^{50}Cr(p,d),(^{3}He,α),(^{3}He,$\alpha\gamma$) 1985Fu03,1978Za03,1971Bl09

History

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

The groups below all measured $\sigma(\theta)$ with magnetic spectrographs and, except for 1980Oh06, performed DWBA analyses.

1969Da02: E(^{3}He=18 MeV. Emulsion (θ=5°−35°); Si (θ=20°−80° In 5° steps; FWHM≈60 keV).

1971Bl09: E(^{3}He)=18 MeV. FWHM=25 keV. θ=3.75°−90° In 3.75° steps. Also measured γ's and Ag(θ) (NaI, position-sensitive Si) At 15 MeV.

1978Fo34: E(^{3}He)=25 MeV. Measured $\sigma(\theta)$; magnetic spectrometer, focal-plane position-sensitive Si detectors. θ=5°−40° In 5° steps. DWBA and and coupled-reaction-channel analyses.

1978Za03: E(^{3}He)=16 MeV. Emulsion. FWHM≈22 keV. θ=11.25°−108.75° In 7.5° steps.

1980Oh06: E(p)=51.93 MeV. Proportional counters, scintillators. FWHM=70-100 keV. θ(C.M.)<100°. CCBA; studied "forbidden" transitions.

1985Fu03: E(p)=55 MeV. Position-sensitive α(P) and ΔE/E counter. FWHM=15 and 20 keV for thin and thick targets, respectively. θ=8°−40°, 10 angles.

See 1978Ha15 for a comparison of the work of 1969Da02 and 1971Bl09 and 1985Fu03 for a comparison of their results to the data of 1969Da02, 1971Bl09, and 1978Za03 and to the (A,NΓ) data of 1977Ka19.

^{49}Cr Levels

See 1985Fu03 for the spreading widths, Coulomb displacement, and average energies for the split IAS′s.

T: from 1985Fu03.

271, 1083, and 1561 Parameters: 1980Oh06 obtained the following parameters for the 271, 1083, and 1561 states, respectively: $\sqrt{C^2S}$=1.67 for coupling with ^{50}Cr g.s., 0$^+$; β_2=0.37 for coupling with 270, 7/2$^-$, state and $\sqrt{C^2S}$=−0.71 for coupling with ^{50}Cr 780, 2$^+$, state; and β_2=0.21 for coupling with 270, 7/2$^-$, state and $\sqrt{C^2S}$=0.5 for coupling with ^{50}Cr 780, 2$^+$, state. The large discrepancy between calculated and experimental $\sigma(\theta)$ for the 1561 state may be due to the effects of the ^{50}Cr 1.89-MeV, 4$^+$, state.

1.70-, 1.74-, and 2.61-MeV $\sigma(\theta)$'s: $\sigma(\theta)$ In (p,d) for the two 3/2$^-$ states show somewhat different patterns near 20° and 40° while the 1703, 1/2$^-$, and 1741, 3/2$^-$, states show nearly the same $\sigma(\theta)$. Using the calculations of 1975Ha22, 1985Fu03 suggest that this May Be explained if the main component of the 1703, 1/2$^-$, and 1741, 3/2$^-$, states is K=1/2, ν=3 and the main component of the 2612, 3/2$^-$, state is K=3/2, ν=3 corresponding to the ^{49}V 152, 3/2$^-$, state.

L(γ),S(H) L=0, C^{2}S=0.51 for multiplet (1978Za03). Parentheses added by evaluator.

E(I),S(J) possible members of IAS(^{49}V 1995, 3/2$^+$). Note that 1985Fu03 assumed J$^\pi$=5/2$^+$ to extract C^{2}S.

E(level)[†]	J$^\pi$[‡]	L[#]	C^{2}S[@]	Comments
0.0	5/2$^-$	3	0.10[&]	J$^\pi$: from the Adopted Levels. C^{2}S: 0.12 (separation energy); 0.13 (isospin-dependent) (1978Fo34).
268 *20*	7/2$^-$[a]	3	2.00	E(level): from 1978Fo34. J$^\pi$: ≠ 5/2$^-$ from large C^{2}S and $\gamma(\theta)$. C^{2}S: 3.60 (separation energy); 3.93 (isospin-dependent) (1978Fo34).
1.07×10^3 *2*	9/2$^-$[a]	(≥4)		L: 1971Bl09 show good fit for L(N)=5 but conclude only L(N)≥4 or complex configuration; 1978Za03 reach similar conclusions.
1.57×10^3 *2*	11/2$^-$[a]			L: $\sigma(\theta)$ exhibits non-stripping character (1978Za03).
1698	1/2$^-$[b]	1	0.02	J$^\pi$: see comment on $\sigma(\theta)$ above.
1.74×10^3 *2*	3/2$^-$	1	0.05	J$^\pi$: see comment on $\sigma(\theta)$ above.
1.98×10^3 *2*	3/2$^+$	2	1.10	J$^\pi$: ≠ 5/2$^+$ from $\gamma(\theta)$ to 5/2$^-$.
2.43×10^3 *2*	5/2$^+$	2	0.06	J$^\pi$: 1971Bl09 give 5/2$^-$ from L(N)=3 and $\gamma(\theta)$ to 3/2$^+$. L,C^{2}S: others: 3, 0.08 *2* (1978Za03); 3 (1971Bl09); and (2) (1969Da02).
2593 *20*	1/2$^+$	0	0.93	E(level): from 1978Fo34. C^{2}S: 1.17 (separation energy); 1.29 (isospin-dependent) (1978Fo34).
2.61×10^3 *2*	3/2$^-$	1	0.11	T=1/2 J$^\pi$: see comment on $\sigma(\theta)$ above.

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^{50}Cr(p,d),(^{3}He,α),(^{3}He,αγ) 1985Fu03,1978Za03,1971Bl09 (continued)

^{49}Cr Levels (continued)

E(level)[†]	Jπ[‡]	L[#]	C^2S[@]	Comments
				antianalog state of 6423 state. See comment on this state.
2.91×10^{3}?				
2985 5				
3250[c] 5	(5/2$^-$)			Jπ: 1971Bl09 give 5/2$^-$ based on L(N)=3 and Γ(Θ) to 3/2$^+$. However, see comment on L. Discrepant with 5/2$^+$ proposed by 2006Br03 In (α,nγ). L,C^{2}S: 3,0.30 (1978Za03) but 1985Fu03 note that this is an unresolved doublet and σ(θ) of the whole peak could not Be fitted by L≤3.
3407 5		3	0.01	
3511 5	(5/2)$^-$	3	0.35[&]	Jπ: from J-dependence of L=3 σ(θ) In (p,d) and similarity of σ(θ) to that for the g.s.; however, 1985Fu03 note that there is a question of whether the $f_{7/2}$ orbital is occupied so much (C^{2}S=0.35) In an N=26 nucleus. C^{2}S: 0.77 (separation energy); 0.86 (isospin-dependent) (1978Fo34).
3717 5	[b]	1	0.01	L,C^{2}S: 3,0.13 (1978Za03).
3913 5	1/2$^-$,3/2$^-$[b]	1	0.01	Jπ: 1971Bl09 suggest 1/2$^-$ on the basis of isotropy of Σ 0.45-2.10 MeV γ′s and Σ 1.80-2.10 γ′s In Ag(θ). evaluator suggests that the 3.93-MeV state observed by the other groups should Be associated with the 3913 state not the 3938 state As suggested by 1985Fu03.
3938 5		2	0.10	
3975 5				
4019 5		(0)	0.01	evaluator suggests that the 4.05-MeV, L=0, state observed by 1978Za03 is associated with this state rather than the 4052 state As indicated by 1985Fu03.
4052 5		3	0.05	member of IAS(^{49}V g.s., 7/2$^-$)?
4151 5		3	0.02	member of IAS(^{49}V g.s., 7/2$^-$)?
4186 5		(0)	0.02	
4259 5		2	0.02	
4323[c] 5				
4379 5				
4426 5		3	0.02	member of IAS(^{49}V g.s., 7/2$^-$)?
4493[c] 5		(2)	0.06	
4559 5		2	0.08	
4594 5		2	0.09	
4651 5		3	0.03	member of IAS(^{49}V g.s., 7/2$^-$)?
4698? 5				
4764 5	(7/2)$^-$	3	0.78	T=3/2 Jπ: 7/2$^-$ from analog-state identification by 1969Da02. C^{2}S: 1.53 (separation energy); 1.38 (isospin dependent) (1978Fo34). member of IAS(^{49}V g.s., 7/2$^-$)?
4852 5		3	0.07[&]	tentatively assigned by 1978Za03 As IAS(^{49}V 91,5/2$^-$). Not confirmed by 1985Fu03 since this state has σ(θ) similar to that of the 4764 state which is the ^{49}V g.s. IAS. IT is possible that these two states are members of a split IAS.
4879 5				
4913 5	[b]	1	0.04	tentatively assigned by 1978Za03 As IAS(^{49}V 152, 3/2$^-$). Not confirmed by 1985Fu03 since this state has a σ(θ) similar to that of the 1703 and 1741 states, not the 2612 state; however, from the calculations of 1975Ha22 the assumed parent state At 152 has a configuration similar to the 2612 state.
4942 5	[b]	(1)	0.01	
4994[c] 5				
5058[c] 5				
5189 5		2	0.10	member of IAS(^{49}V 748, 3/2$^+$)?
5273 5		3	0.03	member of IAS(^{49}V g.s.,7 /2$^-$)?
5384 5	[d]	1	0.03	
5428 5		2	0.04	member of IAS(^{49}V 748, 3/2$^+$)?
5495 5	[b]	1	0.02	

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^{50}Cr(p,d),(^{3}He,α),(^{3}He,αγ) 1985Fu03,1978Za03,1971Bl09 (continued)

^{49}Cr Levels (continued)

E(level)[†]	Jπ[‡]	L[#]	C²S[@]	Comments
5573 *5*	(3/2)+	2	0.76	T=3/2 Jπ: 3/2+ from analog-state identification by 1969Da02. C²S: 1.44 (separation energy); 0.95 (isospin-dependent) (1978Fo34). member of IAS(^{49}V 748, 3/2+)?
5625 *5*				
5637[c] *5*		(3)	0.03	member of IAS(^{49}V g.s., 7/2−)??
5660[c] *5*		(3)	0.02	May correspond to the 6.63-MeV, L=3, state observed In ^{52}Cr(^{3}He,α).
5696 *5*	[d]	(1)	0.03	
5747 *5*		0	0.01	member of IAS(^{49}V≈1.64 MeV, 1/2+)?
5784 *5*		(2)	0.02	member of IAS(^{49}V 748, 3/2+)?
5934 *5*				
5981 *5*		(2)	0.06	member of IAS(^{49}V 748, 3/2+) or IAS(^{49}V 1.14 MeV, 5/2+)?
6006 *6*		0	0.02	member of IAS(^{49}V≈1.64 MeV, 1/2+)?
6036 *6*		2	0.08	member of IAS(^{49}V 748, 3/2+) or IAS(^{49}V 1.14 MeV, 5/2+)?
6090 *6*		2	0.07	member of IAS(^{49}V 748, 3/2+) or IAS(^{49}V 1.14 MeV, 5/2+)?
6127 *6*				
6278 *6*				
6309 *6*				
6342 *6*				
6380 *6*	[d]	(1)	0.01	member of IAS(^{49}V≈1.64 MeV, 3/2−)?
6.41×10^{3}?				E(level): from 1978Za03. see comment on following state.
6423 *6*	(1/2−,3/2−)[d]	(1)	0.07	Jπ: 1985Fu03 suggest 3/2− based on: σ(θ) similar to the 2612 state; ΔE between these states correspond to that between isobaric analog and antianalog state pairs; Jπ=1/2− rejected on basis of shell structure. Note that 1978Za03 suggested that the strength of the IAS of ^{49}V 1647 state was split between the 6.41-, 6.42-, and 6.47-MeV states.
6470 *6*	1/2+	0	0.45	T=3/2 see comment on preceding state. Member of IAS(^{49}V≈1.64 MeV, 1/2+)?
6548 *6*		(2)	0.02	
6639? *6*				
6705 *6*		2	0.03	
6734 *6*		2	0.05	
6765 *6*	1/2+	0	0.10	member of IAS(^{49}V≈1.64 MeV, 1/2+)?
6823 *6*		3	0.11[&]	
6884 *6*		2	0.04	
6948 *6*		(2)	0.02	
6995 *6*	[b]	1	0.01	IAS(^{49}V 2265,3/2−).
7005 *7*				
7084 *7*		(3)	0.02	
7115 *7*				
7161 *7*				
7186 *7*		(3)	0.04	
7225 *7*		3	0.04	
7264 *7*		3	0.06	
7308 *7*		(3)	0.04	
7350 *7*				
7391 *7*				
7432 *7*		(2)	0.04	
7480 *7*		0	0.03	
7503? *7*				
7537 *7*				
7584 *7*		0	0.02	
7601 *7*				

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^{50}Cr(p,d),(^{3}He,α),(^{3}He,$\alpha\gamma$) 1985Fu03,1978Za03,1971Bl09 (continued)

^{49}Cr Levels (continued)

E(level)[†]	L[#]	C^2S[@]	Comments
7627 *7*	0	0.02	
7889 *7*	3	0.06	
8020 *8*	0	0.02	member of IAS(^{49}V 3248, $1/2^+$)?
8050 *8*	0	0.04	member of IAS(^{49}V 3248, $1/2^+$)?
8092 *8*			
8128 *8*			
8157 *8*			
8231 *8*	0	0.02	member of IAS(^{49}V 3248, $1/2^+$)?
8265 *8*	0	0.04	member of IAS(^{49}V 3248, $1/2^+$)?
8331 *8*	0	0.07	member of IAS(^{49}V 3248, $1/2^+$)?
8368 *8*	2	0.05	member of IAS(^{49}V 3699, L(P)=2)?
8405 *8*			
8441 *8*			
8476 *8*	2	0.05	member of IAS(^{49}V 3699, L(P)=2)?
8527 *8*	2	0.17	T=(3/2) member of IAS(^{49}V 3699, L(P)=2)?
8548 *8*			
8557 *8*			
8655 *8*			
8683 *8*			
8716 *8*	2	0.08	member of IAS(^{49}V 3699, L(P)=2)?
8770[c] *8*			
8830[c] *8*	(0)	0.02	
8896[c] *8*	(0)	0.01	
9031 *9*			
9064[c] *9*	2	0.14	T=(3/2) member of IAS(^{49}V 4277, L(P)=2)?
9123 *9*			
9131 *9*			
9145 *9*	2	0.06	member of IAS(^{49}V 4277, L(P)=2)?
9198[c] *9*	(0)	0.02	
9265 *9*			
9292 *9*			
9321 *9*			
9365[c] *9*			
9399 *9*			
9447 *9*	(2)	0.08	
9521 *9*			
9662 *9*	(0)	0.01	member of IAS(^{49}V 4959, $1/2^+$)?
9711 *9*			
9745 *9*	(2)	0.04	IAS(^{49}V 5072, L(P)=2)?
9788 *9*	0	0.02	member of IAS(^{49}V 4959, $1/2^+$)?
9857 *9*			
9945 *9*			
9968 *9*			
10039 *10*			
10105 *10*	(2)		10105 and 10125 are possible members of IAS(^{49}V 5355, L(P)=(2)). C^2S=0.08 for the doublet.
10125 *10*	(2)		
10170 *10*			
10218 *10*			
10266 *10*	0	0.06	IAS(^{49}V 5292, $1/2^+$)?
10302 *10*	0	0.04	IAS(^{49}V 5522, $1/2^+$)?
10374 *10*	(2)	0.04	IAS(^{49}V 5631,L(P)=(2))?

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^{50}Cr(p,d),(^{3}He,α),(^{3}He,$\alpha\gamma$) 1985Fu03,1978Za03,1971Bl09 (continued)

^{49}Cr Levels (continued)

E(level)[†]
10428 *10*
10526 *10*

[†] From 1969Da02 (E≤2612), 1978Za03 (E=1698 and 2.91 MeV), and 1985Fu03 (E≥2985). Below 2612 the states were observed by At least two of the groups listed above. Above 2.98 MeV the states reported by 1969Da02 or 1978Za03 were observed by 1985Fu03 who also reported many additional states.

[‡] From the Adopted Levels. Supporting evidence based on these reactions are given under comments As are discrepancies with adopted J$^{\pi}$. Except As noted, these supporting arguments are from 1971Bl09 (assignments by 1978Fo34 and 1978Za03 consistent) for E(level)<4 MeV and from 1985Fu03 for E(level)>4 MeV.

[#] From 1985Fu03, except As noted. Results are consistent with the values obtained by other groups except As indicated.

[@] From 1985Fu03, except As noted. With the exceptions noted below, spin and parity were assumed to Be 7/2^{-}, 3/2^{+}, and 3/2^{-} for L=3, 2, and 1 states, respectively. The values derived by 1985Fu03 differ, sometimes significantly so, from the results given by the other groups. On comparison to theory, 1985Fu03 note that their calculations for C^{2}S(T=1/2) May Be too small by a factor of 1.5. They further note that Σ C^{2}S(T=3/2) appears to Be too large; this is probably due to the mixing of $d_{5/2}$ states and May arise from neglecting the isospin-dependent potential which could lower the C^{2}S(T=3/2) values by≈40% and correspondingly increase the C^{2}S(T=1/2) values.

[&] J$^{\pi}$=5/2^{-} assumed for calculations by 1985Fu03.

[a] Studied by 1980Oh06. See comment above on parameters derived.

[b] These L=1 states show $\sigma(\theta)$ similar to that of the 1741 state.

[c] Possible doublet.

[d] These L=1 states exhibit $\sigma(\theta)$ similar to that for the 2.61-MeV state.

γ(^{49}Cr)

All data are from 1971Bl09.

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[#]	Comments
268	7/2⁻	2.7×10^2		0.0	5/2⁻	M1+E2	−0.105 *13*	
1.07×10^3	9/2⁻	8.0×10^2		268	7/2⁻	D+Q		δ: −0.19 *4* or −2.2 *3* if δ(3690γ)=+0.05; −0.41 *11* or −1.6 *4* if δ(3690γ)=−30.1.
1.57×10^3	11/2⁻	5.0×10^2	65 *7*	1.07×10^3	9/2⁻	D+Q		δ: δ′s from 1971Bl09 are based on δ(1300γ)=+0.11 which is inconsistent with RUL(M3) using adopted $T_{1/2}$.
		1.3×10^3	35 *4*	268	7/2⁻	Q+O		δ: +0.11 not consistent with RUL(M3) using adopted $T_{1/2}$.
1698	1/2⁻	1.71×10^3	100	0.0	5/2⁻	Q		Mult.,δ: other values excluded by adopted J^π.
1.74×10^3	3/2⁻	1.47×10^3	34 *4*	268	7/2⁻			
		1.74×10^3	66 *7*	0.0	5/2⁻	D+Q		δ: +0.03 *7* or −5.3 *+17−41*.
1.98×10^3	3/2⁺	≈2.5×10^2[b@c]	20[b] *1*	1698	1/2⁻			
		(≈2.5×10^2[b@])	20[b] *1*	1.74×10^3	3/2⁻			inferred from presence of 1740γ. Decay to 1698 state cannot Be ruled out.
		1.98×10^3	80 *8*	0.0	5/2⁻	D+Q	+0.25[&] *2*	
2.43×10^3	5/2⁺	4.5×10^2	43 *9*	1.98×10^3	3/2⁺	D+Q	+0.22 *5*	
		2.16×10^3	17 *1*	268	7/2⁻			
		2.43×10^3	40 *8*	0.0	5/2⁻			
2593	1/2⁺	8.4×10^2	(100)	1.74×10^3	3/2⁻			
2.61×10^3	3/2⁻	≈8.5×10^2[b@c]	18[b] *1*	1.74×10^3	3/2⁻			
		≈8.5×10^2[b@c]	18[b] *1*	1698	1/2⁻			see comment on 910γ In (α,nγ).
		2.34×10^3	54 *6*	268	7/2⁻		[&]	Mult.,δ: Q+O, +0.12 *8*, from Ag(θ) not consistent with RUL(M3).
		2.61×10^3	28 *3*	0.0	5/2⁻			
3250	(5/2⁻)	8.1×10^2[c]	WEAK	2.43×10^3	5/2⁺			
		1.26×10^3	38 *8*	1.98×10^3	3/2⁺	D+Q	+0.17[&] *6*	Mult.,δ: if L(N)=3.
		2.97×10^3	51 *10*	268	7/2⁻			
		3.24×10^3	11 *1*	0.0	5/2⁻			
3511	(5/2)⁻	2.44×10^3	48 *10*	1.07×10^3	9/2⁻			
		3.24×10^3[c]	WEAK	268	7/2⁻			
		3.51×10^3	52 *11*	0.0	5/2⁻	D+Q	−0.08 *8*	
3913	1/2⁻,3/2⁻	≈1.33×10^3[a@c]		2.61×10^3	3/2⁻			
		≈1.33×10^3[a@c]		2593	1/2⁺			
		1.95×10^3		1.98×10^3	3/2⁺			I_γ: strong.
		≈2.20×10^3[a@c]		1.74×10^3	3/2⁻			
		≈2.20×10^3[a@c]		1698	1/2⁻			
4764	(7/2)⁻	3.69×10^3	30 *6*	1.07×10^3	9/2⁻			
		4.49×10^3	64 *13*	268	7/2⁻	M1+E2	−0.052 *90*	δ: +1.2 *3* considered unlikely for analog-antianalog transition.

γ(^{49}Cr) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	Comments
4764	(7/2)$^-$	4.76×10^3	6 *1*	0.0	5/2$^-$		
5573	(3/2)$^+$	3.14×10^3	25 *5*	2.43×10^3	5/2$^+$		these three transitions account for most of the decay of the 5.57-MeV state, but the decay is complex and a complete decay scheme could not Be constructed.
		3.59×10^3	50 *10*	1.98×10^3	3/2$^+$	D+Q	δ: −0.01 *7* or +4.1 *9*.
		5.57×10^3	25 *5*	0.0	5/2$^-$		
6423	(1/2$^-$,3/2$^-$)	2.50×10^3 [c]	38 *8*	3913	1/2$^-$,3/2$^-$		these γ′s May also Be from other members of the multiplet (evaluator).
		≈3.83×10^3 [b@c]	47[b] *10*	2.61×10^3	3/2$^-$		
		≈3.83×10^3 [b@c]	47[b] *10*	2593	1/2$^+$		
		≈4.70×10^3 [b@c]	15[b] *1*	1.74×10^3	3/2$^-$		
		≈4.70×10^3 [b@c]	15[b] *1*	1698	1/2$^-$		
6470	1/2$^+$	2.54×10^3	17 *1*	3938			
		≈3.87×10^3 [b@c]	42[b] *9*	2.61×10^3	3/2$^-$		
		≈3.87×10^3 [b@c]	42[b] *9*	2593	1/2$^+$		
		≈4.74×10^3 [b@c]	41[b] *9*	1.74×10^3	3/2$^-$		
		≈4.74×10^3 [b@c]	41[b] *9*	1698	1/2$^-$		
6765	1/2$^+$	2.83×10^3		3938			
		≈4.16×10^3 [a@c]		2.61×10^3	3/2$^-$		
		≈4.16×10^3 [a@c]		2593	1/2$^+$		
		≈5.03×10^3 [a@c]		1.74×10^3	3/2$^-$		
		≈5.03×10^3 [a@c]		1698	1/2$^-$		

† Calculated by the evaluator from decay scheme of 1971Bl09.
‡ Photon branching (In percent) from each level.
# From Ag(θ). Other values of δ excluded by adopted J$^\pi$.
@ May feed either or both members of the final states shown on the drawing.
& Another solution is possible but considered unlikely due to strength arguments.
a Multiply placed.
b Multiply placed with undivided intensity.
c Placement of transition in the level scheme is uncertain.

$^{49}_{24}Cr_{25}$-7

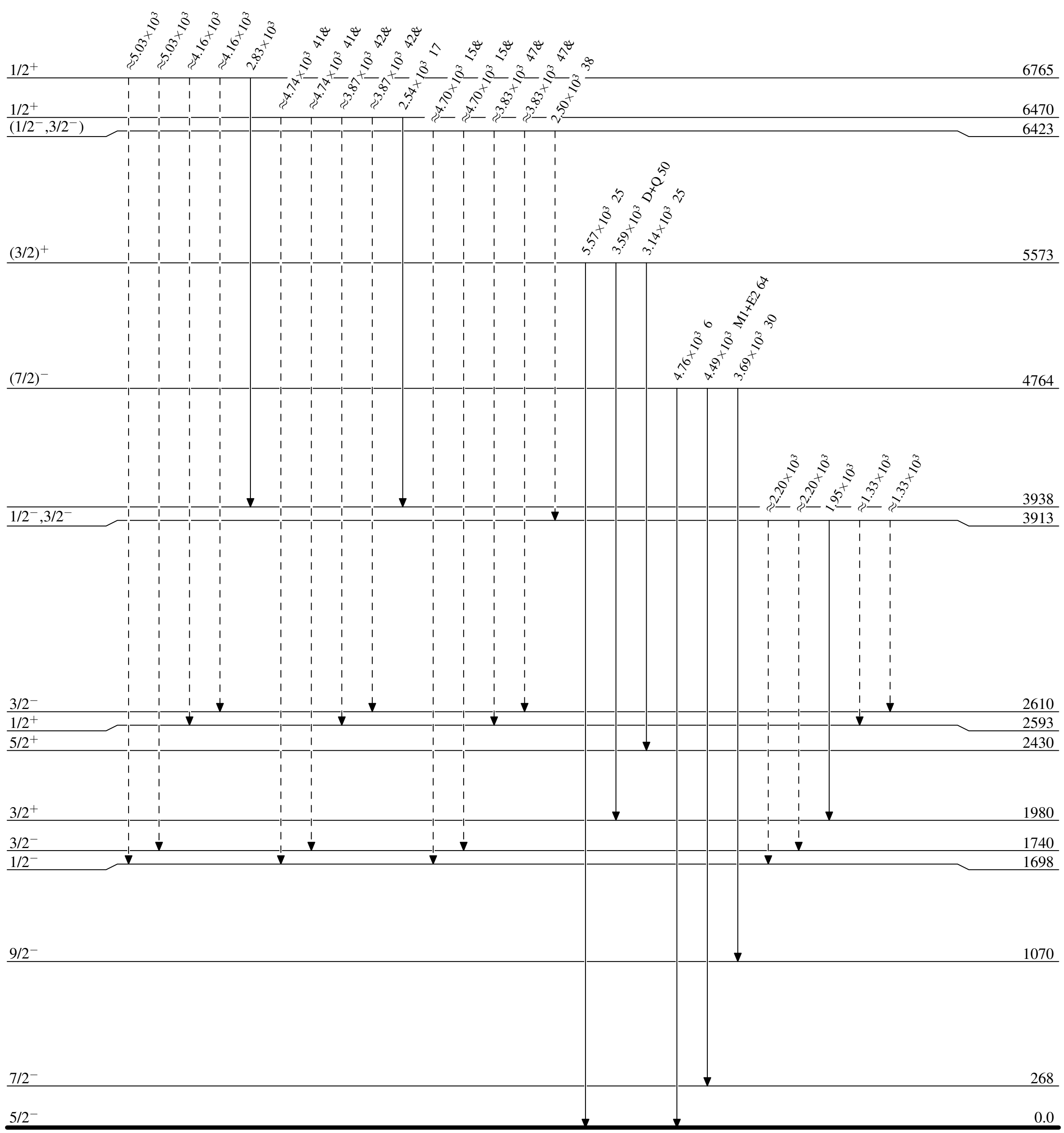
^{50}Cr(p,d),(^{3}He,α),(^{3}He,$\alpha\gamma$) 1985Fu03,1978Za03,1971Bl09

Legend

Level Scheme

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

γ Decay (Uncertain)

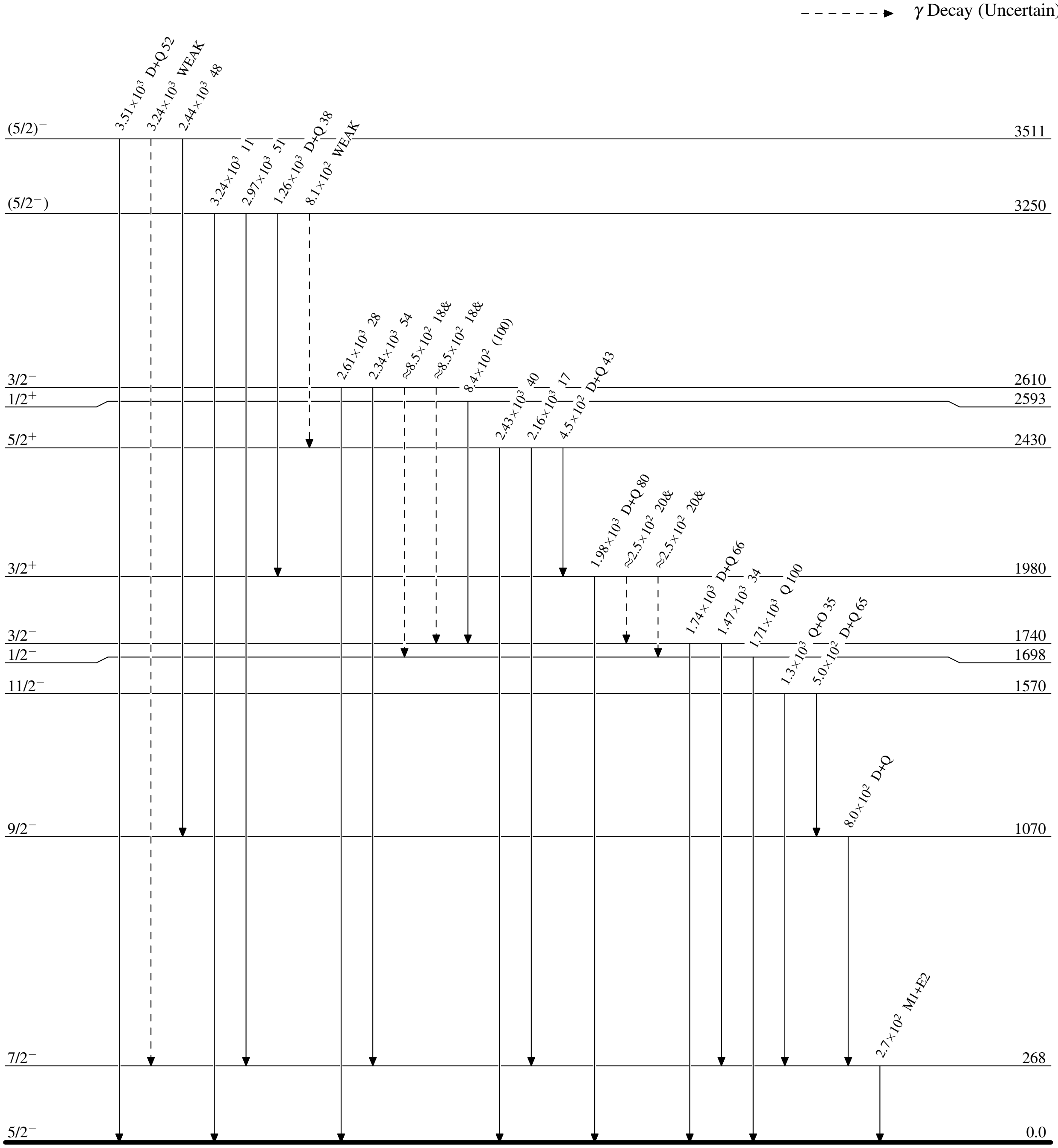


$^{49}_{24}Cr_{25}$

^{50}Cr(p,d),(^{3}He,α),(^{3}He,$\alpha\gamma$) 1985Fu03,1978Za03,1971Bl09

Level Scheme (continued)

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



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