^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows[a]	NDS 109, 1879 (2008)	14-Jul-2008

See also ^{12}C(^{40}Ca,n2pγ),^{40}Ca(^{12}C,n2pγ),...

1972Zu01: E=6-10 MeV. Measured γ's and nγ's; scin, Ge(Li). DSAM (except for 273 state) and RDM (273 state).

1973Sa12: E=14.2, 12.2, 10.2 MeV, measured γ's, $\gamma(\theta)$, $\gamma\gamma(\theta)$, γ(linear pol), and $\gamma\gamma'$s.

1977Ka19: E=8 MeV. Measured γ's, $\gamma(\theta)$ (θ=−15°−105° In 15° steps), $\gamma\gamma(\theta)$ (θ=−10°; 0°,35°,90°), γ(linear pol) (90°);Ge(Li), Compton polarimeter. DSAM.

1979PeZV: E=12, 15, 18 MeV. Measured γ's and nγ's. DSAM.

2006Br03: E=12 MeV. measured γ's, and $\gamma\gamma'$s; Cologne-coincidence-cube spectrometer of five Compton-suppressed≥detectors and one Compton-suppressed cluster DETECTOR.DSAM.

See 1978Ha15 for a comparison between 1972Zu01, 1973Sa12, 1977Ka19, and 1979PeZV; In particular, note that the E(level)′s derived from the data of 1972Zu01 and 1979PeZV tend to Be one to two keV higher than the values cited here. Others: see 1995Bu23.

2006Br03 note that some of their assignments are tentative and that a measurement by a large γ-detector array would Be desireable to verify their level scheme. Also, nγ-coincidence measurements would would allow one to precisely determine the g.s. branches, probably revealing the missing 7/2$^-$ level In the K$^\pi$=1/2$^-$ band. Improvement In the knowledge of the 3-qp K$^\pi$=(7/2$^+$) is also needed.

^{49}Cr Levels

2006Br03 note that the decay from the 3900, 15/2$^-$ and 3893, 13/2$^+$ were mixed up by 1991Ca23 In ^{12}C(^{40}Ca,n2pγ).

Band assignments by 2006Br03 were based on previous assignments, their level scheme, particle-rotor and shell model calculations, and comparison with neighboring nuclides.

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
0.0[@]	5/2$^-$		
271.74[@] *21*	7/2$^-$	13[&] ps *3*	
1083.5[@] *4*	9/2$^-$	0.15[&] ps *3*	J$^\pi$: 9/2$^-$ from $\gamma(\theta)$, $\gamma\gamma(\theta)$, and γ(linear pol).
1562.3[@] *4*	11/2$^-$	0.37[&] ps *6*	J$^\pi$: 11/2$^-$ from $\gamma(\theta)$, $\gamma\gamma(\theta)$, and γ(linear pol) to 9/2$^-$ and 7/2$^-$.
1703.0[a] *4*	1/2$^-$	>3.8[&] ps	J$^\pi$: ≠ 3/2 from $\gamma(\theta)$ and γ(linear pol) to 5/2$^-$.
1741.3[a] *3*	3/2$^-$	1.1[&b] ps *3*	
1981.4[c] *3*	3/2$^+$	>1.39 ps	
2168.5[a] *4*	5/2	1.04 ps *35*	J$^\pi$: ≠ 3/2,7/2 from $\gamma\gamma(\theta)$(2168-271-0) and γ(linear pol) to 7/2$^-$. ≠ 9/2 from $\gamma(\theta)$ and γ(linear pol) to 5/2$^-$. 1977Ka19 suggest π=− based on sys of π=+ energies In other odd f$_{7/2}$ nuclides and J$^\pi$(2432)=5/2$^+$. T$_{1/2}$: >3.1 ps (1977Ka19) discrepant.
2431.8[c] *4*	5/2$^+$	0.97[b] ps *28*	J$^\pi$: ≠ 3/2 from $\gamma(\theta)$ and γ(linear) to 5/2$^-$. ≠ 5/2$^-$,7/2 from $\gamma(\theta)$ and γ(linear pol) to 3/2$^+$.
2499.4[@] *4*	13/2$^-$	0.16[d] ps *4*	J$^\pi$: 13/2$^-$ from $\gamma(\theta)$ to 11/2$^-$ and excit(937γ) (1973Sa12).
2502.0 *4*	7/2$^-$	<8[&] fs	J$^\pi$: ≠ 3/2,5/2$^-$,7/2$^+$ from γ(linear pol) to 7/2$^-$ and 5/2$^-$ (33% confidence level) and ≠ 5/2$^+$ from (M1(+E2)) γ to 5/2$^-$.
2577.9 *5*	1/2$^+$		
2613.1 *6*	3/2$^-$	45[&] fs *14*	
2911.7[c] *5*	7/2$^+$	0.52 ps *10*	
2978.6[e] *5*	(3/2$^+$)	>0.69 ps	
3051.7[af] *8*	(9/2)$^-$	<0.028 ps	
3190.4[@] *5*	(15/2$^-$)	0.28[d] ps *7*	
3201.7[fg] *8*	(9/2)$^-$	<0.028 ps	

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^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03 (continued)

^{49}Cr Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	Comments
3250.8[h] 6	5/2+	0.139 ps 35	Jπ: discrepant with (5/2−) In (p,d),(^{3}He,α),(^{3}He,$\alpha\gamma$).
3407[i]	(5/2)−		
3499.5[af] 11	(11/2)−	<0.021 ps	
3512.5[i] 8	(7/2)−		
3527.6[j] 6	13/2−	0.33 ps 6	
3628.7[c] 5	9/2+	0.125 ps 28	
3687.5[fg] 8	(11/2)−	<0.021 ps	
3717[kl]	(1/2)−		
3802.1[i] 7	11/2−	0.069 ps 21	
3843.8[e] 11	(7/2+)	0.21 ps 4	
3892.3[m] 7	13/2+	>6.9 ps	
3899.9[j] 7	15/2−	0.28 ps 5	
3913[kl]	(3/2)−		
3928.5 11			
4019[l]	1/2+		
4051.6[m] 7	(9/2+)	0.180 ps 28	
4052[kl]	(5/2)−		
4105.3[af] 8	(13/2)−	<0.021 ps	
4201.3[fg] 8	(13/2)−	<0.021 ps	
4219.4[@] 7	17/2−		
4279.7[c] 6	11/2+	0.21 ps 4	
4296.7[e] 11	(9/2+)	0.035 ps 14	
4368[@] 1		>2.1[d] ps	
4421.5 11			
4459.6[m] 11	(11/2+)	0.159 ps 28	
4467.3[n] 8	15/2+		
4571.8[j] 7	17/2−	0.139 ps 28	
4586.5 11			
4717.2[m] 8	(13/2+)	0.49 ps 7	
4749.2 8		<0.035 ps	
4773[o]			
4810.2 8		<0.035 ps	
4837.5 11			
4943.7[e] 11	(11/2)+	0.049 ps 14	
5032.5 11			
5049.0[c] 6	(13/2+)	<0.069 ps	
5062.5 11			
5179.0 11			
5302.3[n] 10	17/2+		

† Calculated by the evaluator using least-squares adjustment procedures, except for the 4368 state which was held fixed and is from 1979PeZV. Δ(Eγ) assumed to Be 1 keV when not given.

‡ From the Adopted Levels for E(level)≤2912 keV and E(level)=3186 keV; supporting evidence from this reaction is given As comments or footnotes. Remaining Jπ assignments are those proposed by 2006Br03 based on their level scheme, particle-rotor and shell model calculations, and comparison with neighboring nuclides.

From 2006Br03 (DSAM), except As noted.

@ Band(A): Kπ=5/2− band. Configuration=1$f_{7/2}$, 5/2[312] (2006Br03). Yrast band suggested by 1977Ka19 based on deformed configuration mixing calculation. Confirmed and extended by 2006Br03.

& From 1972Zu01.

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^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03 (continued)

^{49}Cr Levels (continued)

[a] Band(B): $K^\pi=1/2^-$ band. Configuration=$2p_{3/2}$, 1/2[321] (2006Br03). Suggested by 1977Ka19 based on deformed configuration mixing calculation; confirmed and extended by 2006Br03.
[b] Data from 1972Zu01 are discrepant. $T_{1/2}(1741)>2.8$ ps and $T_{1/2}(2432)>4.2$ ps.
[c] Band(C): $K=3/2^+$ band. Configuration=$1d_{3/2}^{-1}$, 3/2[202] (2006Br03). Proposed by 1977Ka19 based on ΔE agreement with similar band In ^{49}V. Confirmed and extended by 2006Br03.
[d] From 1979PeZV.
[e] Band(D): $K^\pi=1/2^+$ band. Configuration=$1d_{3/2}^{-1}$, 1/2[200] (2006Br03).
[f] $9/2^-$, $11/2^-$ and $13/2^-$ members In $K^\pi=1/2^-$ and $K^\pi=7/2^-$ bands May Be interchanged.
[g] Band(E): $K^\pi=7/2^-$ band. Configuration=$1f_{7/2}$, 7/2[303] (2006Br03).
[h] Band(F): $K^\pi=1/2^+$ band. Configuration=$1d_{3/2}^{-1}$, 1/2[200] (2006Br03).
[i] Band(G): $K^\pi=3/2^-$ band. Configuration=$1f_{7/2}$, 3/2[321] (2006Br03).
[j] Band(H): $K^\pi=13/2^-$, 3qp band. Configuration=$1f_{7/2}^3$ (2006Br03). 2006Br03 confirmed and extended this band.
[k] Band(I): $K^\pi=1/2^-$ band. Configuration=$1f_{7/2}$, 1/2[330] (2006Br03).
[l] Level from Figure 2 of 2006Br03, probably not populated In (α,nγ) study of 2006Br03.
[m] Band(J): $K^\pi=(7/2^+)$, 3qp band. Configuration=$1d_{3/2}^{-1}1f_{7/2}^2$ (2006Br03).
[n] Band(K): $K^\pi=13/2^+$, 3qp band. Configuration=$1d_{3/2}^{-1}1f_{7/2}^2$ (2006Br03). Confirmed by 2006Br03.
[o] 2006Br03 do not show any γ decay from this level.

$\gamma(^{49}Cr)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
271.74	7/2⁻	271.4[&] *3*	100[a]	0.0	5/2⁻	D+Q[&]	−0.14[&] *3*	Mult.,δ: from $\gamma(\theta)$.
1083.5	9/2⁻	810.7[&] *5*	94.1[ab] *10*	271.74	7/2⁻	M1+E2[&c]	−0.21[&] *3*	Mult.: from $\gamma(\theta)$, $\gamma\gamma(\theta)$, and γ(linear pol).
		1083.0[a] *10*	5.9[a] *10*	0.0	5/2⁻			
1562.3	11/2⁻	478.7[&] *3*	51.4[ab] *20*	1083.5	9/2⁻	M1+E2[c]	−0.057[d] *24*	Mult.: from $\gamma(\theta)$, $\gamma\gamma(\theta)$, and γ(linear pol).
		1289.6[a] *5*	48.6[ab] *20*	271.74	7/2⁻	E2[&c]		Mult.: from $\gamma(\theta)$, $\gamma\gamma(\theta)$, and γ(linear pol). δ: 0.00 *4* (1973Sa12). $<3.5\times10^{-4}$ *6* from comparison to RUL.
1703.0	1/2⁻	1703.2[a] *5*	100[a]	0.0	5/2⁻	E2		Mult.: from $\gamma(\theta)$ and γ(linear pol).
1741.3	3/2⁻	39[s]	<0.1	1703.0	1/2⁻			
		1469.3[a] *5*	28.7[a] *20*	271.74	7/2⁻	E2[c]		Mult.: Q(+O) from $\gamma(\theta)$ and $\gamma\gamma(\theta)$. Comparison to RUL excludes M2. δ: +0.02 *16*. $<1.2\times10^{-3}$ *4* from comparison to RUL.
		1741.3 *5*	71.3 *20*	0.0	5/2⁻	D+Q[c]	>+0.070	Mult.,δ: from $\gamma(\theta)$ and $\gamma\gamma(\theta)$.
1981.4	3/2⁺	240	2.4[e] *6*	1741.3	3/2⁻	(E1)[f]		
		278.2[a] *10*	14.1[e] *42*	1703.0	1/2⁻	D(+Q)		$\delta\leq+0.176\geq-2.75$ Mult.,δ: from $\gamma(\theta)$ and $\gamma\gamma(\theta)$. Assigned As E1 by 2006Br03.
		1709.5[a] *5*	8.6[e] *27*	271.74	7/2⁻	Q+O	−0.23 *21*	Mult.,δ: from $\gamma\gamma(\theta)$. Assigned As M2+E3 by 2006Br03.
		1981.4[a] *5*	74.9[e] *54*	0.0	5/2⁻	D+Q[c]		$\delta\leq+2.90\geq+0.488$ Mult.,δ: from $\gamma(\theta)$ and $\gamma\gamma(\theta)$. Assigned As E1 by 2006Br03.
2168.5	5/2	427	2.1 *6*	1741.3	3/2⁻	D,E2[g]		
		465[s]	<0.1	1703.0	1/2⁻			
		1897.0[a] *5*	45.2[a] *20*	271.74	7/2⁻	D+Q[c]		δ: +0.18 *17* or +4 *+10−2*. Mult.,δ: from $\gamma\gamma(\theta)$.

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^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03 (continued)

$\gamma(^{49}Cr)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
2168.5	5/2	2168.2[a] 5	54.8[a] 20	0.0	5/2$^-$	D+Q[c]	<−2.14	Mult.,δ: from $\gamma(\theta)$.
2431.8	5/2$^+$	450.5[i] 10	46 6	1981.4	3/2$^+$	M1+E2[c]	+0.21 9	Mult.,δ: from $\gamma(\theta)$ and γ(linear pol).
		690	3.1 6	1741.3	3/2$^-$	D,E2[h]		
		2161[i]	1.2[j] 4	271.74	7/2$^-$	(E1)[f]		I$_\gamma$: Iγ=17% (1977Ka19) discrepant.
		2431.5[i] 6	50 6	0.0	5/2$^-$	D(+Q)[c]	+0.5 5	Mult.,δ: from $\gamma(\theta)$. Assigned As E1 by 2006Br03.
2499.4	13/2$^-$	936.8[&] 3	90[bk] 3	1562.3	11/2$^-$	D(+Q)[&]	−0.03[&] 4	Mult.,δ: from $\gamma(\theta)$.
		1416[a]	10[k] 3	1083.5	9/2$^-$			
2502.0	7/2$^-$	335[s]	<5	2168.5	5/2			
		1420[s]	<5	1083.5	9/2$^-$			
		2232.6[a] 10	32.7[a] 50	271.74	7/2$^-$	D(+Q)[c]	−0.23 23	Mult.,δ: from $\gamma(\theta)$ and $\gamma\gamma(\theta)$.
		2503.1[a] 5	67.3[a] 50	0.0	5/2$^-$	M1(+E2)[c]	−0.11 10	Mult.: E1+M2 from $\gamma(\theta)$ and γ(linear pol) excluded by $\delta(5/2^+)$=−1.4 +5−15 and comparison to RUL.
2577.9	1/2$^+$	596	11[l] 3	1981.4	3/2$^+$			
		836.5[a] 6	56[al] 4	1741.3	3/2$^-$	(E1)[f]		
		875.3[a] 6	33[al] 4	1703.0	1/2$^-$	(E1)[f]		
2613.1	3/2$^-$	2341.7[a] 6	59.3[a] 6	271.74	7/2$^-$	E2[c]		Mult.: from $\gamma\gamma(\theta)$ and γ(linear pol). δ: −0.13 11. <0.00088 14 from comparison to RUL.
		2611.8[a] 10	40.7[a] 20	0.0	5/2$^-$	M1(+E2)[c]	0.00 +29−12	Mult.,δ: from $\gamma(\theta)$ and γ(linear pol).
2911.7	7/2$^+$	480	33 5	2431.8	5/2$^+$	D[h]		
		930	13 3	1981.4	3/2$^+$	D,E2[h]		
		2640	31 5	271.74	7/2$^-$	D,E2[h]		
		2912	23 4	0.0	5/2$^-$			
2978.6	(3/2$^+$)	401[m]	23.5[n] 41	2577.9	1/2$^+$			
		547[m]	39.8[n] 44	2431.8	5/2$^+$			
		810	15.9[n] 27	2168.5	5/2	(E1)[o]		
		997[m]	10.8[n] 20	1981.4	3/2$^+$	(E1)[o]		
		1237	10.0[n] 18	1741.3	3/2$^-$	(E1)[o]		
		2979[ps]		0.0	5/2$^-$	(E1)[o]		
3051.7	(9/2)$^-$	1968	56 5	1083.5	9/2$^-$	D,E2[g]		
		2780	44 5	271.74	7/2$^-$	D,E2[g]		
		3052[ps]		0.0	5/2$^-$			
3190.4	(15/2$^-$)	689[&a] 1	48[bk] 5	2502.0	7/2$^-$	D[g]		
		1628[a]	52[k] 5	1562.3	11/2$^-$	D,E2[g]		
3201.7	(9/2)$^-$	2118	31 6	1083.5	9/2$^-$	D,E2[g]		
		2930	69 6	271.74	7/2$^-$	D,E2[g]		
		3202[ps]		0.0	5/2$^-$			
3250.8	5/2$^+$	819[m]	44 6	2431.8	5/2$^+$	D[h]		
		1269[m]	44 6	1981.4	3/2$^+$	D,E2[h]		
		2979	<5[j]	271.74	7/2$^-$			
		3251	12 3	0.0	5/2$^-$			
3407	(5/2)$^-$	794[s]		2613.1	3/2$^-$			Additional information 1.
3499.5	(11/2)$^-$	2416	100	1083.5	9/2$^-$			

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^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03 (continued)

γ(^{49}Cr) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.[#]	Comments
3512.5	$(7/2)^-$	2430[s]	48[q] *10*	1083.5	$9/2^-$		
		3511[s]	52[q] *10*	0.0	$5/2^-$		
3527.6	$13/2^-$	337.2	79 *4*	3190.4	$(15/2^-)$	D[g]	
		1027.6	17 *3*	2499.4	$13/2^-$	D,E2[g]	
		1965.4	4.3 *9*	1562.3	$11/2^-$	D,E2[g]	
		2444	<2	1083.5	$9/2^-$		
3628.7	$9/2^+$	717[m]	29 *5*	2911.7	$7/2^+$	D,E2[g]	
		1197[m]	11 *2*	2431.8	$5/2^+$	D,E2[g]	
		2066	4.0 *6*	1562.3	$11/2^-$	D,E2[h]	
		2545	25 *4*	1083.5	$9/2^-$	(E1)[f]	
		3357	30 *5*	271.74	$7/2^-$	(E1)[f]	
3687.5	$(11/2)^-$	2125	31 *4*	1562.3	$11/2^-$	D,E2[g]	
		2604	69 *4*	1083.5	$9/2^-$	D,E2[g]	
3802.1	$11/2^-$	1301	15 *3*	2499.4	$13/2^-$	D,E2[g]	
		2718	30 *4*	1083.5	$9/2^-$		
		3530	55 *5*	271.74	$7/2^-$		
3843.8	$(7/2^+)$	1412[m]	100	2431.8	$5/2^+$	D,E2[g]	
		3572[ps]		271.74	$7/2^-$	(E1)[o]	
		3844[ps]		0.0	$5/2^-$	(E1)[o]	
3892.3	$13/2^+$	364.4	17 *3*	3527.6	$13/2^-$	(E1)[f]	
		701.9	18 *3*	3190.4	$(15/2^-)$	(E1)[f]	
		2330.0	65 *4*	1562.3	$11/2^-$	(E1)[f]	
3899.9	$15/2^-$	709[m]	35 *5*	3190.4	$(15/2^-)$	D,E2[g]	
		1399[m]	35 *5*	2499.4	$13/2^-$	D,E2[g]	
		2337	30 *5*	1562.3	$11/2^-$		
3928.5		1947		1981.4	$3/2^+$		
4051.6	$(9/2^+)$	1140	10 *2*	2911.7	$7/2^+$	D,E2[g]	
		2489[m]	27 *4*	1562.3	$11/2^-$	D,E2[r]	
		2968[m]	63 *6*	1083.5	$9/2^-$	D,E2[r]	
4105.3	$(13/2)^-$	1604	56 *5*	2499.4	$13/2^-$	D,E2[g]	
		3021	44 *5*	1083.5	$9/2^-$	D,E2[g]	
4201.3	$(13/2)^-$	1700	72 *4*	2499.4	$13/2^-$	D,E2[g]	
		3117	28 *4*	1083.5	$9/2^-$	D,E2[g]	Additional information 2.
4219.4	$17/2^-$	1028		3190.4	$(15/2^-)$		
		1718		2499.4	$13/2^-$		
4279.7	$11/2^+$	651[m]	28[m] *4*	3628.7	$9/2^+$	D[g]	
		1368[m]	42 *5*	2911.7	$7/2^+$	D,E2[g]	
		2717	17 *3*	1562.3	$11/2^-$	(E1)[f]	
		3196	13 *2*	1083.5	$9/2^-$	(E1)[f]	
4296.7	$(9/2^+)$	1385	100	2911.7	$7/2^+$		
		4025[ps]		271.74	$7/2^-$	(E1)[o]	
4368		1177	(100)[k]	3190.4	$(15/2^-)$		
4421.5		2440		1981.4	$3/2^+$		
4459.6	$(11/2^+)$	3376	100	1083.5	$9/2^-$	D,E2[r]	
4467.3	$15/2^+$	575		3892.3	$13/2^+$		
		1277		3190.4	$(15/2^-)$		
4571.8	$17/2^-$	352	<5	4219.4	$17/2^-$		
		1382	50 *7*	3190.4	$(15/2^-)$	D,E2[g]	
		2072	50 *7*	2499.4	$13/2^-$	D,E2[g]	
4586.5		2605		1981.4	$3/2^+$		
4717.2	$(13/2^+)$	2216[m]	56 *8*	2499.4	$13/2^-$	D,E2[r]	
		3154[m]	44 *8*	1562.3	$11/2^-$	(E1)[o]	

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^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03 (continued)

$\gamma(^{49}Cr)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.[#]
4749.2		2248	41 *8*	2499.4	13/2$^-$	D,E2
		3186[m]	59 *8*	1562.3	11/2$^-$	D,E2[g]
4810.2		1619[m]	44 *8*	3190.4	(15/2$^-$)	D,E2[g]
		2309	56 *8*	2499.4	13/2$^-$	D,E2[g]
4837.5		3275		1562.3	11/2$^-$	
4943.7	(11/2)$^+$	1315[m]	100	3628.7	9/2$^+$	
		3860[ps]		1083.5	9/2$^-$	(E1)[f]
5032.5		3470		1562.3	11/2$^-$	
5049.0	(13/2$^+$)	769	<10[m]	4279.7	11/2$^+$	
		1420	21 *3*	3628.7	9/2$^+$	D,E2[g]
		2548[m]	38 *4*	2499.4	13/2$^-$	D,E2[r]
		3486[m]	41 *5*	1562.3	11/2$^-$	(E1)[o]
5062.5		3500		1562.3	11/2$^-$	
5179.0		2677		2502.0	7/2$^-$	
5302.3	17/2$^+$	835		4467.3	15/2$^+$	
		1410		3892.3	13/2$^+$	

† From 2006Br03, except As noted.

‡ % photon branching from each level.

From 1977Ka19, except As noted. 2006Br03 adopted an upper limit of 3×10^{-4} W.u. (compared to a RUL of 0.010 W.u. used In the Nuclear Data Sheets) for E1 transitions based on data extracted for several nuclei In this mass region; if the B(E1)↓ value is less than this limit, M1+E2 cannot Be excluded but In some cases it is unfavored.

@ Seen by 1977Ka19 but lack of a Doppler shift shows that it is not from a 2613-1703 transition As proposed by 1971Bl09 In (^{3}He,$\alpha\gamma$) or the 2912-1982 transition reported by 2006Br03 In (α,pnγ).

& From 1973Sa12. Values from 1977Ka19 agree but are less precise.

a From 1977Ka19.

b See 1973Sa12 for Iγ, relative to Iγ(271γ)=100.

c γ(linear pol) measured by 1977Ka19 or 1973Sa12.

d Weighted average from 1973Sa12 and 1977Ka19.

e Unweighted average of Iγ(240γ)/Iγ(279γ)/Iγ(1710γ)/Iγ(1982γ)=2.4 *6*/10 *2*/6 *2*/81 *7* (2006Br03) and Iγ(278.2γ)/Iγ(1709.5γ)/Iγ(1981.4γ)=18.5 *20*/11.4 *20*/70.1 *20* (1977Ka19).

f Assigned As E1 by 2006Br03. Parentheses added by evaluator.

g From comparison to RUL (evaluator).

h From comparison to RUL (evaluator). Assigned As E1 by 2006Br03.

i From 1972Zu01.

j 2006Br03 suggest that these were possible contaminated lines since the branching ratios In 1995Bu23 were large and In their measurements they are small. 2006Br03 note that their Iγ(2160γ) is In agreement with that of 1977Ka19 and suggest that the 2979γ is a transition from the 2979 keV state to the g.s..

k From 1979PeZV.

l Iγ renormalized by evaluator to Σ Iγ=100%.

m In Table I of 2006Br03, there is either an "*" flag on the Eγ or a dagger flag on the Iγ which do not seem to Be defined In the paper (evaluator's note).

n Iγ's In Tables I and II of 2006Br03 appear inconsistent. In Table I the data appear to Be given As relative photon branching ratios normalized to Iγ(547γ)=100. In Table II % photon branching ratios are given but only for three transitions (401γ, 547γ, and 907γ) and these sum to 100% 8. If the Iγ's In Table I are renormalized to Iγ(547γ)=54% 6, Iγ(401γ) and Iγ(997γ) agree between the two tables; however, Σ Iγ=136% 10. The evaluator has chosen to use the Iγ's of Table I renormalized to Iγ(547γ)=54% 6 and then renormalize these so that Σ Iγ=100%.

o Assigned As (E1) by 2006Br03. Mult(997γ) not consistent with $\Delta\pi$=No from level scheme.

Continued on next page (footnotes at end of table)

^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03 (continued)

$\gamma(^{49}Cr)$ (continued)

[p] Listed In Table I of 2006Br03 but with footnote that the line could not Be observed. Placement or existence considered uncertain by the evaluator.
[q] 2006Br03 quote value from 1995Bu23.
[r] From comparison to RUL (evaluator). Assigned As (E1) by 2006Br03.
[s] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

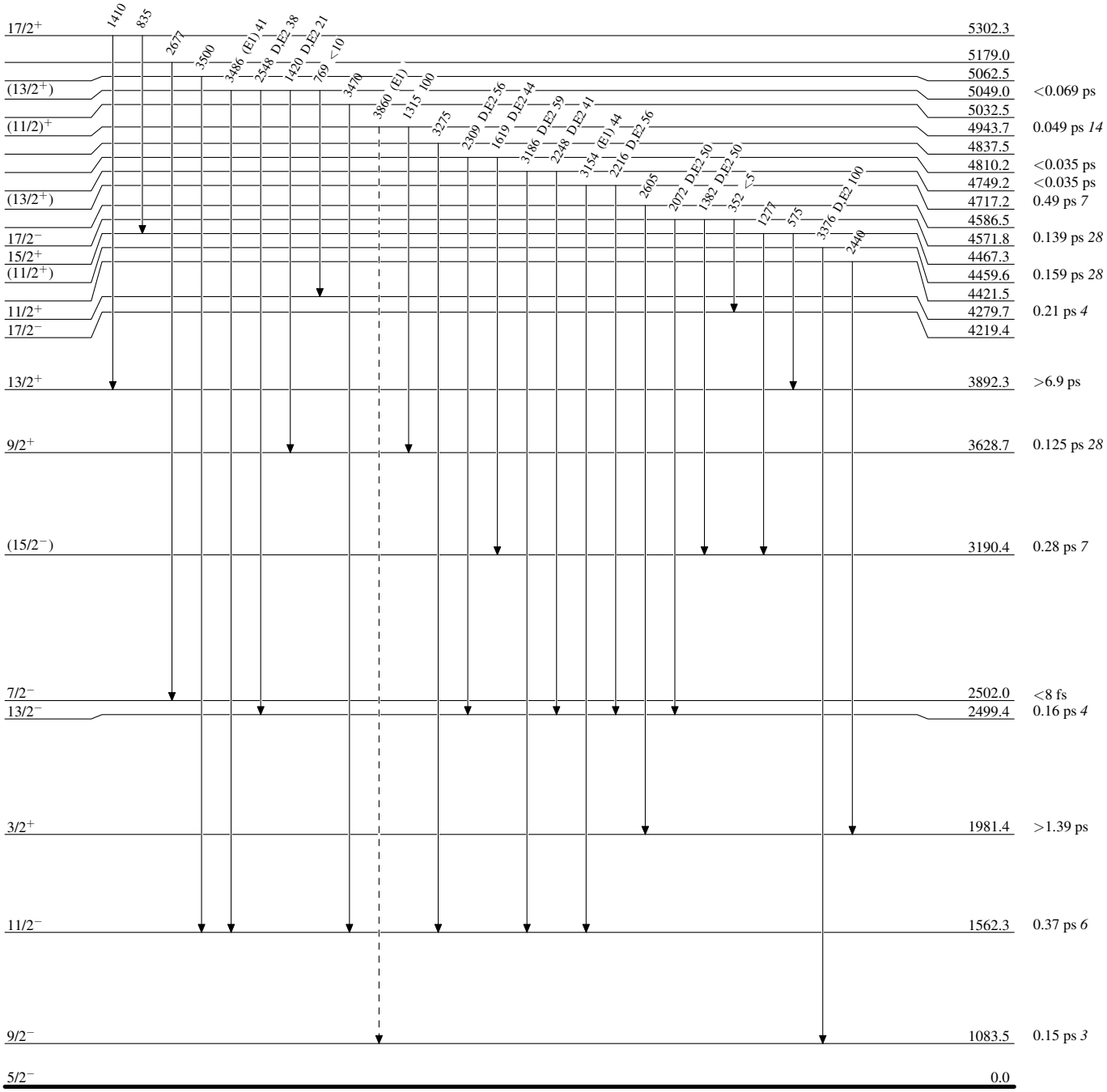
^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03

Legend

Level Scheme

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{49}_{24}Cr_{25}$

^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03

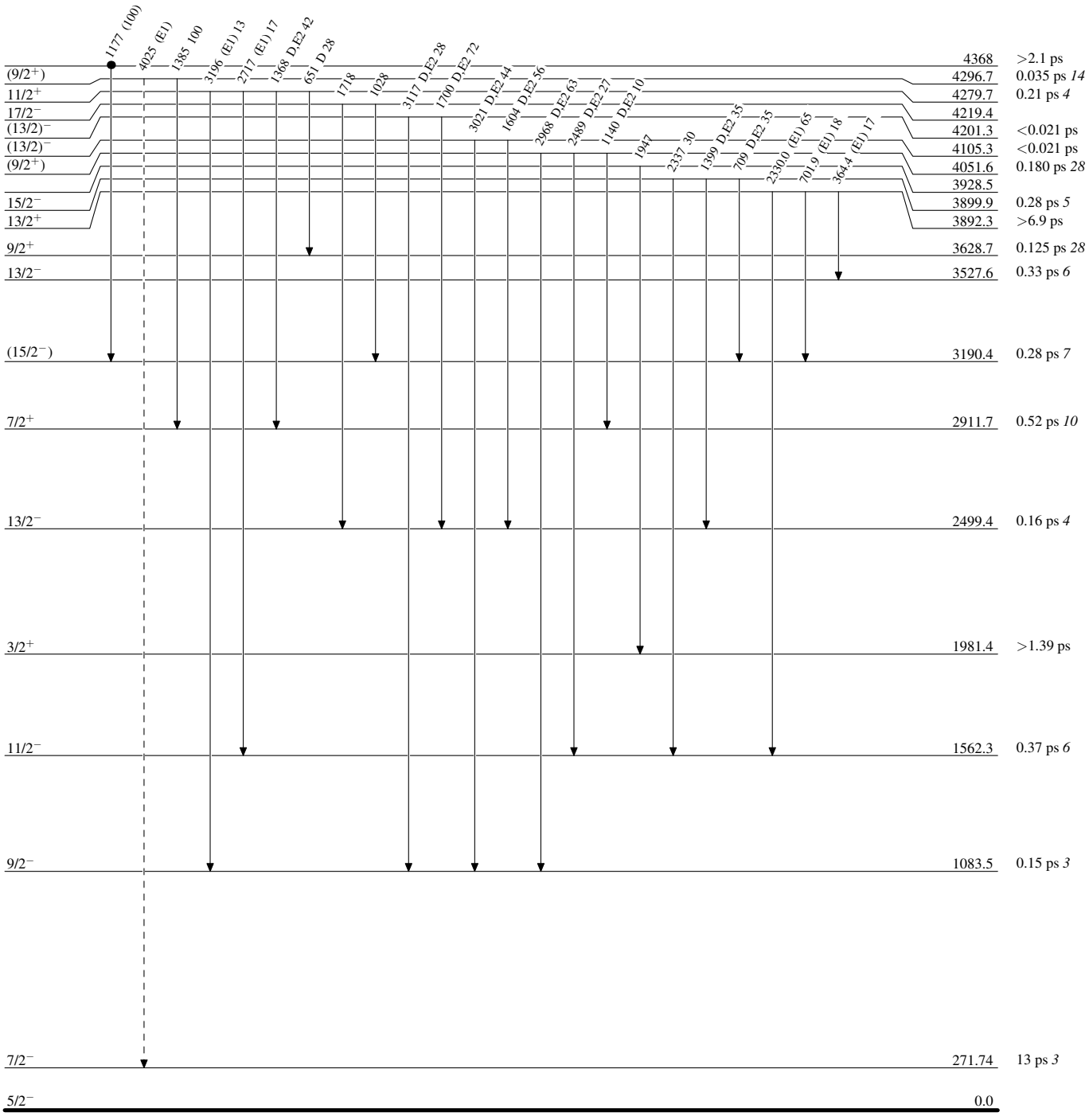
Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)

Coincidence



$^{49}_{24}Cr_{25}$

Legend

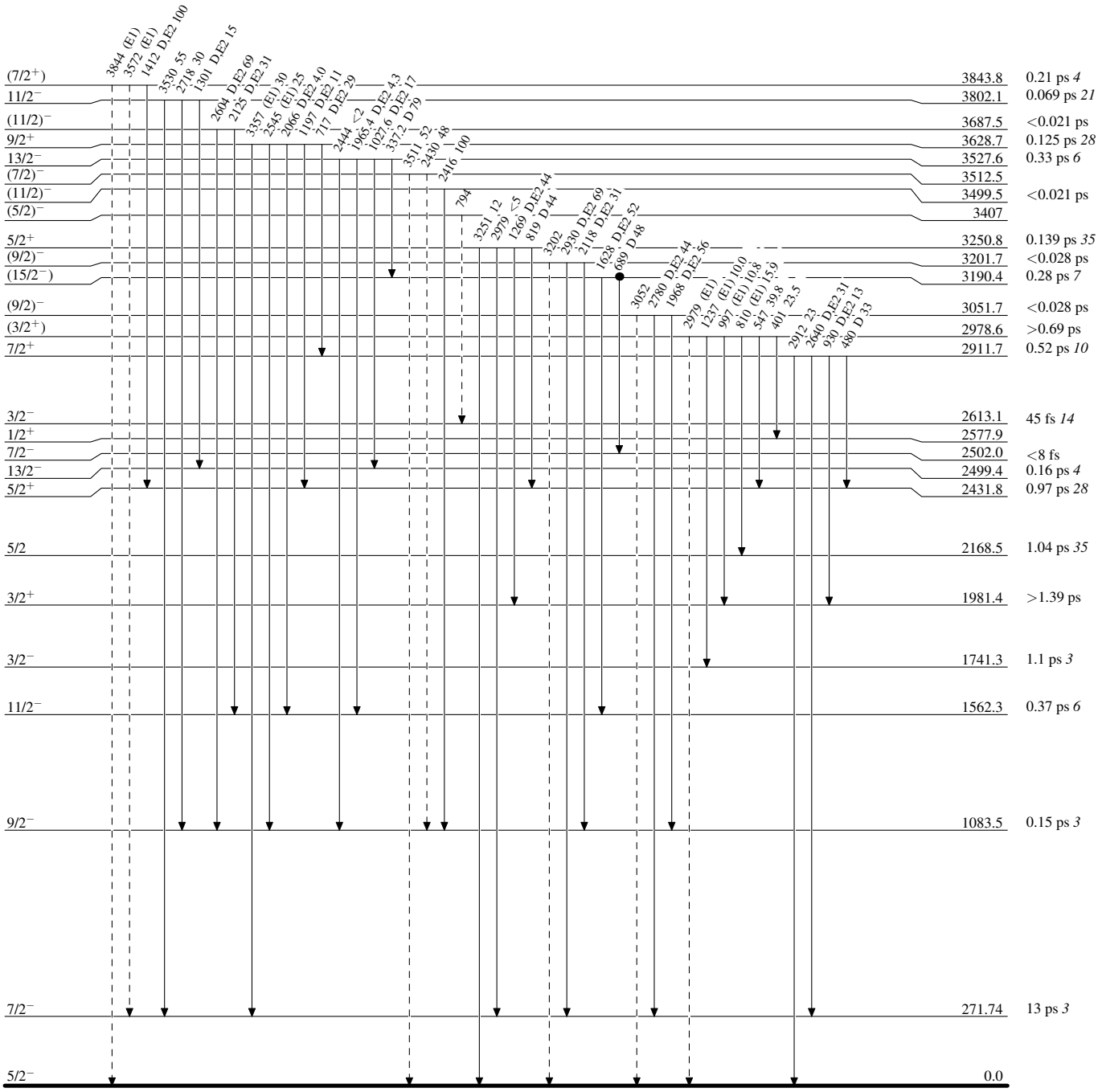
^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)

Coincidence

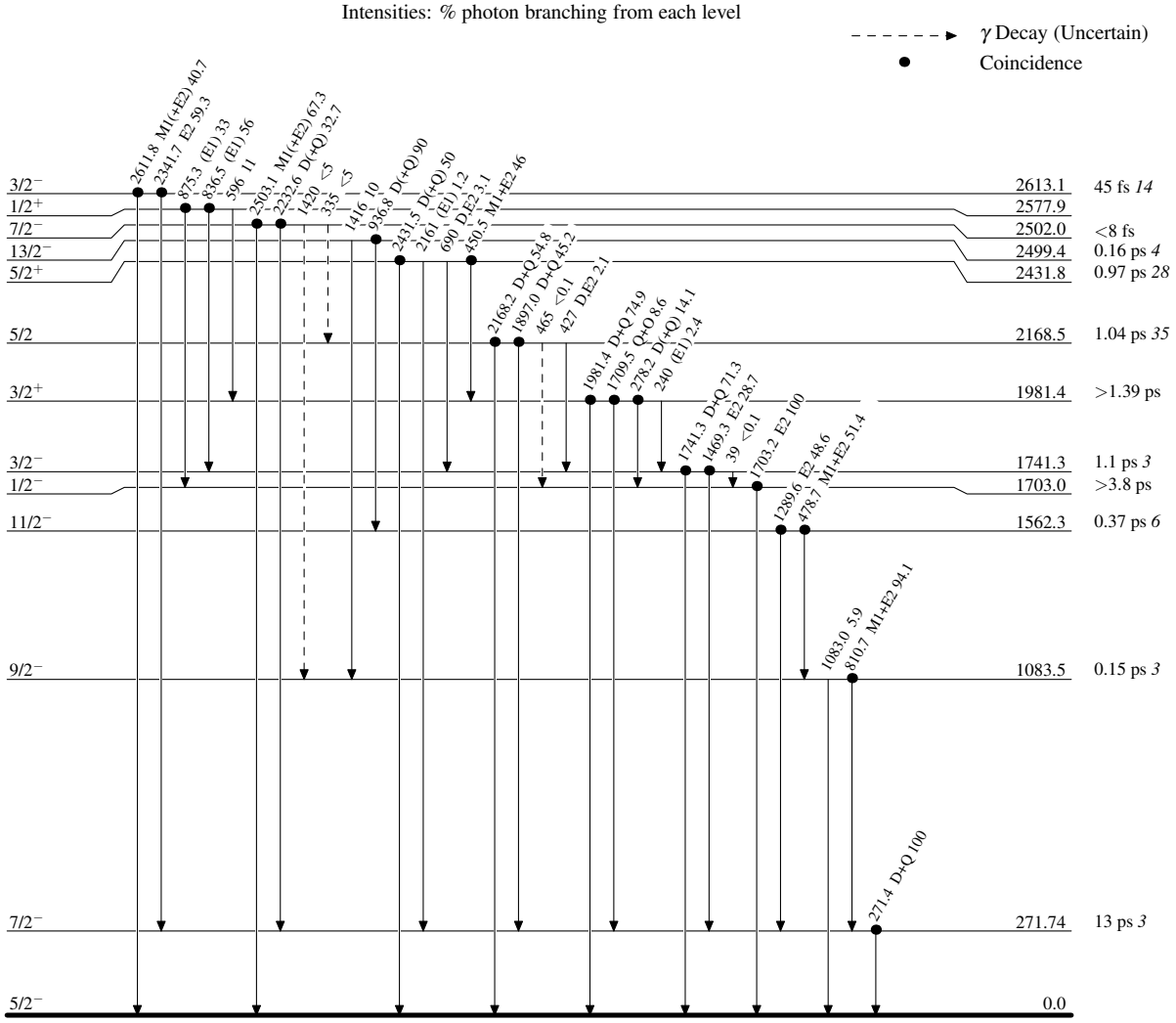


$^{49}_{24}Cr_{25}$

^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03 Legend

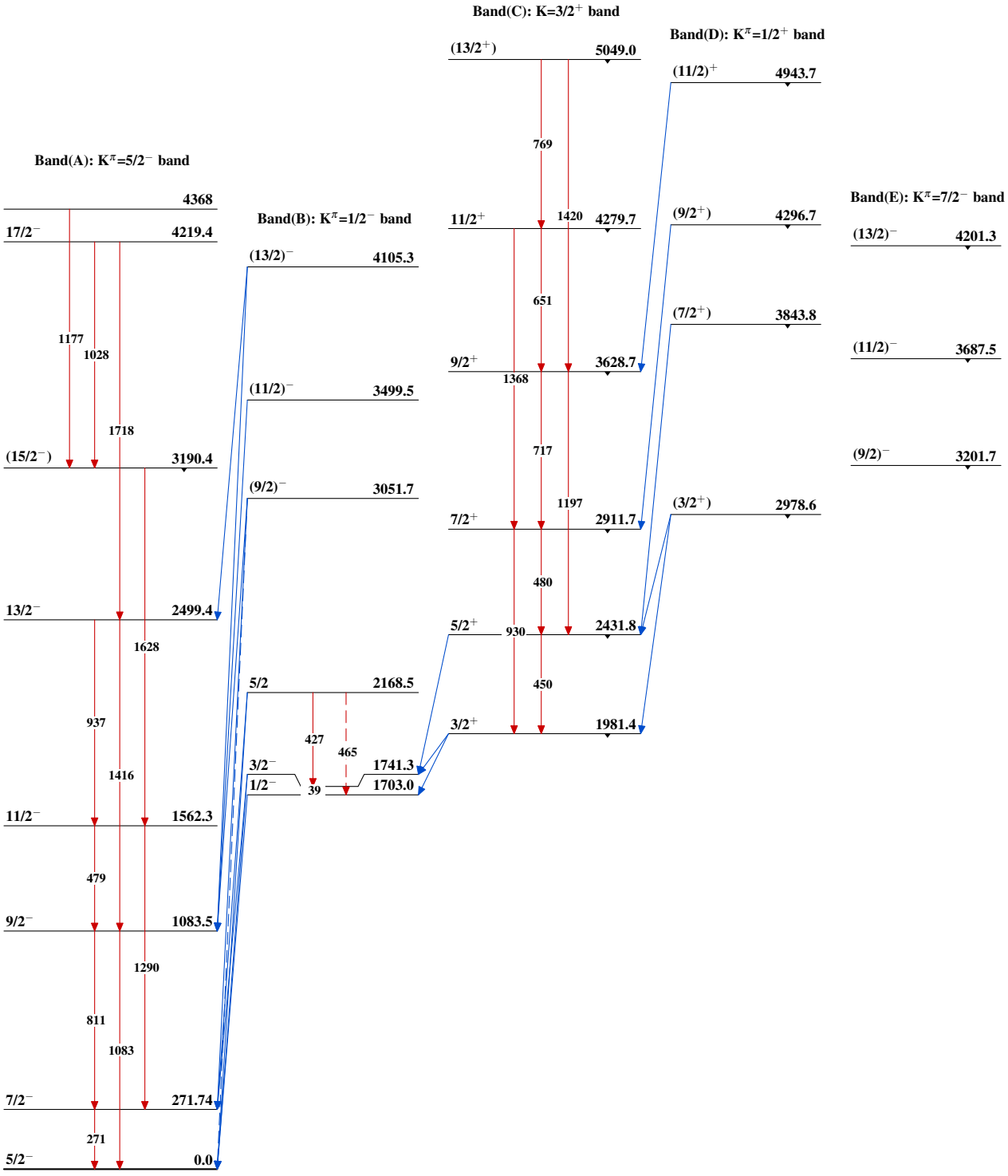
Level Scheme (continued)

Intensities: % photon branching from each level



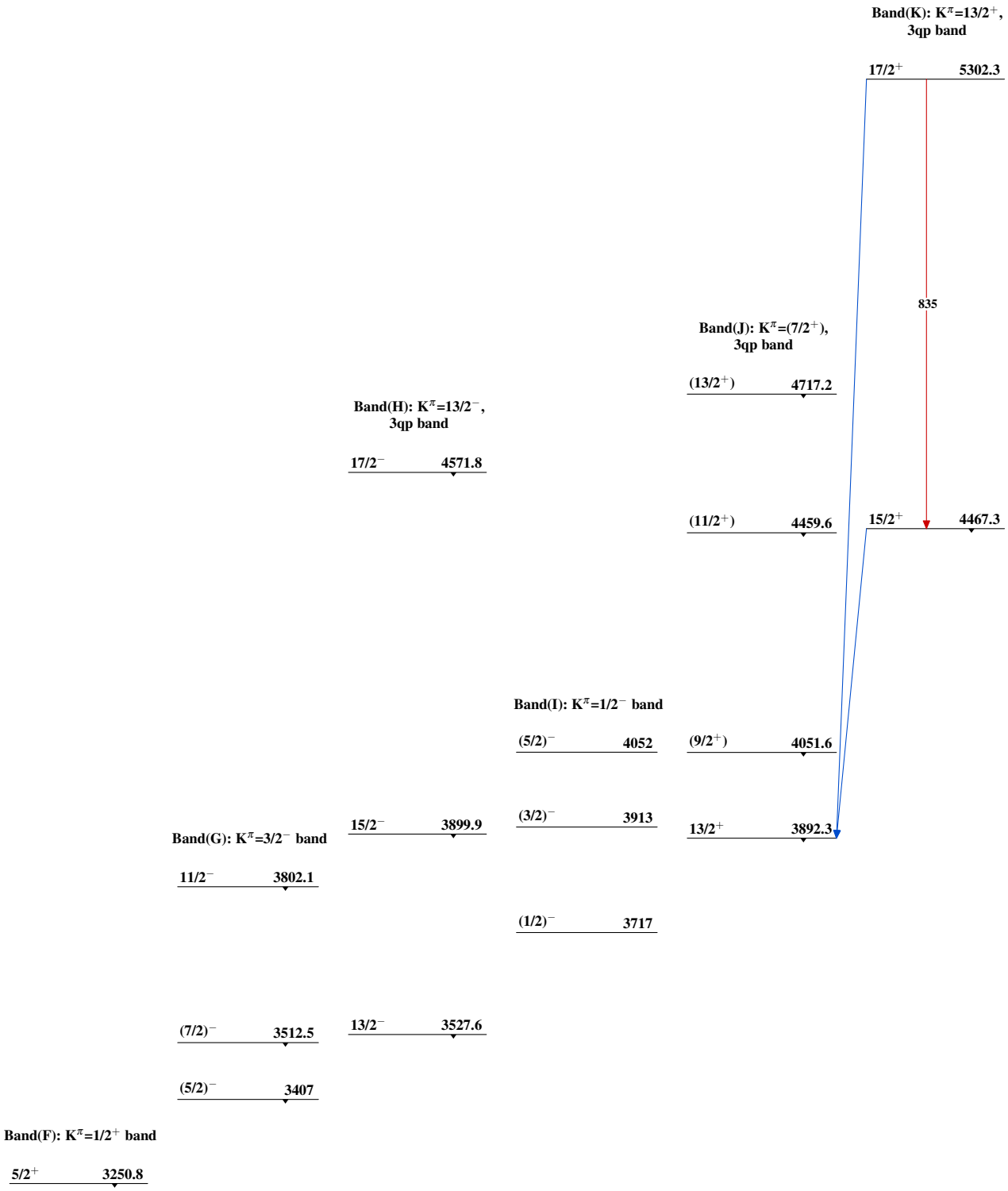
$^{49}_{24}Cr_{25}$

^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03



$^{49}_{24}Cr_{25}$

^{46}Ti(α,nγ) 1977Ka19,1979PeZV,2006Br03 (continued)



$^{49}_{24}Cr_{25}$