *3*	X	
7843.62 *8*			X	
7844.45 *8*	2$^-$	42 eV *2*	X	
7850.42 *8*	(2)$^-$		X	
7852.62 *8*			X	
7852.79 *8*	2$^-$	17 eV *4*	X	
7854.04 *8*			X	
7855.97 *8*	1$^+$	1.1 keV *1*	X	
7856.94 *8*			X	
7857.99 *8*	1$^-$	83 eV *13*	X	
7860.29 *8*			X	
7866.25 *9*	1	1.94 keV *24*	X	
7866.80 *9*			X	
7873.43 *10*			X	
7878.23 *10*			X	

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Adopted Levels, Gammas (continued)

^{40}K Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
7878.74 *10*			X	
7882.37 *10*			X	
7885.12 *11*	1^-	0.47 keV *5*	X	
7890.06 *11*			X	
7890.36 *11*			X	
7893.94 *12*			X	
7894.47 *12*			X	
7896.32 *12*	2^-	0.11 keV *3*	X	
7899.05 *21*	2^-	36 eV *11*	X	
7900.50 *21*			X	
7901.41 *21*			X	
7903.13 *21*			X	
7905.46 *21*			X	
7905.58 *21*	1^+	2.0 keV *4*	X	
7906.44 *21*			X	
7906.81 *21*			X	
7911.78 *25*			X	
7914.07 *25*			X	
7915.41 *25*			X	
7916.7 *3*			X	
7919.3 *3*	$(2)^-$		X	
7922.6 *3*	(2)		X	
7923.5 *3*			X	
7924.3 *3*			X	
7925.7 *3*			X	
7931.5 *3*			X	
7932.2 *3*			X	
7932.8 *3*			X	
7940.1 *3*	2^-	0.17 keV *4*	X	
7941.0 *3*			X	
7943.1 *3*			X	
7944.0 *3*			X	
7947.8 *4*			X	
7949.6 *4*	(3^-)		X	
7952 *32*			H	
7957.8 *4*			X	
7972.7 *4*	1	1.12 keV *15*	X	
7983.1 *5*			X	
7987.8 *5*	1^+	1.0 keV *2*	X	
7994.1 *6*	$(9^-$ to $12^-)$		A	Jπ: tentative assignment in (^{30}Si,npγ).
≈11000			PQ	
12.0×10^3 *3*			Q	

† From a least-squares fit to γ-ray energies when available. Doubly or multiply placed γ rays were not used in the least-squares procedure. Uncertainties of some γ rays were increased by a factor 2 or 4 in the fitting procedure in order to get an acceptable fit (reduced χ^2<3). Other level-energy values are either from individual reactions or weighted averages when quoted precision is comparable. See additional levels in (n,γ) defined on the basis of two-quantum cascades (2002Va28). These levels are not listed here due to insufficient information about their decay modes and spin-parity assignments.

‡ When L-transfer arguments are used, the target spin-parity is $J^\pi=3/2^+$ for ^{39}K(d,p), ^{41}K(p,d) and ^{41}K(d,t); $J^\pi=7/2^-$ for ^{41}Ca(d,^{3}He); $J^\pi=0^+$ for ^{42}Ca(p,^{3}He), ^{40}Ar(^{3}He,t) and ^{38}Ar(α,d). Assignments in (n,γ),(n,n):resonances (for levels above 7800) are from fits to experimental cross sections. When assigning J^π to a level based on γ transitions from this level to a level of known J^π, evaluator consider transitions to be E1,M1 or E2.

Lifetimes are available for 27 levels from (α,nγ); 22 levels from (p,nγ); 17 levels from (d,pγ); and 5 levels from (HI,xnγ).

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Adopted Levels, Gammas (continued)

^{40}K Levels (continued)

Weighted averages from different reactions. For values from (d,pγ) and (p,nγ), 15% systematic uncertainty is added in quadrature. For values from other datasets, systematic uncertainty is already included. Level widths given are the sum of the neutron widths and gamma widths extracted from fits to resonance data of (n,γ), unless otherwise noted.

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
29.8299	3⁻	29.8299 *5*	100	0	4⁻	M1		0.298	B(M1)(W.u.)=0.150 *3* Additional information 15. Mult.: δ(E2/M1)≤0.07 from $\gamma\gamma(\theta)$ in (n,γ) E=thermal, but RUL favors pure M1.
800.1431	2⁻	770.3053 *18*	100 *9*	29.8299	3⁻	M1(+E2)	+0.04 *+3−6*		B(M1)(W.u.)=0.18 *+5−3* Additional information 16. Mult.: D(+Q) from $\gamma\gamma(\theta)$ in (n,γ) E=thermal; polarity from no level-parity change determined from other experimental evidence. δ: from $\gamma\gamma(\theta)$ in (n,γ) E=thermal. Other: δ(Q/D)=0.00 *1* in (p,nγ).
		800.3 *3*	0.147 *16*	0	4⁻	[E2]			B(E2)(W.u.)=1.2 *+7−4*
891.394	5⁻	862.2[&] *3*	<1.3[&]	29.8299	3⁻	[E2]			B(E2)(W.u.)<3
		891.372 *21*	100 *10*	0	4⁻	M1+E2	+0.085 *15*		B(M1)(W.u.)=0.037 *+11−7*; B(E2)(W.u.)=1.1 *+9−5* Additional information 17. Mult.,δ: from $\gamma(\theta$,pol) in $^{26}Mg^{16}O$,npγ).
1643.638	0⁺	843.478 *16*	24.4 *24*	800.1431	2⁻	[M2]			B(M2)(W.u.)=0.0036 *+6−5* I_γ: weighted average of 25 *6* from (α,nγ), 27.5 *28* from (n,γ) E=thermal, 22.0 *24* from (p,nγ).
		1613.84 *4*	100 *3*	29.8299	3⁻	[E3]			B(E3)(W.u.)=1.07 *+8−7* I_γ: from (p,nγ).
1959.071	2⁺	1158.901 *20*	100 *3*	800.1431	2⁻	E1(+M2)	0.00 *5*		B(E1)(W.u.)=0.00058 *+13−9* Additional information 18. I_γ: from (p,nγ). Mult.,δ: from $\gamma(\theta)$ and γ(pol) in (p,nγ).
		1929.34 *10*	21.5 *24*	29.8299	3⁻	E1+M2	+0.11 *3*		B(E1)(W.u.)=2.6×10^{-5} *5*; B(M2)(W.u.)=0.40 *+24−19* Additional information 19. I_γ: weighted average of 22.0 *24* from (α,nγ), 23 *4* from (n,γ) E=thermal, 20.5 *24* from (p,nγ). Other: 36 *18* from (μ-,$\nu\gamma$) and 14.3 *15* from (n,pγ). Mult.: D+Q from $\gamma(\theta)$ in (p,nγ), polarity from level-parity change determined from L-transfer data.
2047.338	2⁻	1247.173 *24*	100 *3*	800.1431	2⁻	M1+E2	+0.09 *4*		B(M1)(W.u.)=0.0142 *+36−25*; B(E2)(W.u.)=0.23 *+37−18* Additional information 20. I_γ: from (p,nγ). Mult.: polarity from γ(circ pol) in (n,γ) E=thermal. δ: weighted average of +0.10 *4* from (n,γ) E=thermal and +0.05 *8* from (p,nγ).
		2017.53 *4*	74.5 *25*	29.8299	3⁻	M1+E2	+0.07 *4*		B(M1)(W.u.)=0.0025 *+7−5*; B(E2)(W.u.)=0.010 *+20−8* Additional information 21. I_γ: weighted average of 88 *13* from (α,nγ), 67 *7* from (d,pγ),

$^{40}_{19}K_{21}$-11

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
								75.0 *25* from (p,nγ), and 74 *11* from (n,pγ). Other: 83 *40* from (μ-,$\nu\gamma$).
								Mult.,δ: from γ(circ pol) in (n,γ) E=thermal.
2047.338	2^-	2047.28 *4*	73.6 *25*	0	4^-	E2		B(E2)(W.u.)=1.8 *+5−3*
								Additional information 22.
								I_γ: weighted average of 62 *13* from (α,nγ), 71 *8* from (n,γ) E=thermal, 65 *7* from (d,pγ), 75.0 *25* from (p,nγ), 74 *29* from (μ-,$\nu\gamma$), and 80 *11* from (n,pγ).
								Mult.: from γ(circ pol) in (n,γ) E=thermal.
2069.802	3^-	1178.38 *4*	10 *2*	891.394	5^-	E2		B(E2)(W.u.)=3.5 *+27−15*
								I_γ: unweighted average of 6.4 *21* from (α,nγ), 13.3 *15* from (n,γ) E=thermal, 13 *4* from (d,pγ), and 6 *2* from (p,nγ).
								Mult.: Q from $\gamma(\theta)$ in (p,nγ); M2 is ruled out by $T_{1/2}$.
								Additional information 23.
		1269.56 *5*	14 *2*	800.1431	2^-	M1+E2	−0.20 *10*	B(M1)(W.u.)=0.00164 *+5−8*; B(E2)(W.u.)=0.13 *+15−10*
								Additional information 24.
								I_γ: weighted average of 10.6 *21* from ^{37}Cl(α,nγ), 17.4 *19* from (n,γ) E=thermal, 13 *4* from (d,pγ), 12 *4* from (p,nγ), and 25 *6* from (n,pγ).
								Mult.,δ: D+Q from $\gamma(\theta)$ in (p,nγ), polarity from no level-parity change determined from L-transfer data.
		2039.94 *4*	100 *6*	29.8299	3^-	M1+E2	+0.26 *10*	B(M1)(W.u.)=0.00274 *+12−15*; B(E2)(W.u.)=0.14 *+12−9*
								Additional information 25.
								I_γ: from (α,nγ) and (p,nγ).
								Mult.,δ: mixing ratio is weighted average of +0.2 *2* from γ(circ pol) in (n,γ) E=thermal and +0.27 *10* from $\gamma(\theta)$ in (p,nγ).
		2070.08 *15*	82 *7*	0	4^-	M1(+E2)	−0.07 *5*	B(M1)(W.u.)=0.002287 *+11−22*
								Additional information 26.
								I_γ: weighted average of 96 *6* from (α,nγ), 74 *8* from (n,γ) E=thermal, 59 *9* from (d,pγ), 82 *10* from (p,nγ), and 77 *29* from (μ-,$\nu\gamma$).
								Mult.,δ: mixing ratio is from $\gamma(\theta)$ in (p,nγ), +0.01 *10* from γ(circ pol) in (n,γ) E=thermal.
2103.68	1^-	460[a]	<4	1643.638	0^+			E_γ,I_γ: from (d,pγ). In (n,γ) E=thermal, a 460.092γ was doubly placed from 2104 and 2397 levels by 1984Vo01 and later resolved by 2013Fi01 to be from 2397 level.
		1303.53 *7*	40 *3*	800.1431	2^-	M1+E2	+0.30 *6*	B(M1)(W.u.)=0.00559 *+18−20*; B(E2)(W.u.)=0.9 *4*
								Additional information 27.
								Mult.,δ: D+Q from $\gamma(\theta)$ in (p,nγ) and $\gamma\gamma(\theta)$ in (n,γ) E=thermal, polarity from no level-parity change determined from L-transfer data.
								I_γ: weighted average of 28 *5* from (α,nγ), 42 *5* from (n,γ) E=thermal, 37 *7* from (d,pγ), 42.9 *29* from (p,nγ), and 39 *11* from (μ-,$\nu\gamma$).
		2073.74 *10*	100 *3*	29.8299	3^-	E2		B(E2)(W.u.)=2.8 *+9−6*
								Additional information 28.

$^{40}_{19}K_{21}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
								I_γ: from (p,nγ). Mult.: Q from $\gamma(\theta)$ in (p,nγ); M2 is ruled out by $T_{1/2}$.
2260.48	3^+	2230.54 *5*	100 *3*	29.8299	3^-	E1(+M2)	+0.01 *9*	B(E1)(W.u.)=0.00063 *+24−14* I_γ: from (p,nγ). δ: from $\gamma(\theta)$ in (p,nγ).
		2260.11 *10*	27 *6*	0	4^-	E1(+M2)	−0.05 *6*	B(E1)(W.u.)=0.00016 *6* I_γ: unweighted average of 18 *4* from (α,nγ), 38 *4* from (n,γ) E=thermal, and 23.5 *25* from (p,nγ). Mult.,δ: from $\gamma(\theta)$ and γ(pol) in (p,nγ).
2289.868	1^+	185.97 *10*	5.6 *9*	2103.68	1^-			E_γ: also placed from 3414 and 3924 levels in (n,γ) E=thermal.
		330.798 *7*	14.1 *22*	1959.071	2^+			I_γ: weighted average of 14 *3* from (α,nγ), 15.7 *14* from (n,γ) E=thermal, and 7 *3* from (p,nγ).
		646.223 *5*	100 *3*	1643.638	0^+	M1		B(M1)(W.u.)=0.51 *+13−9* Additional information 29. I_γ: from (p,nγ). Mult.: D from $\gamma(\theta)$ in (p,nγ), polarity from no level-parity change determined from L-transfer data.
		1489.77 *5*	58 *5*	800.1431	2^-	E1(+M2)	+0.14	B(E1)(W.u.)=0.00065 *+27−17* Additional information 30. I_γ: weighted average of 56 *5* from (α,nγ), 58 *6* from (n,γ) E=thermal, 60 *5* from (p,nγ), and 30 *22* from (μ-,$\nu\gamma$). δ: from $\gamma(\theta)$ in (p,nγ).
2290.551	3^-	1399.03[‡] *4*	19.4 *18*	891.394	5^-	[E2]		B(E2)(W.u.)=14 *+6−4* Additional information 31. I_γ: weighted average of 23 *4* from (α,nγ), 18.9 *18* from (n,γ) E=thermal, and 19.0 *24* from Ar(p,nγ).
		2290.58 *7*	100 *2*	0	4^-	M1+E2	−0.8 *+3−5*	B(M1)(W.u.)=0.0061 *+45−21*; B(E2)(W.u.)=2.3 *+15−19* I_γ: from (p,nγ). Mult.: polarity from γ(pol) in (α,nγ).
2397.190	4^-	106.1 *3*	4.3 *3*	2290.551	3^-			
		327.23 *8*	10.7 *14*	2069.802	3^-			
		2367.17 *5*	100 *3*	29.8299	3^-	M1+E2	+0.25 *4*	B(M1)(W.u.)=0.029 *+24−10*; B(E2)(W.u.)=1.0 *+14−5* Additional information 32. I_γ: from (p,nγ). Mult.,δ: D+Q from $\gamma(\theta)$ in (p,nγ), polarity from no level-parity change determined from other experimental evidence.
		2397.12 *6*	41 *3*	0	4^-	M1+E2	−0.32 *12*	B(M1)(W.u.)=0.0109 *+7−9*; B(E2)(W.u.)=0.6 *+5−4* Additional information 33. I_γ: weighted average of 43 *6* from (α,nγ), 39 *4* from (n,γ) E=thermal, and 40.8 *28* from (p,nγ). Mult.,δ: D+Q from $\gamma(\theta)$ in (p,nγ), polarity from no level-parity change determined from other experimental evidence.

$^{40}_{19}K_{21}$-13

Adopted Levels, Gammas (continued)

γ(^{40}K) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.#	δ#	Comments
2419.160	2⁻	349.33 *4*	0.85 *11*	2069.802	3⁻			
		460.092 *14*	2.19 *24*	1959.071	2⁺			
		1619.00 *4*	100 *3*	800.1431	2⁻	M1+E2	+0.24 *6*	B(M1)(W.u.)=0.0059 *+18−12*; B(E2)(W.u.)=0.41 *+38−22* Additional information 34. I_γ: from (p,nγ). Mult.,δ: D+Q from γγ(θ) in (n,γ) E=thermal, polarity from no level- parity change determined from L-transfer data.
		2389.18 *5*	20.1 *21*	29.8299	3⁻	M1+E2	−0.8 *5*	B(M1)(W.u.)=0.00024 *+12−10*; B(E2)(W.u.)=0.08 *+6−7* Additional information 35. I_γ: weighted average of 19.0 *25* from (α,nγ), 21.6 *21* from (n,γ) E=thermal, 19.0 *25* from Ar(p,nγ). Mult.,δ: D+Q from γ(θ) in (p,nγ), polarity from no level-parity change determined from other experimental evidence.
		2418.69 *15*	8.8 *10*	0	4⁻	E2		B(E2)(W.u.)=0.10 *+5−4* Additional information 36. I_γ: weighted average of 7.6 *13* from (α,nγ), 10.2 *10* from (n,γ) E=thermal, and 7.6 *13* from (p,nγ). Mult.: δ(O/Q)=+0.17 *28* from γ(θ) in (p,nγ); M2 ruled out by RUL.
2542.79	7⁺	1651.31 *12*	100 *2*	891.394	5⁻	M2(+E3)	−0.02 *3*	B(M2)(W.u.)=0.176 *+14−12* E_γ: weighted average of 1651.34 *24* from (^{30}Si,npγ), 1651.29 *12* from ^{26}Mg(^{16}O,npγ), and 1651.5 *5* from (α,nγ). I_γ,Mult.,δ: from ^{26}Mg(^{16}O,npγ), with Mult. and δ from γ(θ) and γ(pol). Other: δ=0.00 *3* from (α,nγ).
		2542.8 *3*	12.7 *4*	0	4⁻	E3(+M4)	+0.10 *7*	B(E3)(W.u.)=1.90 *+26−23* E_γ: weighted average of 2543.2 *4* from (^{30}Si,npγ), 2542.6 *3* from (^{16}O,npγ), and 2542.4 *10* from (α,nγ). I_γ: weighted average of 12.6 *4* from (^{16}O,npγ), 13.6 *23* from (α,nγ), and 13.6 *23* from (p,nγ). Other: 7.4 *8* from (^{30}Si,npγ). Mult.,δ: from γ(θ) and γ(pol) in (^{16}O,npγ). B(M4)(W.u.)=3×10^4 *+7−3* is too large; it is expected to be <30 from RUL and thus δ<0.003.
2558.1		2558	100	0	4⁻			E_γ: from (n,pγ).
2575.93	2⁺	315.52 *8*	2.2 *3*	2260.48	3⁺			
		528.76& *14*	<0.6&	2047.338	2⁻			
		2545.85 *10*	100	29.8299	3⁻	E1(+M2)		Additional information 37.
2626.00	0⁻	522.319 *7*	100 *3*	2103.68	1⁻	M1		B(M1)(W.u.)=0.50 *+12−8* Additional information 38. I_γ: from (p,nγ).
		1825.77 *5*	44 *3*	800.1431	2⁻	E2		B(E2)(W.u.)=4.8 *+19−12* Additional information 39.

$^{40}_{19}K_{21}$-14

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
								I_γ: weighted average of 43 *4* from (α,nγ), 42 *5* from (n,γ) E=thermal, 43 *7* from (d,pγ), 44.9 *29* from (p,nγ), and 37 *14* from (μ-,$\nu\gamma$).
2730.357	1	311.13 *4*	12.0 *5*	2419.160	2^-			
		626.1[&] *3*	<0.9[&]	2103.68	1^-			
		1086.707 *19*	100 *4*	1643.638	0^+	D		Additional information 40. Mult.,I_γ: from (p,nγ).
		1930.2 *3*	6 *4*	800.1431	2^-			I_γ: from (α,nγ) and (p,nγ).
2746.91	3^-	789 *1*	6.2 *16*	1959.071	2^+			E_γ,I_γ: from (α,nγ).
		1946.43 *17*	8.0 *12*	800.1431	2^-			
		2716.95 *11*	100 *5*	29.8299	3^-	M1+E2	−0.19 *14*	I_γ: from (p,nγ). Mult.,δ: from $\gamma(\theta)$ in (p,nγ), polarity from no level-parity change determined from other experimental evidence. Other: δ=−3.4 *+13−29* in (p,nγ).
		2747.00 *18*	51 *5*	0	4^-	M1+E2	−0.18 *+11−18*	Additional information 41. I_γ: weighted average of 50 *5* from (α,nγ), 52 *6* from (n,γ) E=thermal, and 52 *5* from (p,nγ). Mult.,δ: from $\gamma(\theta)$ in (p,nγ), polarity from no level-parity change determined from other experimental evidence.
2756.62	2^+	337.75 *12*	2.0 *3*	2419.160	2^-			
		1113.3 *3*	1.6 *3*	1643.638	0^+	[E2]		B(E2)(W.u.)>20
		1956.58[‡] *5*	100 *3*	800.1431	2^-	E1(+M2)	+0.19 *+19−26*	B(E1)(W.u.)>0.0021? Additional information 42. I_γ: from (p,nγ). Mult.,δ: D+Q from $\gamma(\theta)$ in (p,nγ), polarity implied by level-parity change determined by 1113.3γ to 0^+ and RUL. Other: δ=−2.1 *+13−7* in (p,nγ).
		2726.62 *7*	52 *3*	29.8299	3^-	E1(+M2)	0.00 *12*	B(E1)(W.u.)>0.00045? Additional information 43. I_γ: from (p,nγ). Others: 86 *5* from (n,γ) E=thermal, 52 *5* from (α,nγ). Mult.,δ: D+Q from $\gamma(\theta)$ in (p,nγ), polarity implied by level-parity change determined by 1113.3γ to 0^+ and RUL. Other: −4.7 *+20−144* in (p,nγ).
2786.645	3^+	496.06 *4*	2.4 *3*	2290.551	3^-			
		827.552 *15*	23 *3*	1959.071	2^+	M1+E2	−0.09 *7*	B(M1)(W.u.)>0.17; B(E2)(W.u.)>0.33 Additional information 44. Mult.,δ: D+Q from $\gamma(\theta)$ in (p,nγ), polarity is implied by level-parity change determined from $\gamma(\theta$,pol) in (α,nγ).
		2756.81 *7*	100 *4*	29.8299	3^-	E1(+M2)	−0.09 *+22−5*	B(E1)(W.u.)>0.00050? Additional information 45. I_γ: from (α,nγ). Mult.,δ: from $\gamma(\theta$,pol) in (α,nγ).
		2787.0 *6*	7 *3*	0	4^-			

$^{40}_{19}K_{21}$-15

Adopted Levels, Gammas (continued)

γ(^{40}K) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
2787.32	3⁻,4⁻	496.8 *5*	98 *20*	2290.551	3⁻			E_γ: from (α,nγ).
		1896.3 *5*	46 *20*	891.394	5⁻			E_γ: from (α,nγ).
		2787.10 *25*	100 *20*	0	4⁻	M1+E2		E_γ: from (α,nγ). Mult.: D+Q from γ(θ) in (p,nγ), polarity from no level-parity change determined from other experimental evidence.
2807.88	(1,2)⁻	760.6 *4*	4.8 *16*	2047.338	2⁻			
		848.7 *3*	4.2 *8*	1959.071	2⁺			
		2007.71[‡] *4*	100 *12*	800.1431	2⁻			
2878.99	6⁺	336.18 *6*	100 *3*	2542.79	7⁺	M1(+E2)	+0.01 *2*	B(M1)(W.u.)=1.4 *+10−4* E_γ: weighted average of 336.25 *20* from (^{30}Si,npγ), 336.18 *16* from (^{16}O,npγ), and 336.4 *4* from (α,nγ). I_γ: from (^{16}O,npγ). Mult.,δ: from γ(θ,pol) in (^{16}O,npγ).
		1988.0 *4*	53 *7*	891.394	5⁻	E1(+M2)	−0.05 *4*	B(E1)(W.u.)=9.77×10^{-5} *+4−7*; B(M2)(W.u.)=0.3 *+7−3* E_γ: weighted average of 1988.07 *35* from (^{30}Si,npγ), 1987.8 *6* from (^{16}O,npγ), and 1987.8 *7* from (α,nγ). I_γ: weighted average of 46 *8* from (^{30}Si,npγ), 51 *7* from (^{16}O,npγ), and 61 *7* from (α,nγ). Mult.,δ: from γ(θ,pol) in (^{16}O,npγ). Others: δ=−0.06 *+4−5* from γ(θ,pol) in (α,nγ), −0.09 *9* from θ(θ) in (p,nγ).
2950.9		2950.8 *6*	100	0	4⁻			E_γ: from (α,nγ).
2985.84	(2⁻,3⁺)	695.31 *8*	8.9 *13*	2290.551	3⁻			
		1027.09 *24*	7.7 *17*	1959.071	2⁺			
		2185.70 *20*	100 *22*	800.1431	2⁻			Additional information 46.
		2955.94 *16*	88 *22*	29.8299	3⁻			Additional information 47.
3027.976	(2⁻,3⁺)	737.45 *3*	37 *4*	2290.551	3⁻			Additional information 48. I_γ: weighted average of 43 *8* from (α,nγ) and 36 *4* from (n,γ) E=thermal.
		958.35 *9*	6.5 *8*	2069.802	3⁻			
		1068.87 *3*	100 *9*	1959.071	2⁺			Additional information 49. I_γ: from (α,nγ).
		3027.7 *3*	37 *5*	0	4⁻			Additional information 50. I_γ: weighted average of 43 *8* from (α,nγ) and 35 *5* from (n,γ) E=thermal.
3100.1	(4,5)⁺	2208.7 *7*	82 *18*	891.394	5⁻	[E1]		B(E1)(W.u.)=0.00035 *+27−15* E_γ,I_γ: from (α,nγ).
		3100	100 *18*	0	4⁻	[E1]		B(E1)(W.u.)=0.00015 *+11−6* E_γ: from level-energy difference, reported in (α,nγ). I_γ: from (α,nγ).
3109.56	1⁺,2⁺	534.3[&] *3*	<3.5[&]	2575.93	2⁺			
		1062.20 *8*	20 *2*	2047.338	2⁻			
		1150.58 *18*	88 *15*	1959.071	2⁺			

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
3109.56	$1^+,2^+$	1466.11[‡] *3*	100 *12*	1643.638	0^+			
3128.41	$(2^-,3^+)$	320.9 *6*	1.5 *8*	2807.88	$(1,2)^-$			
		371.792 *10*	28 *3*	2756.62	2^+			
		838.8 *5*	11 *3*	2289.868	1^+			
		3098.56 *20*	61 *23*	29.8299	3^-			
		3128.06 *13*	100 *7*	0	4^-			
3146.50	$1^{(-)}$	727.1[&] *3*	<2.0[&]	2419.160	2^-			
		1187.45 *8*	9 *1*	1959.071	2^+			
		1503.00 *10*	55 *6*	1643.638	0^+	D		Additional information 51. I_γ: weighted average of 49 *8* from (α,nγ), 59 *6* from (n,γ)) E=thermal. Mult.: from $\gamma(\theta)$ in (p,nγ).
		2346.05 *10*	100 *8*	800.1431	2^-	D(+Q)	+0.1 *2*	Additional information 52. I_γ: from (α,nγ). Mult.,δ: from $\gamma(\theta)$ in (p,nγ).
3153.82	$(2^-,3)$	397.28 *17*	8 *2*	2756.62	2^+			
		756.4[&] *6*	<21[&]	2397.190	4^-			
		1509.9[&] *3*	<5.8[&]	1643.638	0^+			Multipolarity=(M2,E3 or M3) if this transition is from this level to 0^+.
		3153.5 *3*	100 *8*	0	4^-			Additional information 53.
3228.62	2^-	938.72 *6*	39 *4*	2289.868	1^+	[E1]		B(E1)(W.u.)=0.004 *+19−2*
		2428.28 *9*	100 *12*	800.1431	2^-			Additional information 54.
		3198.6 *3*	58 *9*	29.8299	3^-			Additional information 55.
		3229.4 *4*	51 *8*	0	4^-	[E2]		B(E2)(W.u.)=1.5 *+70−9*
								Additional information 56.
3353.46	(6^+)	810.79 *24*	100 *18*	2542.79	7^+			E_γ,I_γ: from (^{30}Si,npγ).
		2461.3 *11*	53 *10*	891.394	5^-			E_γ,I_γ: from (^{30}Si,npγ).
3367.94	$(2,3)^-$	620.96[&] *7*	<23[&]	2746.91	3^-			
		1320.9 *4*	100 *10*	2047.338	2^-			
		2568.8[&] *4*	<11[&]	800.1431	2^-			
		3338.2 *3*	80 *20*	29.8299	3^-			
		3368.9 *6*	33 *10*	0	4^-			
3393.65	2^-	1434.50 *6*	28 *3*	1959.071	2^+			
		2593.32 *10*	100 *10*	800.1431	2^-			
3414.34	2^+	627.66 *3*	8.2 *9*	2786.645	3^+			
		1771.4[&] *5*	<2.7[&]	1643.638	0^+			
		2614.21 *9*	100 *6*	800.1431	2^-			
		3384.66 *24*	34 *4*	29.8299	3^-			
3439.18	(2^+)	1335.48 *18*	2.1 *4*	2103.68	1^-			
		1480.09 *4*	100 *10*	1959.071	2^+	D(+Q)	+0.2 *2*	
		1795.45 *4*	87 *9*	1643.638	0^+			
		2638.93 *11*	68 *5*	800.1431	2^-			

$^{40}_{19}K_{21}$-17

Adopted Levels, Gammas (continued)

γ(^{40}K) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Comments
3486.09	2⁻	376.53 *3*	12.9 *17*	3109.56	1⁺,2⁺	
		678.13[&] *20*	<11.2[&]	2807.88	(1,2)⁻	
		756.4[&] *6*	<33[&]	2730.357	1	
		1195.81[‡] *7*	23 *3*	2290.551	3⁻	
		1438.72 *4*	91 *10*	2047.338	2⁻	
		2685.6 *3*	100 *21*	800.1431	2⁻	
3557.41	(1⁻,2⁺,3⁻,4⁺)	528.76[&] *14*	<1.7[&]	3027.976	(2⁻,3⁺)	
		981.03[‡] *7*	10.1 *12*	2575.93	2⁺	
		1267.5[&] *3*	<10.3[&]	2289.868	1⁺	
		1487.42[&] *9*	<9.5[&]	2069.802	3⁻	
		1509.9[&] *3*	<2.2[&]	2047.338	2⁻	
		3526.99[‡] *10*	100 *7*	29.8299	3⁻	
3599.20	2⁻	613.384 *24*	21.4 *24*	2985.84	(2⁻,3⁺)	
		1023.21 *4*	27 *3*	2575.93	2⁺	
		1201.86 *5*	11.2 *12*	2397.190	4⁻	
		1308.9 *4*	4.5 *18*	2289.868	1⁺	
		1496.0 *3*	5.4 *22*	2103.68	1⁻	
		1551.77 *9*	10.7 *13*	2047.338	2⁻	
		2799.30 *18*	100 *11*	800.1431	2⁻	
		3569.30 *8*	47 *3*	29.8299	3⁻	
3629.97	2⁻,3⁻	602.26 *17*	10.3 *18*	3027.976	(2⁻,3⁺)	
		1232.74 *3*	41 *4*	2397.190	4⁻	
		1560.44 *19*	5.3 *5*	2069.802	3⁻	
		3599.62 *20*	56 *6*	29.8299	3⁻	Additional information 57.
		3629.94 *15*	100 *9*	0	4⁻	
3663.88	(1⁻,2,3,4⁺)	249.54 *16*	0.93 *23*	3414.34	2⁺	
		534.3[&] *3*	<0.70[&]	3128.41	(2⁻,3⁺)	
		554.741[‡] *23*	10.3 *13*	3109.56	1⁺,2⁺	
		678.13[&] *20*	<2.1[&]	2985.84	(2⁻,3⁺)	
		1373.227[‡] *21*	100 *10*	2290.551	3⁻	
		1704.73 *9*	73 *9*	1959.071	2⁺	
		3633.88 *9*	49 *3*	29.8299	3⁻	
3712.98	(2)⁻	926.24 *15*	19 *4*	2786.645	3⁺	
		1452.39 *12*	20 *2*	2260.48	3⁺	
		1754.72[‡] *17*	36 *5*	1959.071	2⁺	
		3683.3 *5*	100 *30*	29.8299	3⁻	
3738.49	1⁺	1478.01 *6*	48 *8*	2260.48	3⁺	
		1691.26 *6*	16.6 *18*	2047.338	2⁻	

$^{40}_{19}K_{21}$-18

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Comments
3738.49	1^+	1779.14 *8*	49 *3*	1959.071	2^+	
		2094.61 *10*	7.2 *8*	1643.638	0^+	
		2938.32 *9*	100 *6*	800.1431	2^-	
3768.4	$(2)^-$	620.96& *7*	<48&	3146.50	$1^{(-)}$	
		2967.8 *3*	100 *12*	800.1431	2^-	
3797.48	1^+	383.01 *18*	2.5 *5*	3414.34	2^+	
		811.39 *13*	2.9 *5*	2985.84	$(2^-,3^+)$	
		1221.71 *7*	8.5 *9*	2575.93	2^+	
		1536.84 *5*	33 *4*	2260.48	3^+	
		1838.61‡ *8*	56 *5*	1959.071	2^+	
		2153.81 *4*	100 *10*	1643.638	0^+	
3821.45	2^-	335.44& *14*	<11.1&	3486.09	2^-	
		1034.28& *20*	<10.6&	2787.32	$3^-,4^-$	
		1074.39 *9*	40 *5*	2746.91	3^-	
		1090.9 *3*	10 *3*	2730.357	1	
		1424.229 *23*	100 *11*	2397.190	4^-	
		1530.7 *3*	16 *4*	2290.551	3^-	
		3791.9 *3*	50 *8*	29.8299	3^-	
		3822.17‡ *13*	73 *5*	0	4^-	
3840.27	$(1,2^+)$	730.48 *15*	3.9 *7*	3109.56	$1^+,2^+$	
		1771.4& *5*	<5.0&	2069.802	3^-	
		1881.20 *5*	81 *8*	1959.071	2^+	
		2196.61 *5*	55 *7*	1643.638	0^+	
		3040.24 *13*	100 *7*	800.1431	2^-	
3868.65	2^-	454.19 *8*	6.1 *8*	3414.34	2^+	
		640.4 *6*	6.7 *4*	3228.62	2^-	
		1121.77 *7*	18 *2*	2746.91	3^-	
		1578.97 *12*	5.6 *7*	2289.868	1^+	
		1765.24 *15*	36 *4*	2103.68	1^-	
		3068.7 *4*	40 *7*	800.1431	2^-	
		3838.50 *7*	100 *7*	29.8299	3^-	
		3868.3 *10*	19 *8*	0	4^-	
3872.33	(7^+)	518.97 *26*	7.0 *18*	3353.46	(6^+)	E_γ,I_γ: from (^{30}Si,npγ).
		993.1 *4*	9.4 *18*	2878.99	6^+	E_γ,I_γ: from (^{30}Si,npγ).
		1329.00 *26*	100 *18*	2542.79	7^+	E_γ,I_γ: from (^{30}Si,npγ).
3887.81	$(1^-,2^-)$	1131.17 *5*	34 *4*	2756.62	2^+	
		1262.1 *3*	22 *4*	2626.00	0^-	
		1597.88 *4*	95 *10*	2289.868	1^+	
		3088.3 *5*	62 *13*	800.1431	2^-	
		3857.97 *11*	100 *7*	29.8299	3^-	

$^{40}_{19}K_{21}$-19

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
3924.07	$(2^-,3^+)$	1348.06 *14*	12.6 *15*	2575.93	2^+
		1634.26 *8*	100 *8*	2289.868	1^+
		1964.27 *23*	13.4 *22*	1959.071	2^+
		3895.7 *11*	76 *40*	29.8299	3^-
4020.39	$(2)^-$	534.3[&] *3*	<2.8[&]	3486.09	2^-
		626.1[&] *3*	<3.1[&]	3393.65	2^-
		1034.28[&] *20*	<12[&]	2985.84	$(2^-,3^+)$
		1213.53[‡] *8*	14.7 *16*	2807.88	$(1,2)^-$
		1916.51[‡] *6*	81 *9*	2103.68	1^-
		1973.00 *4*	100 *9*	2047.338	2^-
		3220.08 *21*	75 *9*	800.1431	2^-
4104.49	$(1^-,2,3^-)$	440.77[‡] *7*	4.7 *7*	3663.88	$(1^-,2,3,4^+)$
		504.5 *5*	6.3 *18*	3599.20	2^-
		1118.38 *13*	5.5 *7*	2985.84	$(2^-,3^+)$
		1813.94 *14*	7.3 *9*	2290.551	3^-
		2001.24 *20*	13.8 *20*	2103.68	1^-
		2057.07 *5*	14.2 *16*	2047.338	2^-
		3304.24 *11*	100 *7*	800.1431	2^-
4110.79	2	1001.05[‡] *5*	25 *3*	3109.56	$1^+,2^+$
		1082.92 *7*	62 *7*	3027.976	$(2^-,3^+)$
		1124.91 *6*	37 *4*	2985.84	$(2^-,3^+)$
		1354.12 *3*	50 *2*	2756.62	2^+
		2467.31 *10*	21 *2*	1643.638	0^+
		3310.9 *5*	37 *9*	800.1431	2^-
		4080.69 *12*	100 *7*	29.8299	3^-
		4110.39 *20*	98 *9*	0	4^-
4149.04	$(2^-,3^+)$	756.4[&] *6*	<7[&]	3393.65	2^-
		920.12[&] *18*	<1.5[&]	3228.62	2^-
		1162.59 *24*	28 *5*	2985.84	$(2^-,3^+)$
		1751.76 *5*	20.1 *21*	2397.190	4^-
		1858.51 *5*	48 *5*	2290.551	3^-
		1888.43 *8*	8.8 *10*	2260.48	3^+
		3348.91 *10*	100 *6*	800.1431	2^-
		4148.4 *3*	12.0 *16*	0	4^-
4180.15	(3^-)	740.89 *6*	100 *12*	3439.18	(2^+)
		951.16[‡] *7*	16.5 *19*	3228.62	2^-
		1761.10[&] *17*	<11.5[&]	2419.160	2^-
		1919.28 *20*	57 *9*	2260.48	3^+
		2109.9 *3*	25 *8*	2069.802	3^-

$^{40}_{19}K_{21}$-20

Adopted Levels, Gammas (continued)

γ(^{40}K) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	Comments
4180.15	(3$^-$)	2221.27 *11*	70 *9*	1959.071	2$^+$		
		3286.4 *8*	58 *19*	891.394	5$^-$		
4213.08	(2$^-$,3$^+$)	727.1[&] *3*	<10.1[&]	3486.09	2$^-$		
		798.8[&] *3*	<45[&]	3414.34	2$^+$		
		2143.37 *11*	100 *12*	2069.802	3$^-$		
		2568.8[&] *4*	<24[&]	1643.638	0$^+$		Multipolarity=(M2,E3 or M3) if this transition is from this level to 0$^+$.
4251.70	(1,2$^-$)	1625.67 *14*	100	2626.00	0$^-$		
4253.70	(1,2)$^-$	1100.13 *18*	2.5 *4*	3153.82	(2$^-$,3)		
		1267.5[&] *3*	<6.1[&]	2985.84	(2$^-$,3$^+$)		
		2149.93 *5*	25.1 *23*	2103.68	1$^-$		
		2183.70 *20*	27 *14*	2069.802	3$^-$		
		2206.35 *10*	44 *5*	2047.338	2$^-$		
		3452.2 *10*	100 *6*	800.1431	2$^-$		
		4223.66 *7*	49 *3*	29.8299	3$^-$		
4280.42	2$^-$	1704.70 *20*	84 *43*	2575.93	2$^+$		
		2233.0 *4*	43 *43*	2047.338	2$^-$		
		3480.6 *5*	35 *8*	800.1431	2$^-$		
		4249.5 *4*	32 *4*	29.8299	3$^-$		
		4280.35 *22*	100 *11*	0	4$^-$		
4313.94	2$^-$	1204.36 *10*	100	3109.56	1$^+$,2$^+$		
4350.47	(2$^-$)	1365.06 *24*	47 *9*	2985.84	(2$^-$,3$^+$)		
		2246.3 *3*	100 *22*	2103.68	1$^-$		
		4319.6 *5*	49 *9*	29.8299	3$^-$		
4365.77	8$^+$	1486.7 *3*	18 *6*	2878.99	6$^+$	E2	B(E2)(W.u.)=4.1 *+61−24* E_γ: weighted average of 1486.90 *34* from (^{30}Si,npγ) and 1486.3 *5* from (^{16}O,npγ). I_γ: from (^{16}O,npγ). Mult.: from $\gamma(\theta)$ and RUL based on measured $T_{1/2}$ in (^{16}O,npγ).
		1822.9 *2*	100 *21*	2542.79	7$^+$		E_γ: weighted average of 1822.83 *21* from (^{30}Si,npγ) and 1822.9 *3* from ^{26}Mg(^{16}O,npγ). I_γ: from (^{16}O,npγ).
4383.7	0$^+$	1653	32 *4*	2730.357	1		I_γ: from (p,nγ).
		2094	100 *4*	2289.868	1$^+$		I_γ: from (p,nγ).
4395.88	(2)$^-$	657.39 *3*	29 *3*	3738.49	1$^+$		
		1267.5[&] *3*	<39[&]	3128.41	(2$^-$,3$^+$)		
		1665.43 *4*	53 *6*	2730.357	1		
		1820.35[‡] *5*	100 *11*	2575.93	2$^+$		
		2348.72 *9*	89 *11*	2047.338	2$^-$		
4419.37	(2$^-$,3,4$^+$)	756.4[&] *6*	<40[&]	3663.88	(1$^-$,2,3,4$^+$)		

$^{40}_{19}K_{21}$-21

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
4419.37	$(2^-,3,4^+)$	862.2[&] *3*	<6.0[&]	3557.41	$(1^-,2^+,3^-,4^+)$
		1265.54 *9*	100 *12*	3153.82	$(2^-,3)$
		1843.33 *9*	33 *4*	2575.93	2^+
		2022.32 *17*	83 *12*	2397.190	4^-
4463.61	$(1^-,2,3,4^-)$	2393.84 *12*	25 *3*	2069.802	3^-
		2416.06 *11*	44 *5*	2047.338	2^-
		3663.32 *9*	100 *7*	800.1431	2^-
4473.08	$(2^-,3,4^-)$	1034.28[&] *20*	<9.5[&]	3439.18	(2^+)
		1079.44 *13*	25 *3*	3393.65	2^-
		1487.42[&] *9*	<24[&]	2985.84	$(2^-,3^+)$
		1725.68[&] *17*	<8.2[&]	2746.91	3^-
		4472.80 *11*	100 *8*	0	4^-
4537.07	$(1^-,2,3)$	798.8[&] *3*	<5.4[&]	3738.49	1^+
		1427.45 *18*	1.9 *3*	3109.56	$1^+,2^+$
		1961.11 *6*	13.5 *14*	2575.93	2^+
		2577.63 *10*	28 *3*	1959.071	2^+
		3737.01 *10*	100 *6*	800.1431	2^-
		4506.96 *7*	68 *4*	29.8299	3^-
4544.13	$(0^-$ to $4^-)$	1058.03 *4*	53 *6*	3486.09	2^-
		3743.2 *3*	100 *14*	800.1431	2^-
4662.4	$(2^-$ to $6^-)$	4662.1 *3*	100	0	4^-
4666.49	$(2^-$ to $5^-)$	1680.8 *4*	8.8 *27*	2985.84	$(2^-,3^+)$
		2375.85 *5*	100 *11*	2290.551	3^-
		4667.0 *4*	97 *19*	0	4^-
4744.14	(2^+)	563.86 *6*	7.4 *9*	4180.15	(3^-)
		903.878 *23*	15.3 *15*	3840.27	$(1,2^+)$
		946.29[‡] *8*	3.8 *4*	3797.48	1^+
		1144.7 *5*	8 *3*	3599.20	2^-
		1935.7 *3*	12.8 *23*	2807.88	$(1,2)^-$
		2013.90 *20*	17 *3*	2730.357	1
		2168.16 *4*	18.3 *19*	2575.93	2^+
		2454.7 *3*	2.6 *4*	2289.868	1^+
		2483.8 *3*	3.0 *8*	2260.48	3^+
		2784.4 *4*	21 *5*	1959.071	2^+
		3100.42 *20*	38 *14*	1643.638	0^+
		3943.81 *6*	100 *5*	800.1431	2^-
4788.92	2^-	534.3[&] *3*	<3.5[&]	4253.70	$(1,2)^-$
		678.13[&] *20*	<10.4[&]	4110.79	2
		920.12[&] *18*	<6.5[&]	3868.65	2^-

$^{40}_{19}K_{21}$-22

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	Comments
4788.92	2^-	1761.10[&] *17*	<11.5[&]	3027.976	$(2^-,3^+)$		
		2031.6 *3*	100 *15*	2756.62	2^+		
		2162.16[‡] *17*	15.8 *19*	2626.00	0^-		
		2528.44 *11*	53 *6*	2260.48	3^+		
		3989.07[‡] *14*	93 *7*	800.1431	2^-		
4807.92	$(0 \text{ to } 3)^-$	2077.41 *13*	100 *9*	2730.357	1		
		4008.1 *3*	42 *5*	800.1431	2^-		
4812.01	(8^+)	939.28 *23*	100 *18*	3872.33	(7^+)		E_γ,I_γ: from (^{30}Si,npγ).
		2269.0 *5*	72 *14*	2542.79	7^+		E_γ,I_γ: from (^{30}Si,npγ).
4851.40	$(2^-,3,4^+)$	2892.19 *15*	100 *8*	1959.071	2^+		
		4851.16 *25*	33 *4*	0	4^-		
4872.56	$(2,3)^-$	335.44[&] *14*	<16[&]	4537.07	$(1^-,2,3)$		
		1718.68 *4*	66 *3*	3153.82	$(2^-,3)$		
		1725.68[&] *17*	<13[&]	3146.50	$1^{(-)}$		
		2115.77 *14*	12.3 *16*	2756.62	2^+		
		4842.8 *4*	30 *5*	29.8299	3^-		
		4872.47 *14*	100 *8*	0	4^-		
4875.57	9^+	509.88 *20*	40 *7*	4365.77	8^+		E_γ: weighted average of 509.90 *20* from (^{30}Si,npγ) and 509.4 *10* from (^{16}O,npγ).
							I_γ: weighted average of 37 *7* from (^{30}Si,npγ) and 56 *17* from (^{16}O,npγ).
		2332.87 *22*	100 *11*	2542.79	7^+	E2	B(E2)(W.u.)>1.0
							I_γ: weighted average of 2332.89 *22* from (^{30}Si,npγ) and 2332.8 *4* from (^{16}O,npγ).
							I_γ: from (^{16}O,npγ).
							Mult.: from $\gamma(\theta$,pol) in (^{16}O,npγ).
4960.36	$(2,3^-)$	1402.73 *9*	37 *4*	3557.41	$(1^-,2^+,3^-,4^+)$		
		1566.21[‡] *7*	46 *5*	3393.65	2^-		
		1832.01 *5*	34 *4*	3128.41	$(2^-,3^+)$		
		2173.67 *8*	28 *3*	2786.645	3^+		
		2204.08[‡] *10*	100 *12*	2756.62	2^+		
		2668.8 *4*	31 *6*	2290.551	3^-		
		2857.15[‡] *15*	85 *9*	2103.68	1^-		
		2912.6 *3*	43 *6*	2047.338	2^-		
		4929.3[‡] *3*	54 *6*	29.8299	3^-		
4993.26	(2^-)	813.12 *7*	14 *2*	4180.15	(3^-)		
		1846.72 *6*	32 *3*	3146.50	$1^{(-)}$		
		2702.60 *16*	85 *9*	2290.551	3^-		
		2922.91 *20*	100 *9*	2069.802	3^-		

$^{40}_{19}K_{21}$-23

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
4993.26	(2^-)	3034.43 *17*	89 *7*	1959.071	2^+			
		4962.2 *4*	32 *6*	29.8299	3^-			
5023.7	$(2^-,3,4^-)$	1255.29 *9*	59 *7*	3768.4	$(2)^-$			
		2627.7[‡] *3*	100 *17*	2397.190	4^-			
5063.37	$(2^-,3^+)$	1695.44 *8*	32 *4*	3367.94	$(2,3)^-$			
		1953.74 *6*	100 *10*	3109.56	$1^+,2^+$			
		2644.0 *3*	84 *13*	2419.160	2^-			
		5062.9 *4*	23 *3*	0	4^-			
5111.9	$(2,3)^-$	2688.1[a] *4*	100 *26*	2423.7?				E_γ: placed by 2013Fi01 in (n,γ) E=thermal to a level at 2324. But this level was neither observed in other work nor listed in Table 3 of populated levels in 2013Fi01. The evaluator has considered this placement as questionable.
		5111.5 *7*	43 *11*	0	4^-			
5189.89	(2^-)	976.85 *6*	29 *3*	4213.08	$(2^-,3^+)$			
		1393.16[‡] *8*	34 *4*	3797.48	1^+			
		2403.04 *9*	32 *4*	2786.645	3^+			
		2459.48 *5*	52 *6*	2730.357	1			
		4389.32 *18*	100 *8*	800.1431	2^-			
		5188.8 *3*	14.3 *16*	0	4^-			
5214.23	2^-	3144.30 *19*	100	2069.802	3^-			
5247.1		5216.9 *6*	100	29.8299	3^-			
5332.91	(9^+)	2790.53 *29*	100	2542.79	7^+			E_γ: from (^{30}Si,npγ).
5488.65	$(2^-,3,4^-)$	1931.23 *20*	100 *9*	3557.41	$(1^-,2^+,3^-,4^+)$			
		2359.8 *8*	11 *7*	3128.41	$(2^-,3^+)$			
		2680.4 *5*	23 *6*	2807.88	$(1,2)^-$			
		3418.5 *6*	25 *9*	2069.802	3^-			
		5488.5 *5*	44 *9*	0	4^-			
5891.90	(9^-)	559.28 *22*	63 *11*	5332.91	(9^+)			E_γ,I_γ: from (^{30}Si,npγ).
		1016.6 *4*	48 *9*	4875.57	9^+			E_γ,I_γ: from (^{30}Si,npγ).
		1079.1 *5*	76 *14*	4812.01	(8^+)			E_γ,I_γ: from (^{30}Si,npγ).
		1525.85 *27*	100 *20*	4365.77	8^+			E_γ,I_γ: from (^{30}Si,npγ).
6098.22	$(1^-,2,3,4^-)$	1702.35[‡] *3*	100 *9*	4395.88	$(2)^-$			
		2539.87[‡] *7*	82 *9*	3557.41	$(1^-,2^+,3^-,4^+)$			
		6067.6 *3*	15.2 *15*	29.8299	3^-			
6227.01	$(8,10)^-$	1351.51 *18*	100 *8*	4875.57	9^+	E1(+M2)	−0.07 *5*	B(E1)(W.u.)>0.00016; B(M2)(W.u.)>0.16 E_γ: weighted average of 1351.70 *21* from (^{30}Si,npγ) and 1351.37 *18* from (^{16}O,npγ). I_γ: from (^{16}O,npγ). Mult.,δ: from $\gamma(\theta$,pol) in (^{16}O,npγ).

$^{40}_{19}K_{21}$-24

Adopted Levels, Gammas (continued)

$\gamma(^{40}K)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.#	δ#	Comments
6227.01	$(8,10)^-$	1861.3[a] *6*	<5	4365.77	8^+			E_γ,I_γ: from (^{16}O,npγ).
		3684[a]	<2	2542.79	7^+			E_γ,I_γ: from (^{16}O,npγ).
7033.0	(9^-)	1142.3 *5*	59 *11*	5891.90	(9^-)			E_γ,I_γ: from (^{30}Si,npγ).
		2219.7 *5*	100 *18*	4812.01	(8^+)			E_γ,I_γ: from (^{30}Si,npγ).
7472.2	$(9^-,11^-)$	1245.31 *22*	100 *19*	6227.01	$(8,10)^-$	D+Q	+0.13 *7*	E_γ: weighted average of 1245.10 *31* from (^{30}Si,npγ) and 1245.42 *22* from Mg(^{16}O,npγ). I_γ: from (^{30}Si,npγ). Mult.,δ: from $\gamma(\theta)$ in (^{16}O,npγ).
		1579.3 *5*	37 *8*	5891.90	(9^-)			E_γ,I_γ: from (^{30}Si,npγ).
7748.0	$(9^-,10^-)$	1520.88 *30*	30 *6*	6227.01	$(8,10)^-$			E_γ,I_γ: from (^{30}Si,npγ).
		2872.9 *9*	100 *18*	4875.57	9^+			E_γ,I_γ: from (^{30}Si,npγ).
7994.1	$(9^-$ to $12^-)$	1767.1 *5*	100	6227.01	$(8,10)^-$			E_γ: from (^{30}Si,npγ).

† From (n,γ) E=thermal, unless otherwise noted. Other values are either from individual reactions or weighted averages when quoted precision is comparable.
‡ Uncertainties were increased by a factor of 2 in the least-squares fit, except for 554.741γ, 1213.53γ, 1393.16γ, 1466.11γ, 1820.35γ, and 2539.87γ, increased by a factor of 4. Poor fit for 554.741γ with the fitted energy deviates by about 5 times the quoted energy uncertainty.
# From $\gamma(\theta)$ data in (p,nγ), unless otherwise noted.
@ 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.
& Multiply placed with undivided intensity.
[a] Placement of transition in the level scheme is uncertain.

$^{40}_{19}K_{21}$-25

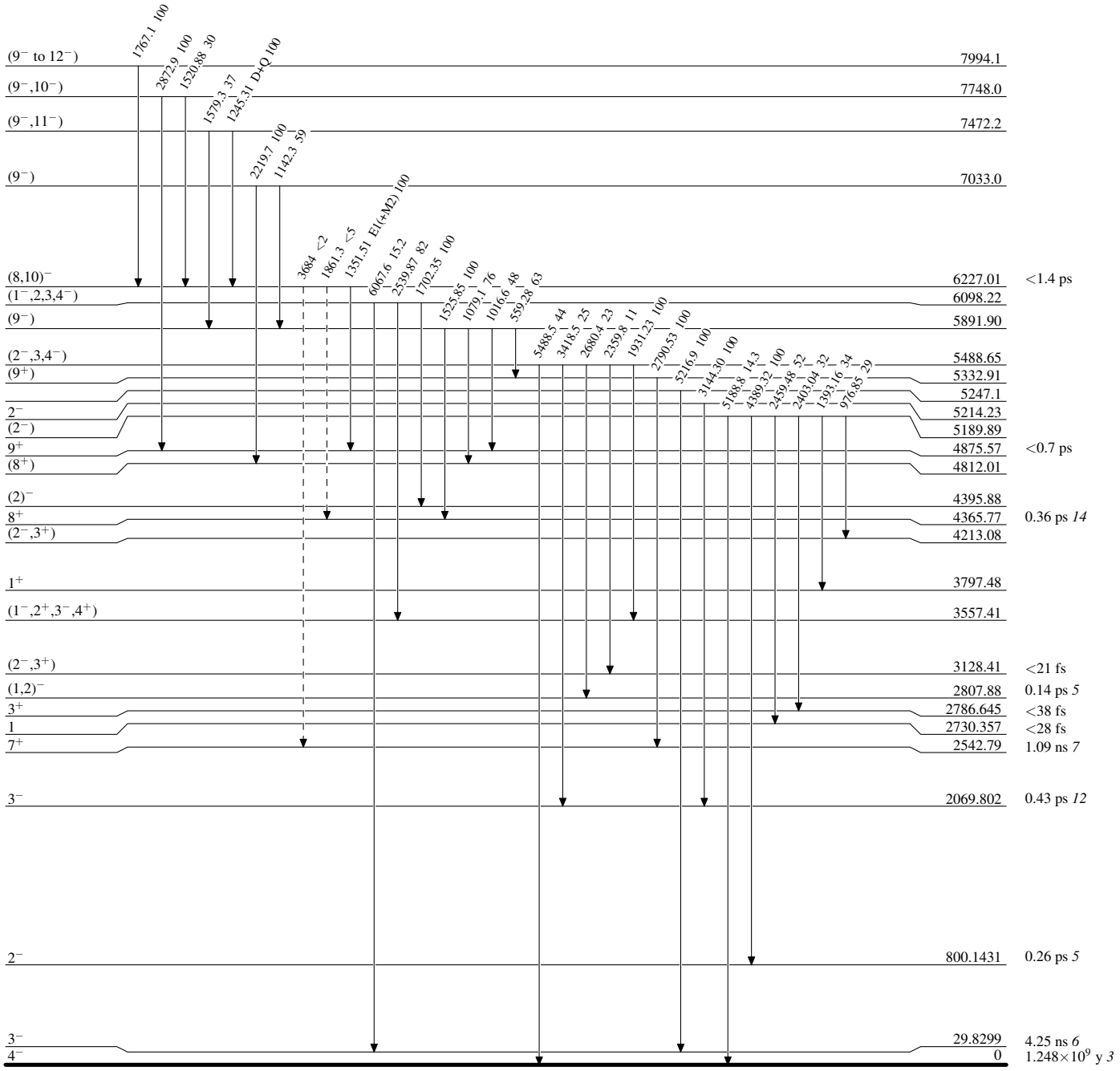
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{40}_{19}K_{21}$

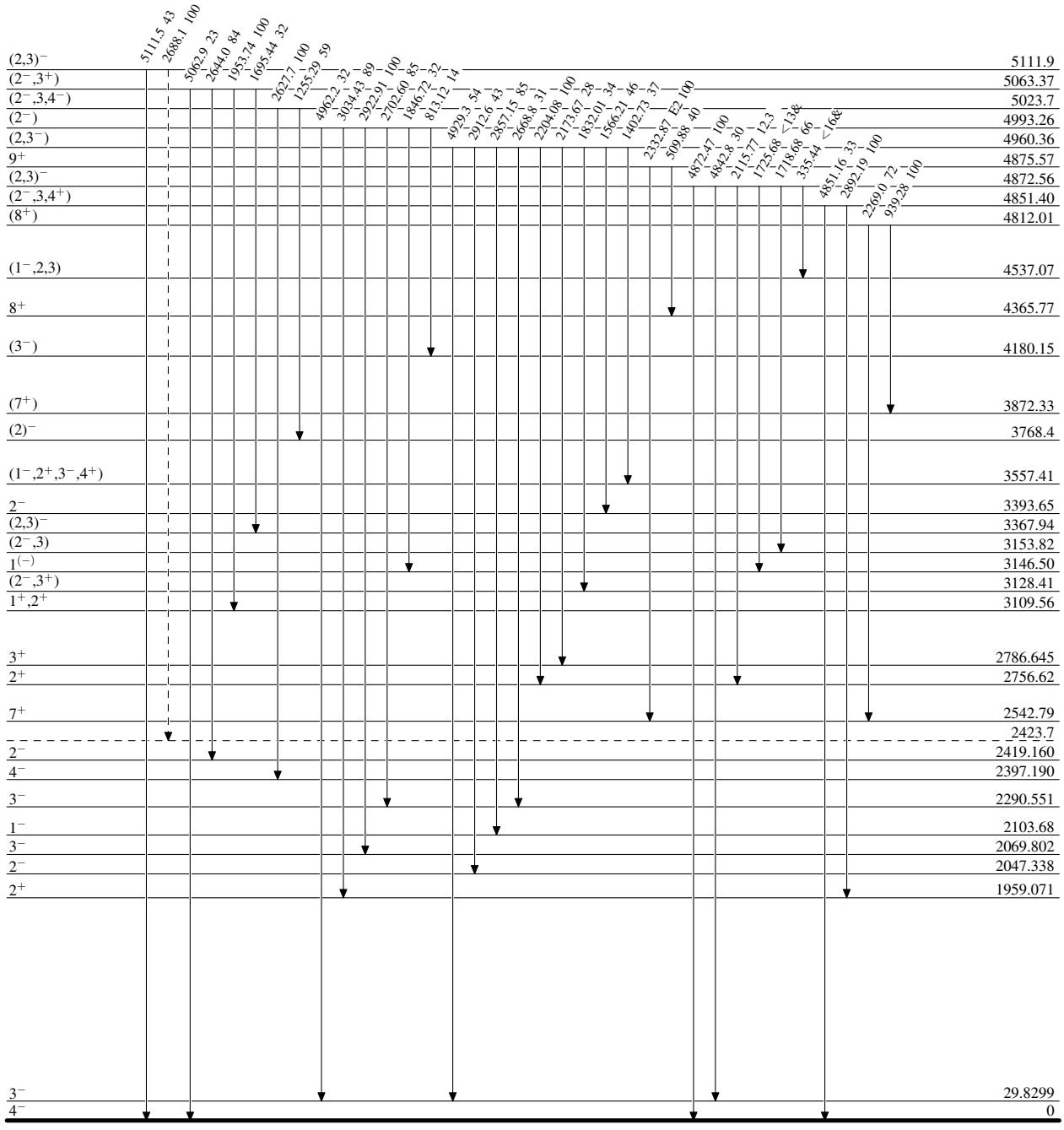
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

– – – – – – ► γ Decay (Uncertain)

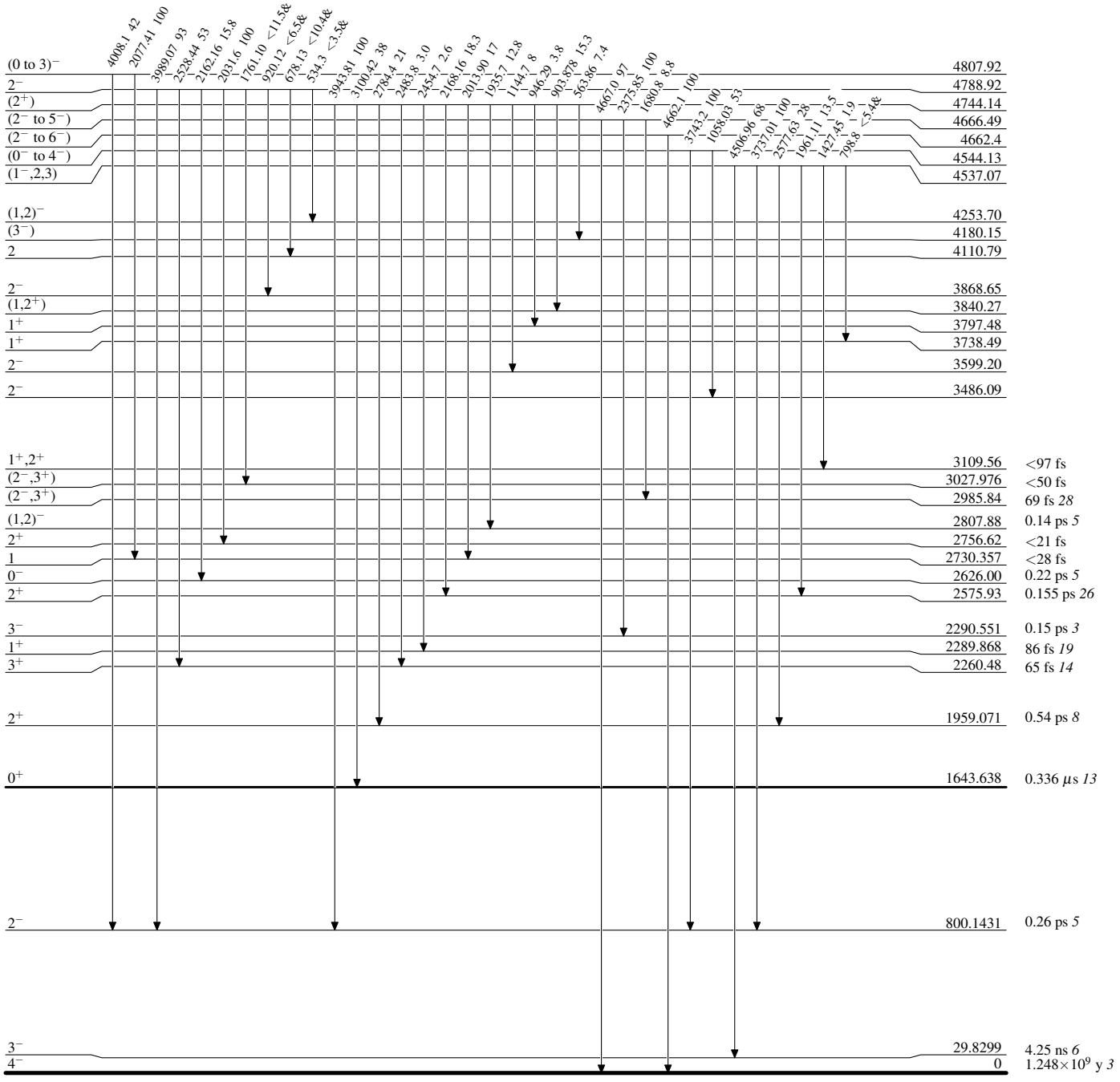


$^{40}_{19}K_{21}$

Adopted Levels, Gammas

Level Scheme (continued)

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

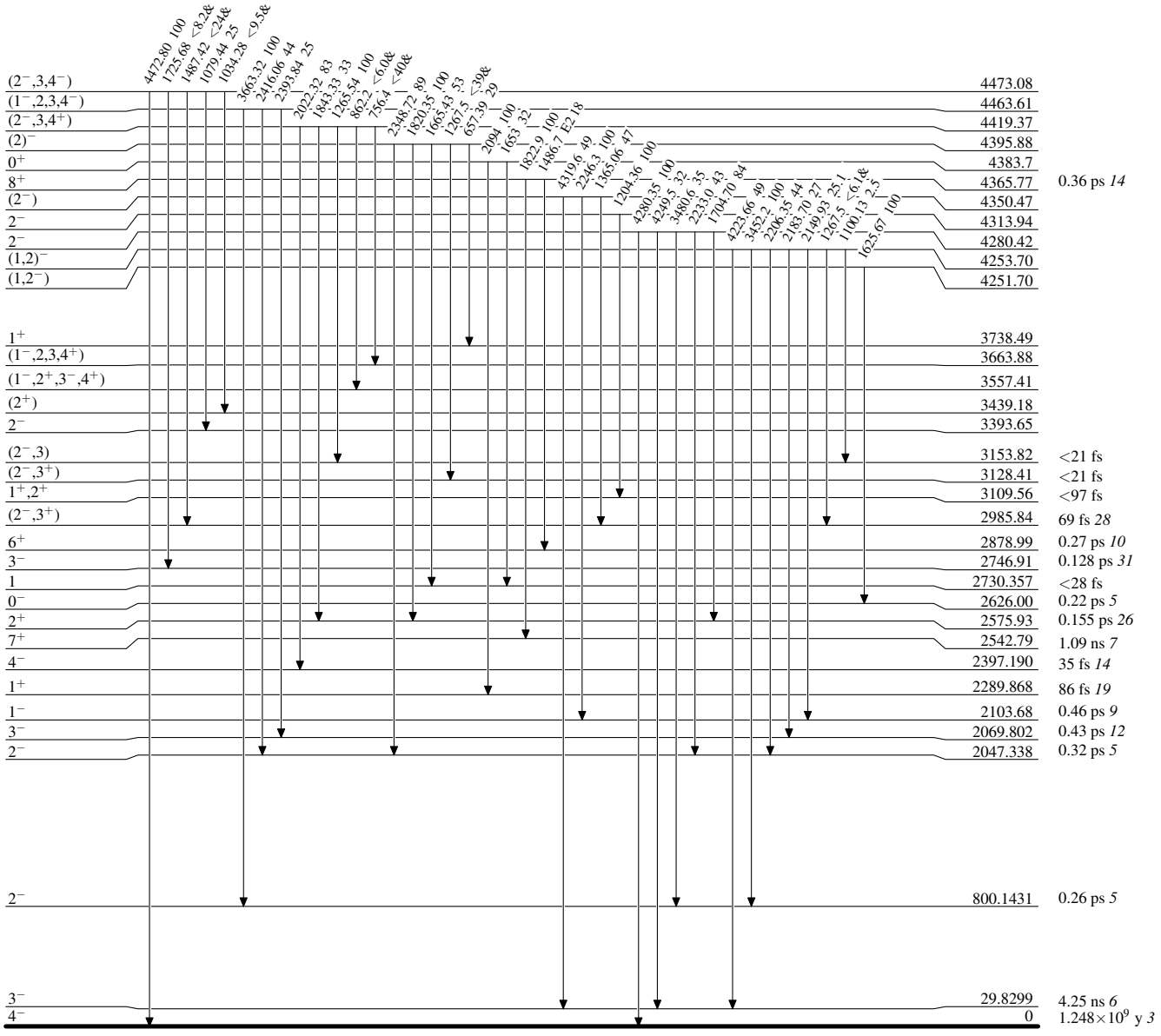


$^{40}_{19}K_{21}$

Adopted Levels, Gammas

Level Scheme (continued)

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

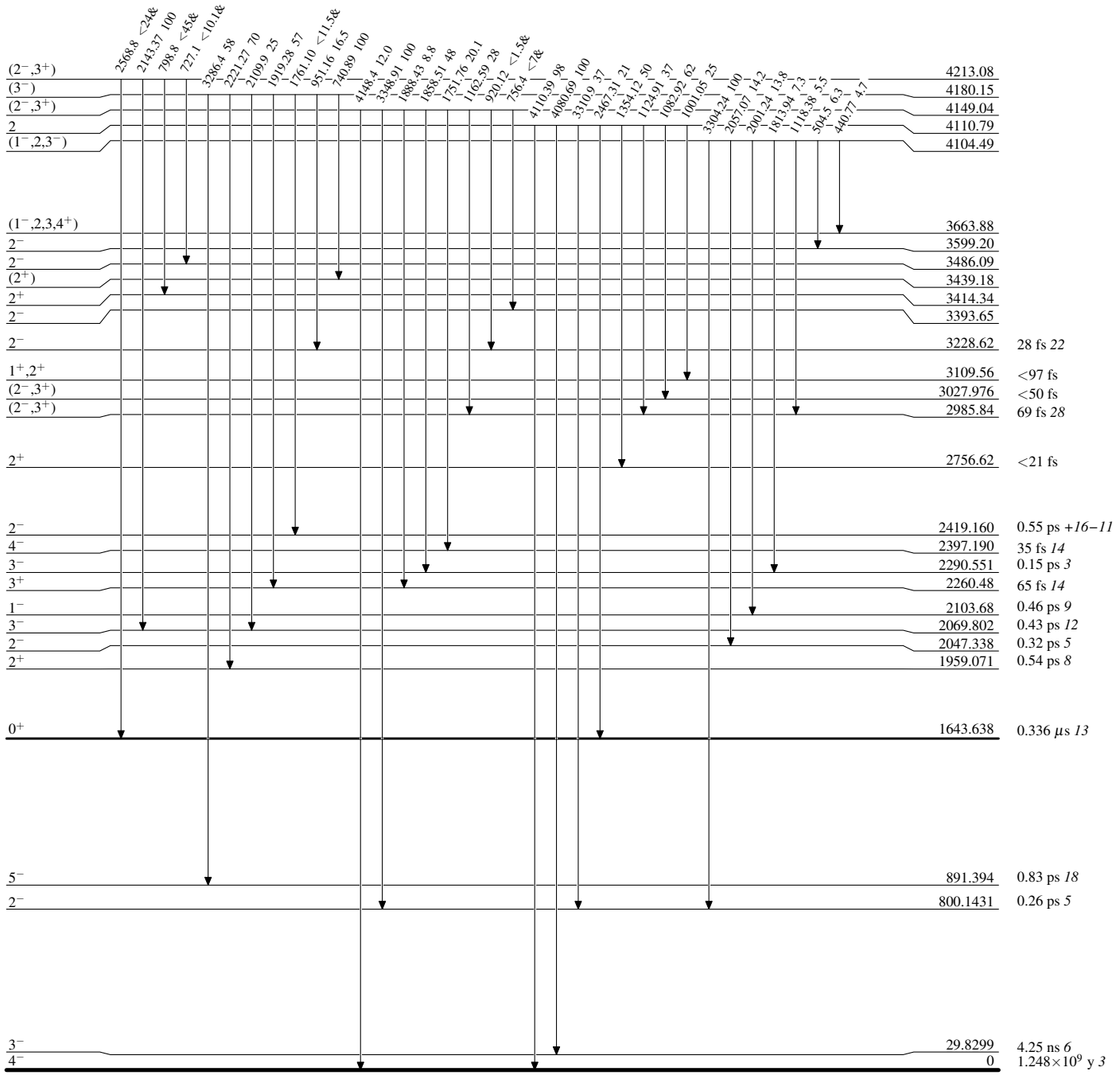


$^{40}_{19}K_{21}$

Adopted Levels, Gammas

Level Scheme (continued)

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

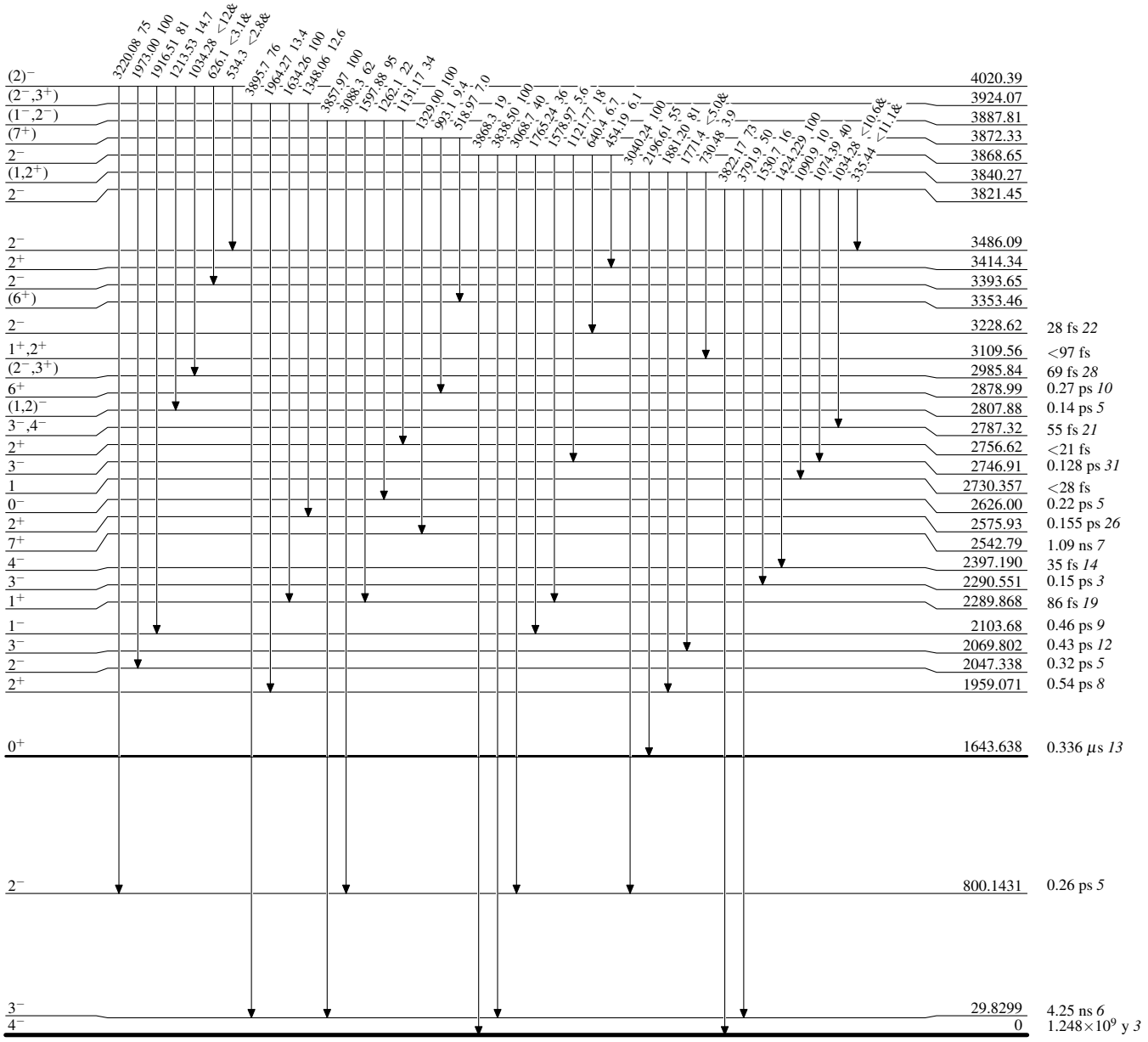


$^{40}_{19}K_{21}$

Adopted Levels, Gammas

Level Scheme (continued)

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

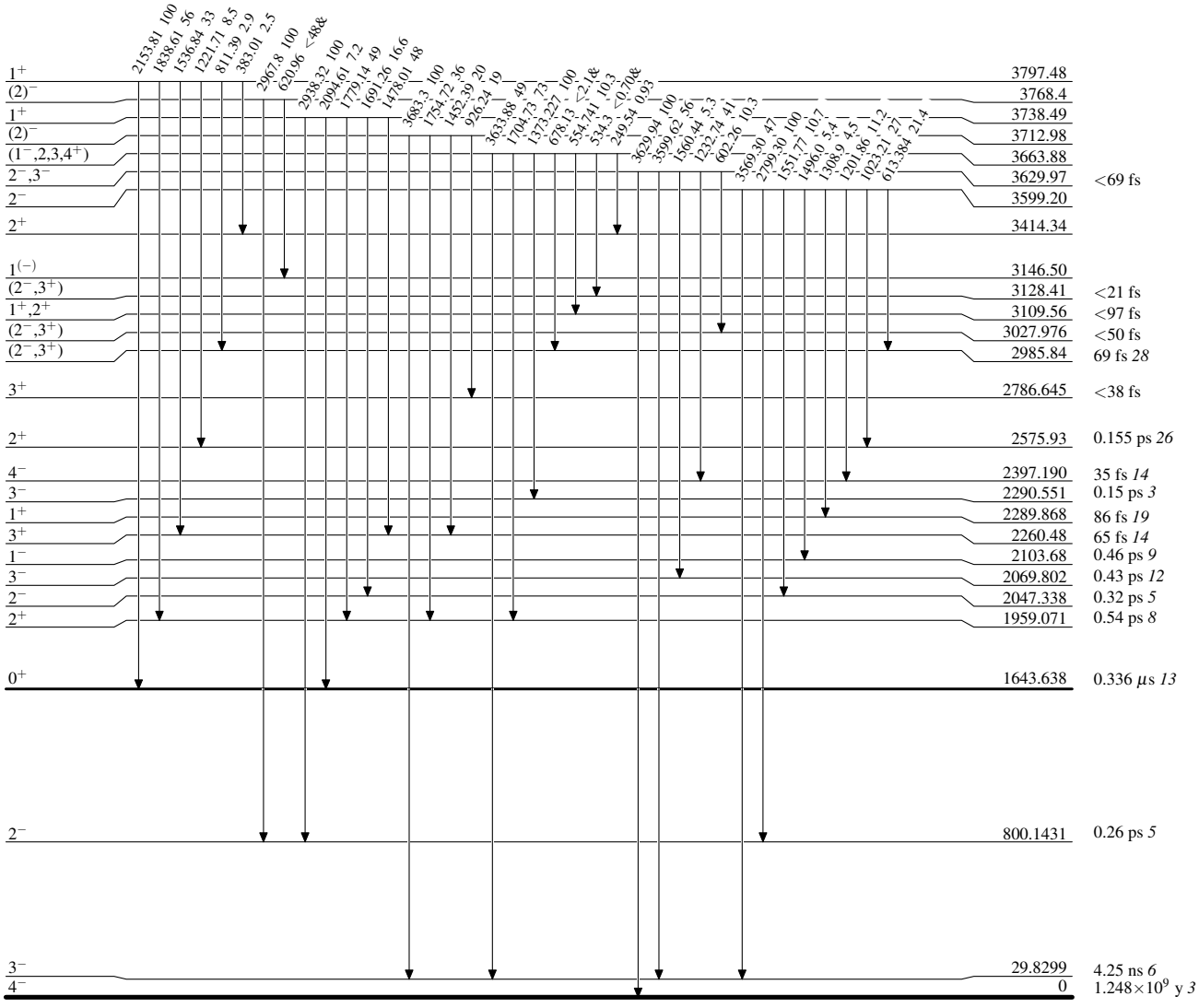


$^{40}_{19}K_{21}$

Adopted Levels, Gammas

Level Scheme (continued)

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

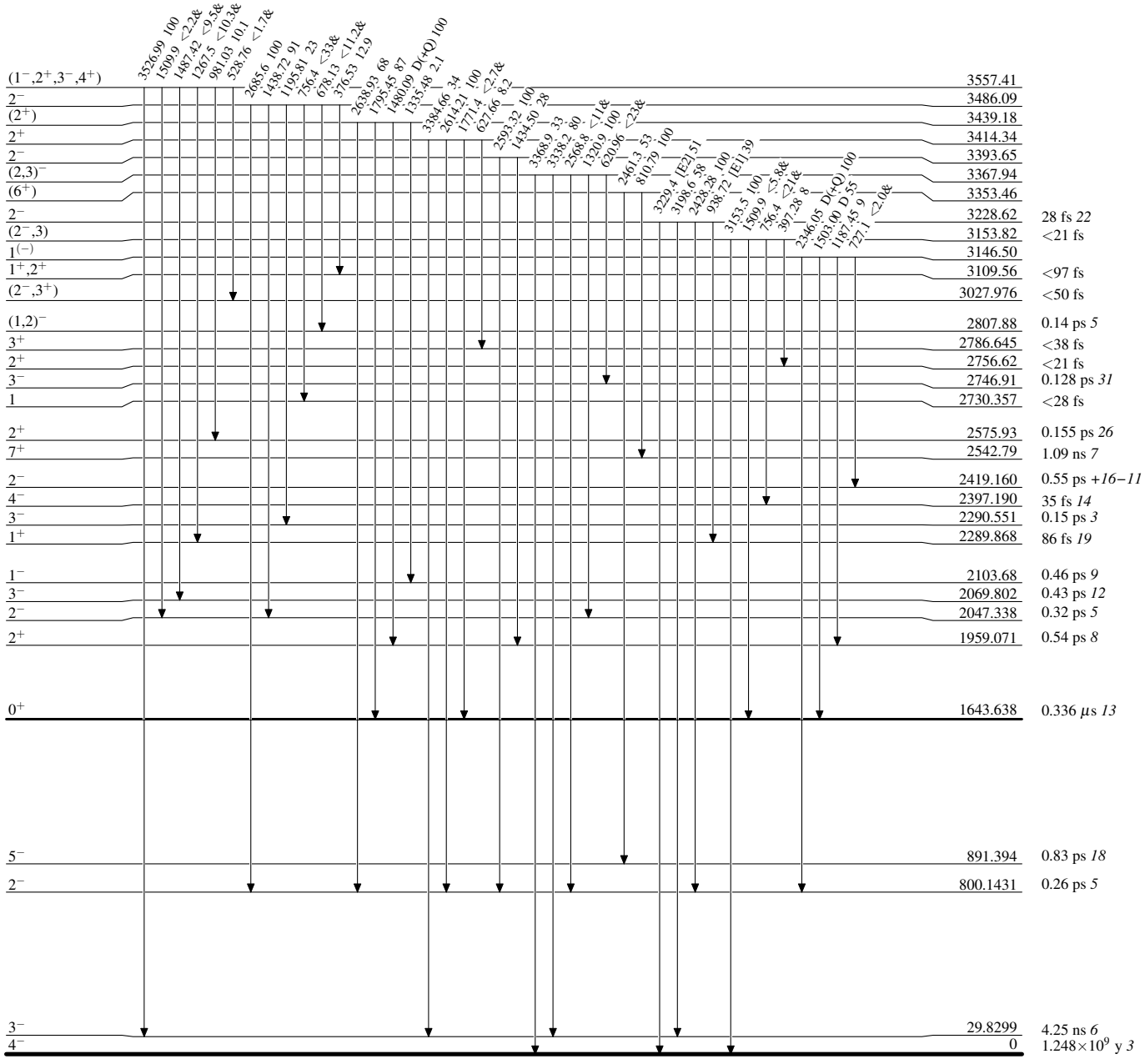


$^{40}_{19}K_{21}$

Adopted Levels, Gammas

Level Scheme (continued)

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

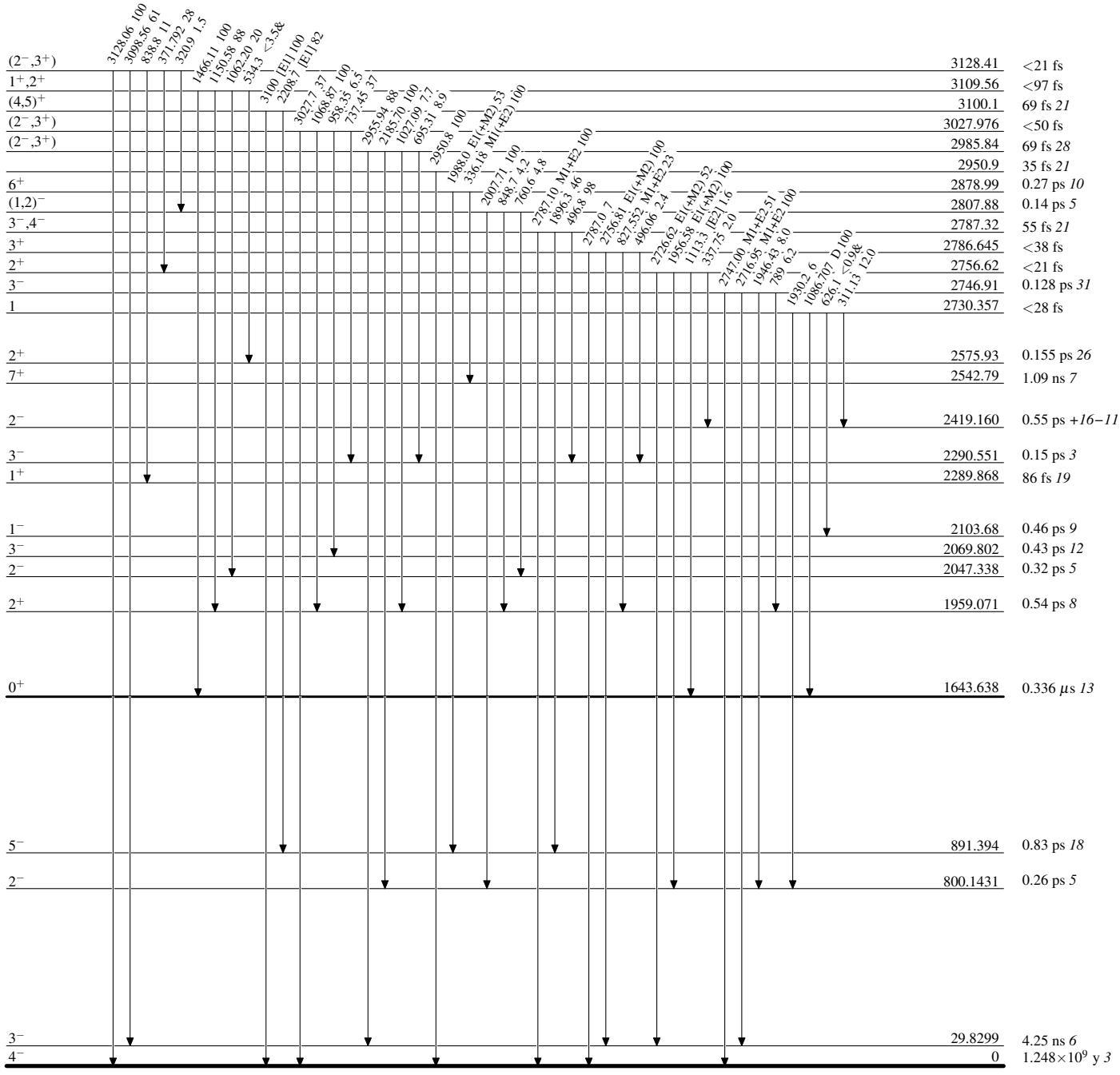


$^{40}_{19}K_{21}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{40}_{19}K_{21}$

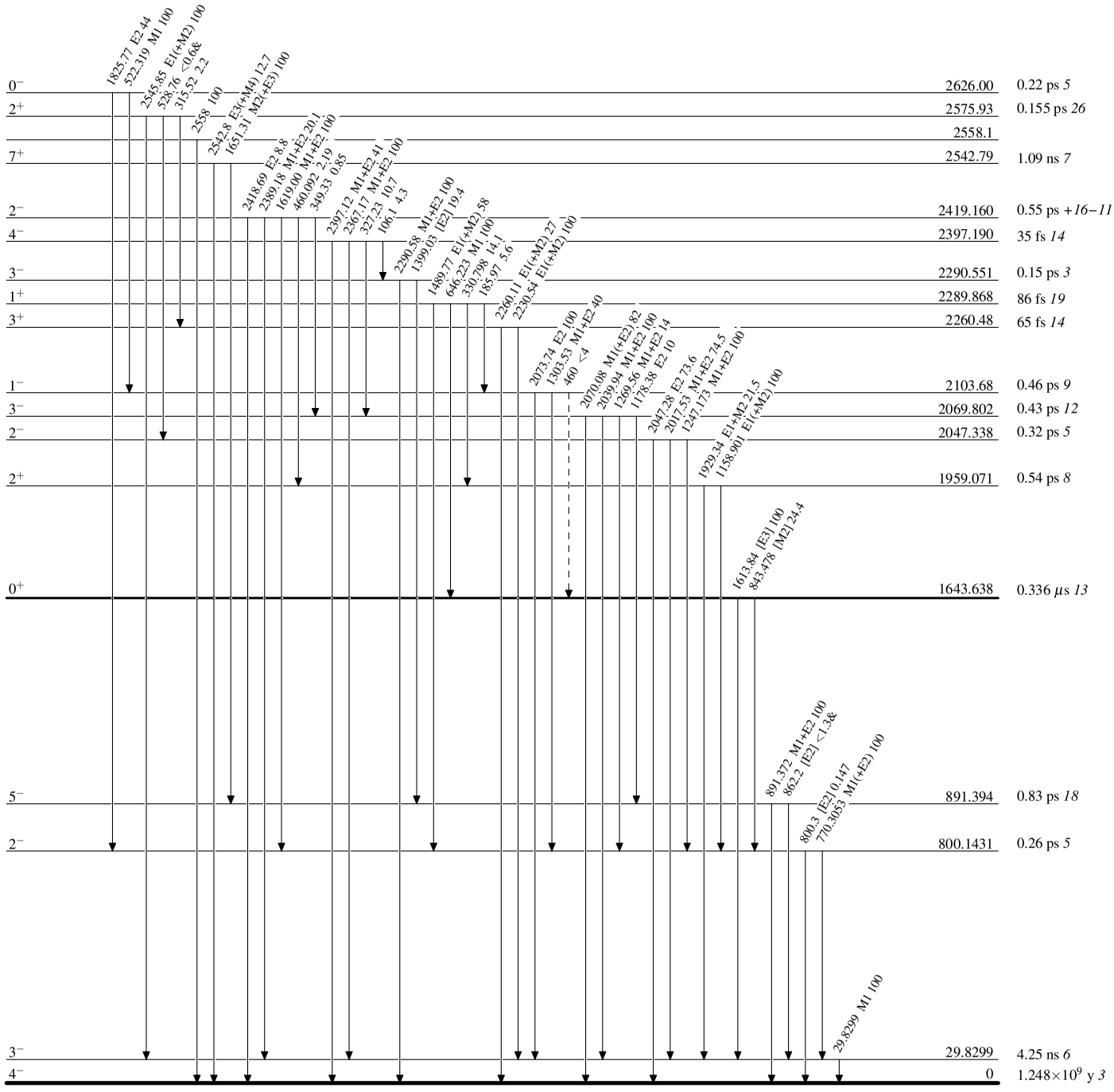
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

– – – – – – ► γ Decay (Uncertain)



$^{40}_{19}K_{21}$