	Туре	Author	History Cita	tion	Literat	ure C	utoff Date
	Full Evaluation	T. W. Burrows ^a	NDS 109,1	879 (2008)	14	4-Jul-	2008
$Q(\beta^{-})=-7696 \ 11; \ S(n)=1058$ Note: Current evaluation has	2 8; S(p)=8145 3; used the following	$Q(\alpha) = -8748 \ 3$ g Q record -7715	2012Wa38 2416332	168106	7 –7696	7	2003Au03.

⁴⁹Cr Levels

T: from (p,d), except for g.s.

Cross Reference (XREF) Flags

A

⁴⁹Mn β^+ decay ¹²C(⁴⁰Ca,n2p γ),⁴⁰Ca(¹²C,n2p γ), ⁴⁶Ti(α ,n γ) В

С

 50 Cr(p,d),(3 He, α),(3 He, $\alpha\gamma$) D

T(D) Level	TV Adopte (ps)	Weig ed (Hi	hted average (I,xnγ) (α,n (ps) (ps)	of: γ))	
1562	0.391	34	0.40 4	0.37 6	Internal
2432	0.66	19	0.55 17	0.97 28	External
2500	0.110	18	0.104 14	0.16 4	External
5520	0.29 4	± .	0.20 5	0.55 0	Incernal
E(level	l) [†]	J ^π ‡	$T_{1/2}^{(a)}$	XREF	Comments
0.0 ^{&}		5/2-	42.3 min <i>1</i>	ABCD	%ε+%β ⁺ =100 μ=0.476 3 (2005St24,1970Jo27); T=1/2 J ^π : J=5/2 from AB (1976Fu06,1970Jo27). π=− from L(p,d),(³ He,α)=3. T _{1/2} : from 1963Ho17 (V(p,X) E≤84 MeV; 90γ NaI, 1-6 T _{1/2} 's; chem). Other measurements (see 1978Ha15 and 1978LeZA) excluded due to a lack of chem or possible problems in detection methods. μ: AB (⁵³ Cr standard).
271.72	1 6	7/2-	13 ps <i>3</i>	ABCD	J^{π} : L(p,d),(³ He, α)=3. Ne 5/2 from $\alpha\gamma(\theta)$ in (³ He, $\alpha\gamma$).
1083.6 <mark>&</mark>	3	9/2-	0.15 ps 3	BCD	J^{π} : from $\gamma(\theta)$, $\gamma\gamma(\theta)$, and $\gamma(\text{linear pol})$ to $7/2^{-1}$ in $(\alpha, n\gamma)$.
1562.1 ^{<i>a</i>}	3	$11/2^{-}$	0.391 ps 34	BCD	J^{π} : from $\gamma(\theta)$, $\gamma\gamma(\theta)$, and $\gamma(\text{linear pol})$ to $9/2^{-}$ and $7/2^{-}$ in $(\alpha, n\gamma)$.
1703.2 ^b	4	$1/2^{-}$	>3.8 ps	BCD	J ^{π} : L(p,d),(³ He, α)=1. Ne 3/2 from $\gamma(\theta)$ and γ (linear pol) in (α ,n γ).
1741.4 <mark>b</mark>	3	3/2-	1.1 ps 3	CD	J^{π} : L(p,d),(³ He, α)=1; E2 γ to 7/2 ⁻ .
1981.8 ^c	3	3/2+	>1.39 ps	BCD	J ^{π} : L(p,d),(³ He, α)=2. Ne 5/2 from $\gamma(\theta)$ to 5/2 ⁻ in (α ,n γ). T _{1/2} : T _{1/2} <18 ps if 1710 γ is M2.
2168.5 ^b	4	5/2	1.04 ps 35	C	J ^{π} : Ne 3/2,7/2 from $\gamma\gamma(\theta)$ and $\gamma(\text{linear pol})$ to 7/2 ⁻ and Ne 9/2 from $\gamma(\theta)$ and $\gamma(\text{linear pol})$ to 5/2 ⁻ in $(\alpha,n\gamma)$. See $(\alpha,n\gamma)$ for suggested π . T _{1/2} : >3.1 ps in $(\alpha,n\gamma)$ discrepant.
2431.8 ^c	3	5/2+	0.66 ps 19	BCD	J^{π} : L(p,d)=2. Ne 3/2 from $\gamma(\theta)$ and $\gamma(\text{linear pol})$ to $5/2^{-1}$ in $(\alpha, n\gamma)$.
2500.1 ^{&}	4	$13/2^{-}$	0.110 ps 18	BC	J ^{π} : 13/2 from $\gamma(\theta)$ to 11/2 ⁻ in (α ,n γ). π =- from d,E2 γ to 9/2 ⁻ .
2502.6 5	5	7/2-	<8 fs	A C	J ^{π} : 3/2 ⁻ ,5/2 ⁻ ,7/2 ⁻ from log <i>ft</i> =4.8 <i>via</i> 5/2 ⁻ ; Ne 3/2,5/2 ⁻ ,7/2 ⁺ from γ (linear pol) to 7/2 ⁻ and 5/2 ⁻ in (α ,n γ).
2578.1 5	5	$1/2^{+}$		CD	
2613.1 ^d	6	3/2-	45 fs 14	CD	T=1/2 J ^{π} : L(p,d),(³ He, α)=1; E2 γ to 7/2 ⁻ . Antianalog state of 6423 state. See (p,d).
2911.7 ^c	5	$(7/2^+)^{\#}$	0.52 ps 10	CD	J^{π} : 3/2 ⁻ ,5/2,7/2 ⁻ from D,E2 γ 's to 3/2 ⁺ and 7/2 ⁻ .

Continued on next page (footnotes at end of table)

⁴⁹Cr Levels (continued)

E(level) [†]	$J^{\pi \ddagger}$	T _{1/2} @	XREF	Comments
2978.7 ^e 5	(3/2 ⁺)	>0.69 ps	CD	J^{π} : 1/2,3/2,5/2 from γ to 1/2 ⁺ . (3/2 ⁺) proposed by 2006Br03 in (α ,n γ) based on their level scheme, particle-rotor and shell model calculations, and comparison with neighboring nuclides.
3051.7 <mark>b</mark> 8	$(9/2)^{-\#f}$	<0.028 ps	С	J^{π} : (5/2 ⁻ ,7/2,9/2) from γ ? to 5/2 ⁻ and D,E2 γ to 9/2 ⁻ .
3190.1 ^{<i>a</i>} 4	15/2-	0.083 ps 21	BC	J^{π} : D(+Q) γ to 13/2 ⁻ and J \rightarrow J or J \rightarrow J-2 E2 to 11/2 ⁻ ; member of K^{π} =5/2 ⁻ g.s. band.
				$T_{1/2}$: from ${}^{1/2}C({}^{+0}Ca,n2p\gamma),{}^{+0}Ca({}^{1/2}C,n2p\gamma), 0.28 \text{ ps } 7 \text{ in } (\alpha,n\gamma)$ discrepant.
3201.7 <mark>8</mark> 8	$(9/2^{-})^{\#f}$	<0.028 ps	С	J^{π} : (5/2 ⁻ ,7/2,9/2) from γ ? to 5/2 ⁻ and D,E2 γ to 9/2 ⁻ .
3250.9 ^h 6	$(5/2^+)^{i}$	0.139 ps 35	CD	J^{π} : discrepant with (5/2 ⁻) in (p,d),(³ He, α),(³ He, $\alpha\gamma$).
3407 <i>jk 5</i>	$(5/2)^{-\#}$		CD	J^{π} : 5/2 ⁻ ,7/2 ⁻ from L(p,d) or L(³ He, α)=3.
3499.7 <mark>b</mark> 11	$(11/2^{-})^{i}$	<0.021 ps	С	
3511 <i>jk 5</i>	(7/2) ^{-#}		CD	J^{π} : $5/2^{-}$, $7/2^{-}$ from L(p,d) or L(³ He, α)=3. (5/2 ⁻) from J-dependence of L(p,d)=3 $\sigma(\theta)$ and similarity of $\sigma(\theta)$ to g.s. $\sigma(\theta)$; however, in (p,d) 1985Fu03 note that there is a question of whether the f7/2 orbital is occupied so much (C ² S=0 35) in an N=26 nucleus
$3527.6^{l}.4$	13/2-	0.29 ps 4	BC	I^{π} : 13/2 from $I \rightarrow I-1 \gamma$ to $11/2^-$: $\pi = -$ from E1 γ to $15/2^-$
3628.6 ^c 5	(9/2+)	0.125 ps 28	C	J^{π} : 7/2 ⁻ ,9/2 ⁺ from D,E2 γ 's to 5/2 ⁺ and 11/2 ⁻ . 9/2 ⁺ proposed by 2006Br03 in (α ,n γ) based on their level scheme, particle-rotor and shell model calculations, and comparison with neighboring nuclides.
3687.4 ⁸ 8	$(11/2^{-})^{fi}$	<0.021 ps	С	
3717 ^{jm} 5	$(1/2)^{-\#}$		CD	J^{π} : $1/2^{-}, 3/2^{-}$ from L(p,d) or L(³ He, α)=1.
3802.4 ^k 7	$(11/2^{-})^{\#}$	0.069 ps 21	С	J^{π} : 9/2 ⁻ ,11/2 from γ to 7/2 ⁻ and D,E2 γ to 13/2 ⁻ .
3843.9° 11 3892.20 1	$(1/2^+)^n$ 13/2 ⁺	0.21 ps 4	C BC	I^{π} . AI-0 E1 v to $13/2^{-1}$
3899.1^{l} 7	$(15/2^{-})^{\#}$	-0.9 ps	C C	I^{π} : (11/2 ⁻ 13/2 15/2) from γ to 11/2 ⁻ and D F2 γ to (15/2 ⁻)
3913jm 5	$(15/2)^{-#}$	0.20 ps 5	С	$I^{\pi} \cdot 1/2^{-3/2^{-1}}$ from I (n d) or I (³ He α)=1
3928.8 11	(3/2)		C	$3 \cdot 1/2 , 5/2 \cdot 1000 \cdot 1(5, a) \text{ or } 1(10, a) - 1.$
3938 <i>j 5</i> 3975 5	3/2+,5/2+		D D	
4019 ^j 5	$(1/2^+)$		CD	
4051.5 ^e 7	$(9/2^+)^{\#}$	0.180 ps 28	С	J^{π} : 7/2 ⁻ ,9/2,11/2 ⁺ from D,E2 γ 's to 7/2 ⁺ and 11/2 ⁻ .
4052 ^{Jm} 5	(5/2)-		CD	J^{π} : $5/2^{-}$, $7/2^{-}$ from L(p,d) or L(³ He, α)=3. (5/2) ⁻ proposed by 2006Br03 in $(\alpha, n\gamma)$ based on their level scheme, particle-rotor and shell model calculations, and comparison with neighboring nuclides.
4105.7 <mark>b</mark> 8	(13/2) ^{-#}	<0.021 ps	С	J^{π} : 9/2 ⁻ ,11/2,13/2 ⁻ from D,E2 γ 's to 9/2 ⁻ and 13/2 ⁻ .
4151 5 4186 5	$5/2^{-},7/2^{-}$ (1/2 ⁺)		D D	
4201.7 <mark>8</mark> 8	$(13/2)^{-\#f}$	<0.021 ps	С	J^{π} : 9/2 ⁻ ,11/2,13/2 ⁻ from D,E2 γ 's to 9/2 ⁻ and 13/2 ⁻ .
4218.1 ^{&} 5 4259 5	17/2 ⁻ 3/2 ⁺ ,5/2 ⁺	0.107 ^{<i>p</i>} ps 50	BC D	J^{π} : J \rightarrow J-1 γ to 15/2 ⁻ and J \rightarrow J or J \rightarrow J-2 E2 γ to 13/2 ⁻ .
4279.5 [°] 6	$(11/2^+)^{\#}$	0.21 ps 4	С	J^{π} : 7/2,9/2,11/2 ⁺ from D γ to 9/2 ⁺ and D,E2 γ to 7/2 ⁺ .
4296.8 <i>11</i> 4323 <mark>9</mark> 5	$(9/2^+)^n$	0.035 ps 14	C D	
4366.0 ^{<i>a</i>} 5	19/2-	1.67 ^p ps 14	BC	μ =+7.4 <i>11</i> (2005St24)
				J^{π} : J \rightarrow J-1 γ to 17/2 ⁻ and J \rightarrow J-2 E2 γ to 15/2 ⁻ .
				1 _{1/2} : 1 _{1/2} >2.1 ps from DSAM in $(\alpha, n\gamma)$ discrepant. μ : From g-factor in $({}^{40}Ca n^2 n\gamma)$
4379 5			D	μ . From gradion in ($ca, n2p_{f}$).
4426 ^j 5	5/2-,7/2-		CD	

⁴⁹Cr Levels (continued)

E(level) [†]	$J^{\pi \ddagger}$	T _{1/2} @	XREF	Comments
4459.7 <i>11</i> 4467.1 ⁰ 4 4493 ⁹ 5 4559 5	$\frac{(11/2^+)^n}{15/2^+}$ $(3/2^+, 5/2^+)$ $3/2^+, 5/2^+$	0.159 ps 28 1.2 ^p ps 3	C BC D	J^{π} : $\Delta J=1$ M1+E2 γ to 13/2 ⁺ and $\Delta J=0$ or $\Delta J=2$ E2 γ to 15/2 ⁻ .
4571.5^{l} 7	17/2 ^{-#}	0.139 ps 28	c	J^{π} : 13/2,15/2,17/2 ⁻ from D,E2 γ to 13/2 ⁻ and γ to 17/2 ⁻ .
4580.5 11 4594 5 4651 5 4698? 5	3/2 ⁺ ,5/2 ⁺ 5/2 ⁻ ,7/2 ⁻		D D D	
4716.2 ^{<i>c</i>} 8 4749.4 8	$(13/2^+)^n$	0.49 ps 7 <0.035 ps	C C	
4764 ^{jr} 5	(7/2)-		D	T=3/2 J^{π} : L(p,d)=3. IAS identification in (³ He, α).
4773 4809.1 <i>8</i> 4837.2 <i>11</i>		<0.035 ps	C C C	
4852 5 4879 5 4913 5	5/2 ⁻ ,7/2 ⁻		D D D	
4942 5 4943.6 ^e 11	$(1/2^{-}, 3/2^{-})$ $(11/2^{+})^{i}$	0.049 ps <i>14</i>	D C	
4994 <i>9</i> 5 5032.3 <i>11</i>			D C	
5048.4 6 5058 <i>jq</i> 5 5179 7 11	$(13/2^+)^{\#}$	<0.069 ps	C CD C	J^{π} : 9/2 ⁻ ,11/2,13/2 ⁻ from D,E2 γ 's to 9/2 ⁺ and 13/2 ⁻ .
5179.7 77 5189 5 5273 5 5302.7 5 5384 5 5428 5 5495 5	$3/2^+, 5/2^+$ $5/2^-, 7/2^-$ $17/2^+$ $1/2^-, 3/2^-$ $3/2^+, 5/2^+$ $1/2^-, 3/2^-$	0.76 ^p ps 14	D D BC D D D	J^{π} : $\Delta J=1$ M1+E2 to 15/2 ⁺ and $\Delta J=2$ E2 to 13/2 ⁺ .
5573 ^{jr} 5	$(3/2)^+$		D	T=3/2 J ^{π} : L(p,d)=2. IAS identification in (³ He, α).
5625 5 5637 <i>4</i> 5 5660? <i>4</i> 5 5696 5 5747 5 5784 5 5934 5	$(5/2^{-},7/2^{-})$ $(5/2^{-},7/2^{-})$ $(1/2^{-},3/2^{-})$ $1/2^{+}$ $(3/2^{+},5/2^{+})$		D D D D D D	
5962.4 ^{<i>a</i>} 6	23/2-	0.444 ^{<i>p</i>} ps 31	в	J ^{π} : 15/2 ⁻ ,19/2,23/2 ⁻ from J→J or J→J-2 E2 γ to 19/2 ⁻ . 23/2 ⁻ from membership in K^{π} =5/2 ⁻ g.s. band.
5981 5 6006 6 6036 ^r 6 6090 6 6127 6	$(3/2^+, 5/2^+)$ $1/2^+$ $3/2^+, 5/2^+$ $3/2^+, 5/2^+$		D D D D	
6134.1 ^{&} 5 6278 6 6309 6	21/2-	0.069 ^p ps 21	B D D	
6341.9 ⁰ 5 6342 6	19/2+	0.28 ^p ps 7	BD	J^{π} : D,E2 γ to 17/2 ⁺ and $\Delta J=2$ E2 γ to 15/2 ⁺ .
6380 6	$(1/2^-, 3/2^-)$		D	

Continued on next page (footnotes at end of table)

⁴⁹Cr Levels (continued)

6.41×10 ¹⁷ ; 6.427 f (1/2 ⁻ , 3/2 ⁻) 6470 ¹⁶ 6 (1/2 ⁻ , 3/2 ⁻) 6470 ¹⁶ 6 (1/2 ⁻ , 3/2 ⁻) 6484 6 (3/2 ⁺ , 5/2 ⁺) 6683 6 (3/2 ⁺ , 5/2 ⁺) 7008 7 (5/2 ⁻ , 7/2 ⁻) 708 7 (5/2 ⁻ , 7/2 ⁻) 709 7 (5/2 ⁻ , 7/2 ⁻) 700 7 (5/2 ⁻) 700 7 (5/2 ⁻) 700 7 (5	E(level) [†]	Jπ‡	T _{1/2} @	XREF	Comments
	6.41×10^3 ?			D	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6423 ^r 6	$(1/2^{-}, 3/2^{-})$		D	J^{π} : see discussion in (p,d).
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	6470 jr 6	1/2+		- ת	T - 3/2
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6548 6	$(3/2^+ 5/2^+)$		ם ח	1 - 3/2
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	66392 6	(3/2 ,3/2)		ם ח	
6734 6 3/2 + 5/2 + D 6735 6 1/2' D 6736 6 5/2 - 7/2 - D 6884 6 3/2 + 5/2 + D 6998 6 (3/2 + 5/2 +) D 6998 6 (3/2 + 5/2 +) D 6998 6 (3/2 + 5/2 +) D 7005 7 D 7005 7 D 7005 7 D 7005 7 D 716 7 D 7225 7 5/2 - 7/2 - D 7305 7 S/2 - 7/2 - D 7308 7 (5/2 - 7/2 -) D 7309 7 (3/2 + 5/2 +) D 7432 7 (3/2 + 5/2 +) D 7432 7 (3/2 + 5/2 +) D 7430 7 1/2 + D 7601 7 1/2 + D 7889 7 5/2 - 7/2 - D 8000 8 1/2 + D 8000 8 1/2 + D 8000 8 1/2 + D 8128 8 D D 8231 8 1/2 + D <td>6705.6</td> <td>$3/2^{+} 5/2^{+}$</td> <td></td> <td>D D</td> <td></td>	6705.6	$3/2^{+} 5/2^{+}$		D D	
of ref μ μ 6763 6 1/2* D 6823 6 3/2*, 5/2* D 6948 6 (3/2*, 5/2*) D 6949 6 (3/2*, 5/2*) D 6949 6 (3/2*, 5/2*) D 7005 7 D D 7115 7 D D 7184 7 (5/2*, 7/2*) D 7185 7 (5/2*, 7/2*) D 7269, 2% 6 21/2* 0.18% ps 4 B 7307 7 D D 7308 (5/2*, 7/2*) D D 7307 7 D D 7432 (3/2*, 5/2*) D D 7601 7 D D 7837 7 D D 7807 1/2* D D 8000 8 1/2* D D 8000 8 1/2* D D 8128 1/2* D D <td< td=""><td>6734 6</td><td>$3/2^+$ $5/2^+$</td><td></td><td>ם ח</td><td></td></td<>	6734 6	$3/2^+$ $5/2^+$		ם ח	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	676516	1/2+		D	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	0/03/0	$1/2^{-1}$		ע	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	6991 6	$\frac{3}{2}, \frac{7}{2}$		ע	
6998 <i>b</i> (<i>J</i> /2 - 3 <i>J</i> /2 + <i>J</i>	6048 6	$(2/2^+, 5/2^+)$		ע	
0 50 0 1/2 + 3/2 0 7005 7 7 1/2 + 3/2 0 7005 7 7 1/2 + 3/2 0 7115 7 0 0 7115 7 0 0 7115 7 0 0 7105 7 5/2 - 7/2 - 0 7269 2° 6 2/2' + 0.18 ⁰ ps 4 0 7305 7 7 0 7305 7 0 0 7305 7 0 0 7432 7 (3/2 + 5/2 +) 0 7601 7 1/2 + 0 7601 7 0 0 7601 7 1/2 + 0 7601 7 1/2 + 0 789 7 5/2 - 7/2 - 0.190 ⁰ ps 15 0 8000 4 1/2 + 0 0 8000 4 1/2 + 0 0 800 74 ^a 12 27/2 - 0.190 ⁰ ps 15 0 8177 8 0 0 8231 8 1/2 + 0 8333 3 ^b 13 25/2 - 0.29 ps 6 0 8405 8 3/2 +	6005 ^r 6	(3/2, 3/2)		ע	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7005 7	1/2 ,5/2		ע	
7034 <i>J</i> (<i>J</i> ² , <i>J</i> /2 ⁻) <i>J</i> 7115 <i>T</i> (<i>J</i> /2 ⁻ , <i>J</i> /2 ⁻) <i>D</i> 7255 <i>T</i> 5/2 ⁻ , <i>J</i> /2 ⁻ <i>D</i> 7264 <i>J</i> 5/2 ⁻ , <i>J</i> /2 ⁻ <i>D</i> 7265 <i>L</i> ⁰ 2 <i>J</i> /2 ⁺ <i>D</i> 7368 <i>T</i> (<i>J</i> /2 ⁻ , <i>J</i> /2 ⁻) <i>D</i> 7350 <i>T D</i> 7350 <i>T D</i> 7432 <i>T</i> (<i>J</i> /2 ⁺ , <i>J</i> /2 ⁺) <i>D</i> 75037 <i>T D</i> 7537 <i>T D</i> 7601 <i>T D</i> 7601 <i>T D</i> 7601 <i>T D</i> 788 <i>T J</i> /2 ⁺ <i>D</i> 8007.4 ⁴ <i>I Z T</i> /2 ⁺ <i>D</i> 8007.4 ⁴ <i>I Z T</i> /2 ⁺ <i>D</i> 8020 <i>8 I</i> /2 ⁺ <i>D P</i> [±] : 19/2 ⁻ , 23/2, 27/2 ⁻ from J→J or J→J-2 E2 <i>γ</i> to 23/2 ⁻ . 27/2 ⁻ from membership in <i>Kⁿ</i> =5/2 ⁻ g, s. band. 8020 <i>8 I</i> /2 ⁺ <i>D P D</i> 8157 <i>8 D D P</i> [±] : 25/2 ⁻ , 29/2 from ΔJ=1 M1 <i>γ</i> to 27/2 ⁻ . 25/2 ⁻ from membership in <i>Kⁿ</i> =5/2 ⁻ g, s. band. 8333.9 & <i>I</i> /3 <i>Z</i> /2 ⁺ , 5/2 ⁺	7003 7	$(5/2^{-} 7/2^{-})$		ע	
1110 7 7 7161 7 7 7161 7 7 7257 5/2",7/2" 0 7269 6 21/2" 0 7308 7 (3/2",7/2") 0 7308 7 (3/2",7/2") 0 7391 7 0 0 7432 7 (3/2",5/2") 0 75037 7 0 0 75337 7 0 0 7627 1/2" 0 0 7637 1/2" 0 0 7637 1/2" 0 0 7637 1/2" 0 0 788 7 5/2",7/2" 0 8000 8 1/2" 0 8050 1/2" 0 0 8050 1/2" 0 0 8157 1/2" 0 0 8255 1/2" 0 0 8333.3 ⁴ 13 25/2" 0.29 ps 6 0 <tr< td=""><td>7084 7</td><td>(3/2, 7/2)</td><td></td><td>ע ת</td><td></td></tr<>	7084 7	(3/2, 7/2)		ע ת	
7186 7 (5/2 ⁻ ,7/2 ⁻) 0 7225 7 5/2 ⁻ ,7/2 ⁻) 0 7264 2 ⁰ 6 21/2 ⁺ 0.18 ^P ps 4 B 7308 7 (5/2 ⁻ ,7/2 ⁻) 0 7308 7 (5/2 ⁻ ,7/2 ⁻) 0 7350 7 0 7353 7 0 7432 7 (3/2 ⁺ ,5/2 ⁺) 0 760 17 0 7537 7 0 760 7 1/2 ⁺ 0 760 7 1/2 ⁺ 0 788 7 5/2 ⁻ ,7/2 ⁻ 0 8007 4 ^d 12 27/2 ⁻ 0.190 ^P ps 15 B J [#] : 19/2 ⁻ ,23/2,27/2 ⁻ from J→J or J→J-2 E2 γ to 23/2 ⁻ . 27/2 ⁻ from membership in K ^m =5/2 ⁻ g.s. band. 8020 8 1/2 ⁺ 0 8050 8 1/2 ⁺ 0 8031 8 1/2 ⁺ 0 8331 8 1/2 ⁺ 0 8333.3 [©] 13 25/2 ⁻ 0.29 ps 6 B 8405 8 1/2 0 8405 8 0 0 8405 8 0 0 8416 8 0 0	7161 7			D D	
T225 7 S/2 ⁻ , T/2 ⁻ D 7264 7 S/2 ⁻ , T/2 ⁻ D 7269 2 ⁰ 6 21/2 ⁺ 0.18 ^P ps 4 B 7308 7 (S/2 ⁻ , T/2 ⁻) D 7308 7 (S/2 ⁻ , T/2 ⁻) D 7309 7 T D 7432 7 (3/2 ⁺ , 5/2 ⁺) D 7480 7 1/2 ⁺ D 75037 7 D D 76017 1/2 ⁺ D 76017 1/2 ⁺ D 7687 7 S/2 ⁻ , 7/2 ⁻ D 8007.4 ^a 1/2 27/2 ⁻ 0.190 ^P ps 15 B 1 ^r : 19/2 ⁻ , 23/2, 27/2 ⁻ from J→J or J→J -2 E2 γ to 23/2 ⁻ . 27/2 ⁻ from membership in K ^π =5/2 ⁻ g.s. band. 8020 8 1/2 ⁺ D 8050 8 1/2 ⁺ D 8231 8 1/2 ⁺ D 8331 ^r 8 1/2 ⁺ D 8331 ^s 8 1/2 ⁺ D 8405 8 1/2 ⁺ D 8418 D D 8476 8 3/2 ⁺ , 5/2 ⁺ D 8477 8 3/2 ⁺ , 5/2 ⁺ D	7186 7	$(5/2^{-} 7/2^{-})$		D	
7264 7 $5/2^{-}, 7/2^{-}$ D 7269.2° 6 21/2' 0.18 ^p ps 4 B 7308 7 (5/2 ⁻ , 7/2 ⁻) D 7350 7 D D 7350 7 D D 743 2 7 (3/2 ⁺ , 5/2 ⁺) D 743 7 1/2 ⁺ D 7503 7 D D 7503 7 D D 7503 7 D D 7601 7 1/2 ⁺ D 7601 7 D D 7601 7 D D 788 7 5/2 ⁻ , 7/2 ⁻ D 8007.4" 12 27/2 ⁻ 0.190 ^P ps 15 B 9 J [*] : 19/2 ⁻ , 23/2, 27/2 ⁻ from J→J or J→J-2 E2 γ to 23/2 ⁻ . 27/2 ⁻ from membership in K ^π =5/2 ⁻ g.s. band. 8020 8 1/2 ⁺ D 8020 8 1/2 ⁺ D 8031 8 1/2 ⁺ D 8333.4% 13 25/2 ⁻ 0.29 ps 6 B 8347 8 3/2 ⁺ , 5/2 ⁺ D D 8405 8 D D F<: 25/2 ⁻ , 29/2 from ΔJ=1 M1 γ to 27/2 ⁻ . 25/2 ⁻ from membershi	7225 7	$(3/2^{-}, 7/2^{-})$		D	
7266.29 6 212^{+} 0.18 ^p ps 4 B J ^x : D,E2 γ to 19/2 ⁺ and ΔJ=2 E2 γ to 17/2 ⁺ . 7308 7 (5/2 ⁻ ,7/2 ⁻) D D 7480 7 1/2 ⁺ D 7503? 7 T D 7537 7 D D 7637 7 D D 7537 7 D D 7627 7 1/2 ⁺ D 7627 7 1/2 ⁺ D 7889 7 5/2 ⁻ ,7/2 ⁻ D 8007.4 ^a 12 27/2 ⁻ 0.190 ^p ps 15 B 8020 8 1/2 ⁺ D 8020 8 1/2 ⁺ D 8050 8 1/2 ⁺ D 8157 8 D D 8231 8 1/2 ⁺ D 8333.3 ^k 13 25/2 ⁻ 0.29 ps 6 D 8476 8 3/2 ⁺ ,5/2 ⁺ D D 8476 8 3/2 ⁺ ,5/2 ⁺ D T=(3/2) 8488 8 3/2 ⁺ ,5/2 ⁺ D T=(3/2) 8476 8 3/2 ⁺ ,5/2 ⁺ D D 8557 8 D	7264 7	$5/2^{-},7/2^{-}$		D	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7269.2 <mark>0</mark> 6	$21/2^+$	0.18^{P} ns 4	R	I^{π} : D E2 v to 19/2 ⁺ and AI=2 E2 v to 17/2 ⁺
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7308.7	$(5/2^{-},7/2^{-})$	0.10 p5 /	ี้ D	$\mathbf{b} : \mathbf{b}, \mathbf{b} \in [\mathbf{b}, \mathbf{b}] $ and $\mathbf{b} \in \mathbf{b} \in [\mathbf{b}, \mathbf{b}] $
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7350 7	(0/2 ,//2)		D	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7391 7			D	
7480 7 1/2+ D 75037 7 D 7537 7 D 7584 7 1/2+ D 7601 7 D 7627 7 1/2+ D 7889 7 5/2-,7/2- 0.190 ^P ps 15 B 8007.4 ^Q 12 27/2- 0.190 ^P ps 15 B 8008 1/2+ D D 8009 1/2+ D D 8020 8 1/2+ D D 8128 8 D D D 8311 ⁷ 8 1/2+ D D 8333.3 ^{&} 13 2/2+ D D 8333.3 ^{&} 13 2/2+ D D 8405 8 3/2+,5/2+ D D 8441 8 D D K ^π =5/2 ⁻ g.s. band. 8557 8 D D D 8557 8 D D D 8565 8 <t< td=""><td>7432 7</td><td>$(3/2^+, 5/2^+)$</td><td></td><td>D</td><td></td></t<>	7432 7	$(3/2^+, 5/2^+)$		D	
7503? 7 0 7537 7 0 7584 1/2 ⁺ 0 7601 7 0 7627 1/2 ⁺ 0 8007.4 ^d 12 27/2 ⁻ 0.190 ^P ps 15 B 8007.4 ^d 1/2 27/2 ⁻ 0.190 ^P ps 15 B 8008 1/2 ⁺ 0 0 0 80508 1/2 ⁺ 0 0 0 80208 1/2 ⁺ 0 0 0 80517 0 0 0 0 80208 1/2 ⁺ 0 0 0 81578 0 0 0 0 82318 1/2 ⁺ 0 0 0 8331 [*] 8 1/2 ⁺ 0 0 0 8333.3 ^{&} 13 25/2 ⁻ 0.29 ps 6 0 0 8405 3/2 ⁺ ,5/2 ⁺ 0 0 0 8405 3/2 ⁺ ,5/2 ⁺ 0 0 0 8457 3/2 ⁺ ,5/2 ⁺ 0 0 0	7480 7	1/2+		D	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7503? 7	,		D	
7584 7 $1/2^+$ D 7601 7 D 7627 7 $1/2^+$ D 7889 7 $5/2^-,7/2^-$ D 8007.4 ^a 12 $27/2^ 0.190^p$ ps 15 B $y^{\pi}: 19/2^-, 23/2, 27/2^-$ from J \rightarrow J or J \rightarrow J-2 E2 γ to 23/2 ⁻ . 27/2 ⁻ from membership in $K^{\pi}=5/2^-$ g.s. band. 8020 8 $1/2^+$ D 8020 8 $1/2^+$ D 8020 8 $1/2^+$ D 8127 8 D 8231 8 $1/2^+$ D 8265 8 $1/2^+$ D 8333.3 ^{&} 13 $25/2^ 0.29$ ps 6 B 8405 8 $3/2^+, 5/2^+$ D 8405 8 B 47^- 5.2 ⁻ g.s. band. 8405 8 D D 8441 8 D D 8457 8 D D 8557 7 S D 8658 8 D D 8658 8 D D 8658 8 D D 8658 8 D D 8655 8 D D	7537 7			D	
7601 7 $1/2^+$ D 7889 7 $5/2^-, 7/2^-$ D 8007.4 ^a 12 $27/2^ 0.190^P$ ps 15 B 8020 8 $1/2^+$ D 8050 8 $1/2^+$ D 8051 8 $1/2^+$ D 8253 8 $1/2^+$ D 8253 8 $1/2^+$ D 8333.3 ^{&} 13 $25/2^ 0.29 \text{ ps 6}$ B $K^{\pi}=5/2^-$ g.s. band. $K^{\pi}=5/2^-$ g.s. band. 8368 8 $3/2^+, 5/2^+$ D 8441 8 D D 8441 8 D D 8441 8 D D 8476 8 $3/2^+, 5/2^+$ D 8557 8 D D 8658 8 D D 8655 8 D D	7584 7	$1/2^{+}$		D	
7627 1/2 ⁺ D 7889 7 5/2 ⁻ ,7/2 ⁻ D 8007.4 ^a 12 27/2 ⁻ 0.190 ^p ps 15 B 8020 8 1/2 ⁺ D 8050 8 1/2 ⁺ D 8020 8 1/2 ⁺ D 8050 8 1/2 ⁺ D 8020 8 1/2 ⁺ D 8028 D D 8128 D D 8127 B 1/2 ⁺ D 8265 1/2 ⁺ D D 8331 [*] 8 1/2 ⁺ D 8333.3 ^{&} 13 25/2 ⁻ 0.29 ps 6 B 8405 8 3/2 ⁺ ,5/2 ⁺ D 8405 B D K ^π =5/2 ⁻ g.s. band. 8405 B D F ^π = 25/2 ⁻ g.s. band. 8405 B D F ^π = 5/2 ⁻ g.s. band. 8441 B D D 8470 8 D T=(3/2) 8548 B D </td <td>7601 7</td> <td></td> <td></td> <td>D</td> <td></td>	7601 7			D	
7889 7 $5/2^-,7/2^-$ D 8007.4 ^a 12 $27/2^ 0.190^p$ ps 15 B $J^{\pi}: 19/2^-, 23/2, 27/2^-$ from J \rightarrow J or J \rightarrow J $-3-2$ E2 γ to $23/2^-$. $27/2^-$ from membership in $K^{\pi}=5/2^-$ g.s. band. 8020 8 $1/2^+$ D 8050 8 $1/2^+$ D 8092 8 D 8128 8 D 8231 8 $1/2^+$ D 8265 8 $1/2^+$ D 8331 ^a $1/2^+$ D 8333.3 ^c $1/2$ D 8333.3 ^c $1/2^+$ D 8405 8 D $K^{\pi}=5/2^-$ g.s. band. 8441 8 D $K^{\pi}=5/2^-$ g.s. band. 8476 8 $3/2^+, 5/2^+$ D 8476 8 $3/2^+, 5/2^+$ D 8457 8 D D 8457 8 D D 8657 8 D D 8663 8 D D 8716 8 $3/2^+, 5/2^+$ D 8677 0 D D 8683 8 S/2 ⁺ , 5/2 ⁺ D 8663 8 D	7627 7	$1/2^{+}$		D	
8007.4 ^d 12 $27/2^ 0.190^p$ ps 15 B J^{π} : $19/2^-, 23/2, 27/2^-$ from J \rightarrow J or J \rightarrow J-2 E2 γ to $23/2^-$. $27/2^-$ from membership in $K^{\pi} = 5/2^-$ g.s. band. 8020 8 1/2 ⁺ D 8092 8 D 8128 8 D 8157 8 D 8231 8 1/2 ⁺ D 8265.8 1/2 ⁺ D 8331 ^T 8 1/2 ⁺ D 8333.3 ^Q 13 25/2 ⁻ 0.29 ps 6 B 8368.8 3/2 ⁺ ,5/2 ⁺ D B 8405.8 D D E 8441.8 D D E 8527 ^T 8 3/2 ⁺ ,5/2 ⁺ D T=(3/2) 8548.8 D D E 8655.8 D D B 8655.8 D D E 8665.8 D D D 8665.8 D D D 8665.8 D D D 8665.8 D D D	7889 7	5/2-,7/2-		D	
membership in $K^{\pi} = 5/2^{-}$ g.s. band. 8020 8 1/2 ⁺ D 8092 8 D 8128 8 D 8157 8 D 8231 8 1/2 ⁺ D 8265 8 1/2 ⁺ D 8333.3 ^{&} 13 25/2 ⁻ 0.29 ps 6 B J ^{\pi} : 25/2 ⁻ , 29/2 from $\Delta J = 1$ M1 γ to 27/2 ⁻ . 25/2 ⁻ from membership in $K^{\pi} = 5/2^{-}$ g.s. band. 8368 8 3/2 ⁺ , 5/2 ⁺ D 8405 8 D 8441 8 D 84476 8 3/2 ⁺ , 5/2 ⁺ D 8527 ^r 8 3/2 ⁺ , 5/2 ⁺ D 8527 ^r 8 3/2 ⁺ , 5/2 ⁺ D 8557 8 D 8655 8 D 8655 8 D 8663 8 D	8007.4 ^{<i>a</i>} 12	$27/2^{-}$	0.190 ^p ps 15	В	J^{π} : 19/2 ⁻ ,23/2,27/2 ⁻ from J \rightarrow J or J \rightarrow J-2 E2 γ to 23/2 ⁻ . 27/2 ⁻ from
8020 8 $1/2^+$ D 8050 8 $1/2^+$ D 8092 8 D 8128 8 D 8128 8 D 8231 8 $1/2^+$ D 8235 8 $1/2^+$ D 8331' 8 $1/2^+$ D 8333.3 ^{&} 13 $25/2^-$ 0.29 ps 6 B $8^{\pi}=5/2^-$ g.s. band. $K^{\pi}=5/2^-$ g.s. band. 8405 8 D D 8441 8 D D 8476 8 $3/2^+, 5/2^+$ D 8527' 8 $3/2^+, 5/2^+$ D 8557 8 D D 8655 8 D D 8683 8 D D 8716 8 $3/2^+, 5/2^+$ D 8716 8 $3/2^+, 5/2^+$ D 8716 8 $3/2^+, 5/2^+$ D					membership in $K^{\pi} = 5/2^{-}$ g.s. band.
8050 8 1/2 ⁺ D 8092 8 D 8128 8 D 8137 8 D 8231 8 1/2 ⁺ D 8333 3 ^{&} 13 25/2 ⁻ 0.29 ps 6 B J ^{π} : 25/2 ⁻ ,29/2 from Δ J=1 M1 γ to 27/2 ⁻ . 25/2 ⁻ from membership in K^{π} =5/2 ⁻ g.s. band. 8368 8 3/2 ⁺ ,5/2 ⁺ D 8405 8 D 8441 8 D 8476 8 3/2 ⁺ ,5/2 ⁺ D 8527 ^{<i>T</i>} 8 3/2 ⁺ ,5/2 ⁺ D 8527 ^{<i>T</i>} 8 3/2 ⁺ ,5/2 ⁺ D 8557 8 D 8655 8 D 8663 8 D 8716 8 3/2 ⁺ ,5/2 ⁺ D	8020 8	1/2+		D	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8050 8	1/2+		D	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8092.8			D	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8128 8			D	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8157 8	1/2+		D	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8231 8	$1/2^{+}$ $1/2^{+}$		ע	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8205 8 8221 r 8	1/2 $1/2^+$		ע	
8333.3 C 13 25/2 0.29 ps 6 B $J^{\mu}: 25/2^{-}, 29/2$ from $\Delta J=1$ M1 γ to $21/2^{-}, 25/2^{-}$ from membership in $K^{\pi}=5/2^{-}$ g.s. band. 8368 8 $3/2^{+}, 5/2^{+}$ D $K^{\pi}=5/2^{-}$ g.s. band. 8441 8 D $K^{\pi}=5/2^{-}$ g.s. band. 8476 8 $3/2^{+}, 5/2^{+}$ D $T=(3/2)$ 8548 8 D $T=(3/2)$ 8548 8 D $K^{\pi}=5/2^{-}$ D $K^{\pi}=5/2^{-}$ D $K^{\pi}=5/2^{-}$ C $K^{\pi}=5/2^{-}$ g.s. band.	0000 0	1/2	0.00	U	
$8368 \ 8 \qquad 3/2^+, 5/2^+$ D $8405 \ 8 \qquad 0$ D $8441 \ 8 \qquad 0$ D $8476 \ 8 \qquad 3/2^+, 5/2^+$ D $8527^r \ 8 \qquad 3/2^+, 5/2^+$ D $8557 \ 8 \qquad 0$ D $8557 \ 8 \qquad 0$ D $8655 \ 8 \qquad 0$ D $86716 \ 8 \qquad 3/2^+, 5/2^+$ D $8716 \ 8 \qquad 3/2^+, 5/2^+$ D $8716 \ 8 \qquad 3/2^+, 5/2^+$ D	8333.3 13	25/2	0.29 ps 6	В	J^{\star} : 25/2 ,29/2 from $\Delta J=1$ M1 γ to 2//2 . 25/2 from membership in
$8405 8$ D $8405 8$ D $8441 8$ D $8476 8 3/2^+, 5/2^+$ D $8527^r 8 3/2^+, 5/2^+$ D $8557 8$ D $8655 8$ D $8683 8$ D $8716 8 3/2^+, 5/2^+$ D $8716 8 3/2^+, 5/2^+$ D $8716 8 3/2^+, 5/2^+$ D	8368 8	3/2+ 5/2+		л	$\mathbf{K} = 5/2$ g.s. band.
843 B 8441 B 8476 $3/2^+, 5/2^+$ D 8527^r $3/2^+, 5/2^+$ D 8548 B 8557 B 8655 B 8663 B 8716 $3/2^+, 5/2^+$ 8716 $3/2^+, 5/2^+$ 8716 $3/2^+, 5/2^+$	8405 8	5/2 ,5/2		ם ח	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8441 8			ם	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8476.8	$3/2^{+} 5/2^{+}$		D D	
8548 8 D 8557 8 D 8655 8 D 8683 8 D 8716 8 3/2 ⁺ ,5/2 ⁺	8527 ^r 8	$3/2^+, 5/2^+$		D	T = (3/2)
8557 8 D 8655 8 D 8683 8 D 8716 8 3/2 ⁺ ,5/2 ⁺	8548 8	012 ,012		л П	· (~/-)
8655 8 D 8683 8 D 8716 8 3/2 ⁺ ,5/2 ⁺ 8770 0 D	8557 8			D	
8683 8 D 8716 8 3/2 ⁺ ,5/2 ⁺ D	8655 8			D	
8716 8 3/2 ⁺ ,5/2 ⁺ D	8683 8			D	
	8716 8	$3/2^+, 5/2^+$		D	
$\delta / / 0^{q} \delta$ D	8770 ⁹ 8			D	

Continued on next page (footnotes at end of table)

⁴⁹Cr Levels (continued)

E(level) [†]	Jπ‡	T _{1/2} @	XREF	Comments
8830 ⁹ 8	$(1/2^+)$		D	
8896 ⁹ 8	$(1/2^+)$		D	
9031.9	(-/-)		D	
$9064\frac{qr}{2}$ 9	$3/2^{+}.5/2^{+}$		D	T = (3/2)
9123 9	-/- ,-/-		D	- (-1-)
9131 9			D	
9145 9	$3/2^+.5/2^+$		D	
9198 <mark>9</mark> 9	$(1/2^+)$		D	
9265 9			D	
9292 9			D	
9321 9			D	
9365 <mark>9</mark> 9			D	
9399 9			D	
9447 9	$(3/2^+, 5/2^+)$		D	
9521 9			D	
9662 9	$(1/2^+)$		D	
9711 9			D	
9745 ^r 9	$(3/2^+, 5/2^+)$		D	
9788 ^r 9	$1/2^{+}$		D	
9857 9			D	
9945 9			D	
9968 9			D	
10039 10			D	
10105 10	$(3/2^+, 5/2^+)$		D	
10125' 10	$(3/2^+, 5/2^+)$		D	
10170 10			D	
10218 10			D	
10222.4 ^{&} 15	29/2 ⁻	0.0324 ^p ps 8	В	
10266 ^r 10	$1/2^{+}$		D	
10302 10	$1/2^{+}$		D	
10374 ^r 10	$(3/2^+, 5/2^+)$		D	
10428 10			D	
10526 10			D	
10700.3 ^{<i>a</i>} 15	$31/2^{-s}$	0.069 ^p ps 14	В	

[†] From least-squares fit to $E\gamma'$ s, excepted as noted in the footnotes or the XREF's. $\Delta E(\gamma)=1$ keV assumed when not given.

[‡] From angular momentum transfer in (p,d) or (³He, α), except as noted.

[#] Proposed by 2006Br03 in $(\alpha,n\gamma)$ based on their level scheme, particle-rotor and shell model calculations, and comparison with neighboring nuclides.

[@] From DSAM or RDM in $(\alpha, n\gamma)$, except as noted.

[&] Band(A): $K^{\pi}=5/2^{-}$, $\alpha=1/2^{+}$ g.s. rotational band. Suggested by 1973BIZW to Be a relatively pure band based on the small δ for transitions connecting the members and the agreement in excitation energies with predictions of the strong coupling model (1972Zu01). Band extended with some changes by 1991Ca23 and 1990Ca06. Further extensions and modifications were made by 1998Ca26 (see comment on the 5964-, 8008-, 10221-, and 10701-keV states in ${}^{12}C({}^{40}Ca,n2p\gamma), {}^{40}Ca({}^{12}C,n2p\gamma), 1997Ol03$ supported these extensions and modifications except for the 25/2⁻ member which was proposed to Be at 8880-keV. 2001Br32 confirmed the extensions and modifications of 1998Ca26 including the 25/2⁻ member.

^{*a*} Band(B): $K^{\pi}=5/2^{-}$, $\alpha=1/2^{-}$ g.s. rotational band. See footnote on $K^{\pi}=5/2^{-}$, $\alpha=1/2^{+}$ g.s. rotational band for details.

^{*b*} Band(C): $K^{\pi} = 1/2^{-}$ band. Configuration=2p_{3/2}, 1/2[321] (2006Br03). Suggested by 1977Ka19 based on deformed configuration mixing calculation; confirmed and extended by 2006Br03.

^{*c*} Band(D): $K^{\pi}=3/2^+$ band. Configuration= $1d_{3/2}^{-1}$, 3/2[202] (2006Br03). Proposed by 1977Ka19 based on ΔE agreement with similar band in ⁴⁹V. Confirmed and extended by 2006Br03 in (α ,n γ).

 ${}^{49}_{24}\text{Cr}_{25}$ -6

Adopted Levels, Gammas (continued)

⁴⁹Cr Levels (continued)

- ^d Band(E): $K^{\pi}=3/2^{-}$, $\nu=3$. Appears to Be main component of this state; $\sigma(\theta)$ for other states are similar. See (p,d). Note that the main component of the ${}^{49}V$ 152, $3/2^-$, state also appears to Be K=3/2, ν =3.
- ^{*e*} Band(F): $K^{\pi} = 1/2^+$ 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. ^{*g*} Band(G): $K^{\pi} = 7/2^{-}$ band? Configuration=1f_{7/2}, 7/2[303] (2006Br03).
- ^{*h*} Band(H): $K^{\pi} = 1/2^+$ band? Configuration= $1d_{3/2}^{-1}$, 1/2[200] (2006Br03).
- ^{*i*} Proposed by 2006Br03 in $(\alpha, n\gamma)$ based on their level scheme, particle-rotor and shell model calculations, and comparison with neighboring nuclides; parentheses added by evaluator.
- ^j Level energy held fixed in least-squares adjustment.
- ^{*k*} Band(I): $K^{\pi} = 3/2^{-}$ band? Configuration=1f_{7/2}, 3/2[321] (2006Br03).
- ¹ Band(J): $K^{\pi}=13/2^{-}$, 3qp band. Configuration=1 $f_{7/2}^{3}$ (2006Br03). 2006Br03 confirmed and extended this band.
- ^{*m*} Band(K): $K^{\pi} = 1/2^{-}$ band? Configuration=1f_{7/2}, 1/2[330] (2006Br03).
- ⁿ Proposed by 2006Br03 in $(\alpha, n\gamma)$ based on their level scheme, particle-rotor and shell model calculations, and comparison with neighboring nuclides.
- ^o Band(L): Band based on 13/2⁺ (1999Br40, 2001Br32). Originally proposed as a band based on the 3529, 11/2 state by 1998Ca26. Proposed as a $K^{\pi}=13/2^+$ band formed by the coupling of the $1d_{3/2}$ proton hole with the $K^{\pi}=5^+$, T=2 band in ⁵⁰Mn by 1999Br40.
- ^{*p*} From DSAM or Narrow Gate on Transitions Below in ¹²C(⁴⁰Ca,n2pγ),⁴⁰Ca(¹²C,n2pγ),...
- ^q Possible doublet. See (p,d).
- ^r Strongest member of various possible IAS's of ⁴⁹V. See (p,d) for details.
- ^s J \rightarrow J or J \rightarrow J-2 E2 γ for 10702 \rightarrow 8009 and J \rightarrow J-1 M1 and J \rightarrow J-1 for 10702 \rightarrow 10224 \rightarrow 8009 establish $J^{\pi}(10224)=29/2^{-}$ and $J^{\pi}(10702)=31/2^{-}$.

					Adopt	ed Levels, Gam	mas (continued)		
						γ ⁽⁴⁹ Cr))		
E(E) Adopted (keV)	TV β- (ke	Weighted a Decay (HI, EV) (ke	verage (int ,xn γ) (α , V) (ke	cernal) of nγ) eV)	Adopted (keV)	(keV)	β- Deca (keV)	y (HI,xnγ) (keV)	$(\alpha, n\gamma)$
271.78 1	9	272.3 4 272 272 271.3	271.9 6 1 1 8 4	271.4	4 3 27 450.2 7 1981.3 5 2232.1 7	78.1 7	2231.5 10	278 1 27 450.0 4 1981 1	8.2 10 450.5 10 1981.4 5 2232.6 10
E(H) Adopted (keV) 690.2 4 812.0 4 937.4 7 2503.4 7	TV β- <u>(ke</u> 2504.	Weighted a Decay (HI,2 (Ke) 690. 812. 812 812 812. 812. 938. 8 10	verage (ext $xn\gamma$) (α , V) (ke 3 3 689 1 3 6 810.7 1 1 6 4 1 4 936.8 2503.1 1	cernal) of nγ) eV) I 7 5 3 3 I 5	Ξ: 177 - Ματίκ [‡]	.#	- m		Commente
$E_i(level)$	J_i^{π}	Eγ	Iγ	\mathbf{E}_{f} .	J_f^{π} Mult. ⁺	δ#	α^m		Comments
271.72	7/2-	271.78 19	100	0.0 5,	/2 ⁻ M1+E2 [@]	-0.115 ^{&} 11	0.00219 4	B(M1)(W.u.)=0.0 α (K)=0.00197 4; α (N+)=9.06×10 α (N)=9.06×10 ⁻⁷ Mult.: D+Q from from δ and con	83 20; B(E2)(W.u.)=36 11 α (L)=0.000185 3; α (M)=2.44×10 ⁻⁵ 4 ⁻⁷ 15 15 $\gamma(\theta)$ in (α ,n γ) and (³ He, $\alpha\gamma$). Ne E1+M2 parison to RUL.
1083.6	9/2-	812.0 4	100.0 ^{<i>a</i>} 11	271.72 7	/2 ⁻ M1+E2 [@]	-0.21 3	0.000187 3	B(M1)(W.u.)=0.2. α (K)=0.000169 3 α (N+)=7.76×10 α (N)=7.76×10 ⁻⁸ Mult.: from $\gamma(\theta)$,	5 5; B(E2)(W.u.)=40 14 ; α (L)=1.567×10 ⁻⁵ 24; α (M)=2.06×10 ⁻⁶ 3 -8 12 12 $\gamma\gamma(\theta)$, and γ (linear pol) in (α ,n γ).
		1083.9 ^b 10	6.3 ^{<i>a</i>} 11	0.0 5,	/2 ⁻ (E2) ^C		0.0001280 <i>18</i>	B(E2)(W.u.)=14 4 α (K)=0.0001161 α (M)=1.413×10 α (N)=5.30×10 α (N)=5.30×10 ⁻⁸ Mult.: D,Q from 1 ² C(⁴⁰ Ca,n2py) comparison to 1	4 17; $\alpha(L)=1.074\times10^{-5}$ 16; 0 ⁻⁶ 20 -8 8 8 recoil-γ(θ) in , ⁴⁰ Ca(¹² C,n2pγ),; Ne M2 from RUL. $\Delta J^{\pi}=2$,no from level scheme.

						Adopted	l Levels, Gammas (continued)	
							γ ⁽⁴⁹ Cr) (continued	<u>l)</u>	
E _i (level)	\mathbf{J}_i^{π}	${\rm E_{\gamma}}^{\dagger}$	I_{γ}^{\dagger}	\mathbf{E}_{f}	\mathbf{J}_f^{π}	Mult. [‡]	$\delta^{\#}$	α^{m}	Comments
1562.1	11/2-	478.63 26	100 ^{ad} 4	1083.6	9/2-	M1+E2 [@]	-0.058 ^{&} 23	5.70×10 ⁻⁴ 9	$\alpha(K)=0.000515 \ 8; \ \alpha(L)=4.80\times10^{-5} \ 7; \\ \alpha(M)=6.31\times10^{-6} \ 10 \\ \alpha(N+)=2.37\times10^{-7} \ 4 \\ \alpha(N)=2.37\times10^{-7} \ 4 \\ B(M1)(W.u.)=0.26 \ 3; \ B(E2)(W.u.)=9 \ 8 \\ Mult.: \ from \ \gamma(\theta), \ \gamma\gamma(\theta), \ and \ \gamma(linear \ pol) \ in \\ (\alpha \ p_{Y})$
		1290.2 5	95 ^{ad} 4	271.72	7/2-	E2 ^c		0.0001130 <i>16</i>	$\alpha(K) = 7.84 \times 10^{-5} \ 11; \ \alpha(L) = 7.24 \times 10^{-6} \ 11; \alpha(M) = 9.52 \times 10^{-7} \ 14 \alpha(N+) = 2.65 \times 10^{-5} \ 4 \alpha(N) = 3.58 \times 10^{-8} \ 5; \ \alpha(IPF) = 2.65 \times 10^{-5} \ 4 B(E2)(W.u.) = 18.5 \ 19 Mult.: from \gamma(\theta), \ \gamma\gamma(\theta), \text{ and } \gamma(\text{linear pol}) \text{ in } (\alpha.n\gamma).$
1703.2	1/2-	1703.2 ^{<i>a</i>} 5	100 ^a	0.0	5/2-	E2 ^{ce}		0.000223 4	$\alpha(K)=4.43\times10^{-5} 7; \ \alpha(L)=4.09\times10^{-6} 6; \alpha(M)=5.38\times10^{-7} 8 \alpha(N+)=0.0001736 25 \alpha(N)=2.03\times10^{-8} 3; \ \alpha(IPF)=0.0001736 25 B(E2)(W.u.)<0.98$
1741.4	3/2-	39 ^{<i>ap</i>} 1469.3 ^{<i>a</i>} 5	<0.14 ^a 40 ^a 3	1703.2 271.72	1/2 ⁻ 7/2 ⁻	E2		0.0001420 20	B(E2)(W.u.)=2.0 6 α (K)=5.95×10 ⁻⁵ 9; α (L)=5.50×10 ⁻⁶ 8; α (M)=7.23×10 ⁻⁷ 11 α (N+)=7.65×10 ⁻⁵ 11 α (N)=2.72×10 ⁻⁸ 4; α (IPF)=7.65×10 ⁻⁵ 11 Mult.: Q from $\gamma(\theta)$ and $\gamma\gamma(\theta)$ in $(\alpha,n\gamma)$. Ne M2 from comparison to RUL.
		1741.3 ^{<i>a</i>} 5	100 ^{<i>a</i>} 3	0.0	5/2-	(M1+E2) [#]	+0.106 +18-36	0.000191 <i>3</i>	B(M1)(W.u.)=0.0027 <i>8</i> ; B(E2)(W.u.)=0.024 <i>11</i> α (K)=3.90×10 ⁻⁵ <i>6</i> ; α (L)=3.59×10 ⁻⁶ <i>5</i> ; α (M)=4.72×10 ⁻⁷ <i>7</i> α (N+)=0.0001484 <i>21</i> α (N)=1.783×10 ⁻⁸ <i>25</i> ; α (IPF)=0.0001483 <i>21</i> Mult.: from $\gamma(\theta)$ and $\gamma\gamma(\theta)$. $\Delta\pi$ =no from level scheme. δ : >+0.070 from $\gamma(\theta)$ and $\gamma\gamma(\theta)$ in (α ,n γ); <0.106 <i>18</i> from comparison to RUL.
1981.8	3/2+	240 ^{<i>a</i>}	2.4 ^{<i>f</i>} 6	1741.4	3/2-	(E1) ^g		0.00243 4	$\alpha(K)=0.00220 \ 3; \ \alpha(L)=0.000204 \ 3; \\ \alpha(M)=2.67\times10^{-5} \ 4 \\ \alpha(N+)=9.88\times10^{-7} \ 14$

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 $^{49}_{24}\mathrm{Cr}_{25}$ -8

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						Adopted	d Levels, Gam	mas (continued)	
							γ ⁽⁴⁹ Cr) (cont	inued)	
E _i (level)	\mathbf{J}_i^{π}	E_{γ}^{\dagger}	I_{γ}^{\dagger}	E_f	\mathbf{J}_f^{π}	Mult. [‡]	$\delta^{\#}$	α^{m}	Comments
1981.8	3/2+	278.1 7	26 ^{,f} 3	1703.2	1/2-	(E1(+M2))		0.005 4	$\begin{aligned} &\alpha(N) = 9.88 \times 10^{-7} \ 14 \\ B(E1)(W.u.) < 0.00044 \\ &\alpha(K) = 0.005 \ 4; \ \alpha(L) = 0.0005 \ 4; \ \alpha(M) = 6.E-5 \ 5 \\ &\alpha(N+) = 2.3 \times 10^{-6} \ 17 \\ &\alpha(N) = 2.3 \times 10^{-6} \ 17 \end{aligned}$
		1709.5 ^{<i>a</i>} 5	16 ^{<i>f</i>} 3	271.72	7/2-	(M2+E3)	-0.23 21	1.43×10 ⁻⁴ 4	-2.74 $\leq \delta \leq 0.176$. Mult., δ : D(+Q) from $\gamma(\theta)$ and $\gamma\gamma(\theta)$ in ($\alpha, n\gamma$). $\Delta \pi$ =yes from level scheme. $\alpha(K)=7.23\times10^{-5} 11$; $\alpha(L)=6.68\times10^{-6} 10$; $\alpha(M)=8.80\times10^{-7} 13$ $\alpha(N+)=6.28\times10^{-5} 25$ $\alpha(N)=3.32\times10^{-8} 5$; $\alpha(IPF)=6.27\times10^{-5} 25$
	5.0	1981.3 5	100 ^f 3	0.0	5/2-	(E1+M2)		0.00042 23	 B(M2)(W.u.)<13; B(E3)(W.u.)<2.2×10³ Mult.,δ: Q+O from γγ(θ) in (α,nγ). Δπ=yes from level scheme. α(K)=3.6×10⁻⁵ 17; α(L)=3.3×10⁻⁶ 16; α(M)=4.4×10⁻⁷ 21 α(N+)=0.00038 25 α(N)=1.7×10⁻⁸ 8; α(IPF)=0.00038 25 0.488≤δ≤2.90. Mult.,δ: D+Q from γ(θ) and γγ(θ) in (α,nγ). Δπ=yes from level scheme.
2108.5	5/2	427^{a} 465^{ap} 1897.0^{a} 5	$< 0.18^{a}$ 82^{a} 4	1741.4 1703.2 271.72	3/2 1/2 ⁻ 7/2 ⁻	D,E2 D+Q			$ δ: +0.18 \ 17 \text{ or } +4 \ 10-2. $ Mult., $δ$: from $\gamma\gamma(\theta)$ in (α,nγ).
2431.8	5/2+	2168.2 ^{<i>a</i>} 5 450.2 7	100 ^{<i>a</i>} 4 92 ^{<i>a</i>} 12	0.0 1981.8	5/2 ⁻ 3/2 ⁺	D+Q M1+E2 ^e	<-2.14 +0.21 ^{&} 9	0.00069 4	Mult., δ : from $\gamma\gamma(\theta)$ in $(\alpha,n\gamma)$. $\alpha(K)=0.00062 \ 4; \ \alpha(L)=5.8\times10^{-5} \ 4; \ \alpha(M)=7.6\times10^{-6} \ 5$ $\alpha(N+)=2.85\times10^{-7} \ 16$ $\alpha(N)=2.85\times10^{-7} \ 16$ B(M1)(W.u.)=0.16 \ 6; B(E2)(W.u.)=8.E+1 \ 8
		690 ^{<i>a</i>}	6.2 ^{<i>a</i>} 12	1741.4	3/2-	(E1) ^h		1.47×10 ⁻⁴ 21	B(E1)(W.u.)=7.E-5 3 α (K)=0.0001328 19; α (L)=1.227×10 ⁻⁵ 18; α (M)=1.613×10 ⁻⁶ 23 α (N+)=6.05×10 ⁻⁸ 9 α (N)=6.05×10 ⁻⁸ 9
		2161 ^{<i>a</i>}	2.4 ^{<i>a</i>} 8	271.72	7/2-	(E1) ^g		0.000769 11	$\alpha(K) = 1.708 \times 10^{-5} 24; \ \alpha(L) = 1.568 \times 10^{-6} 22; \alpha(M) = 2.06 \times 10^{-7} 3$

						Adopted	Levels, Gamn	nas (continued)	
							$\gamma(^{49}Cr)$ (conti	inued)	
E _i (level)	\mathbf{J}_i^π	${\rm E_{\gamma}}^{\dagger}$	I_{γ}^{\dagger}	E_{f}	\mathbf{J}_f^{π}	Mult. [‡]	$\delta^{\#}$	α^{m}	Comments
2431.8	5/2+	2431.4 5	100 ^{<i>a</i>} 12	0.0	5/2-	(E1(+M2))	+0.5 5	0.00081 19	$\begin{aligned} \alpha(\text{N}+) &= 0.000750 \ 11 \\ \alpha(\text{N}) &= 7.79 \times 10^{-9} \ 11; \ \alpha(\text{IPF}) &= 0.000750 \ 11 \\ \text{B}(\text{E1})(\text{W.u.}) &= 9.\text{E}-7 \ 4 \\ \alpha(\text{K}) &= 1.9 \times 10^{-5} \ 7; \ \alpha(\text{L}) &= 1.7 \times 10^{-6} \ 6; \\ \alpha(\text{M}) &= 2 \ 3 \times 10^{-7} \ 8; \ \alpha(\text{N}+) &= 0.00079 \ 20 \end{aligned}$
2500.1	13/2-	937.4 7	100 ^{<i>a</i>} 4	1562.1	11/2-	(M1(+E2)) [@]	-0.03 ^{&} 4	0.0001380 20	$ α(K)=0.0001245 18; α(L)=1.150×10^{-5} 17; α(M)=1.514×10^{-6} 22 α(N+)=5.70×10^{-8} 8 α(N)=5.70×10^{-8} 8 B(M1)(W.u.)=(0.22 4); B(E2)(W.u.)=(0.5 +15-5) Mult.: D(+Q) from γ(θ) in (α,nγ). Δπ=no from level scheme$
		1416.4 <i>4</i>	11 ^{<i>a</i>} 4	1083.6	9/2-	(E2) ^C		0.0001300 <i>19</i>	$ α(K) = 6.42 \times 10^{-5} 9; α(L) = 5.93 \times 10^{-6} 9; α(M) = 7.80 \times 10^{-7} 11 α(N+) = 5.92 \times 10^{-5} 9 α(N) = 2.93 \times 10^{-8} 5; α(IPF) = 5.92 \times 10^{-5} 9 B(E2)(W.u.) = 8 4 Mult.: D,Q from recoil-γ(θ) in 12C(40Ca, n2pγ),40Ca(12C, n2pγ),; Ne M2 from comparison to RUL. ΔJπ = 2, no from level scheme. $
2502.6	7/2-	$335^{ap}_{1420^{ap}}$	<7.4 ^a <7.4 ^a	2168.5 1083.6	5/2 $9/2^{-}$				
		2232.1 7	49 ^{<i>a</i>} 8	271.72	7/2-	$D(+Q)^{\#}$	-0.23 23		E_{γ} : weighted av (int.) of 2231.5 <i>10</i> from β^+ decay
		2503.4 7	100 ^{<i>a</i>} 8	0.0	5/2-	M1(+E2) ^e	-0.11 ^e 10	4.92×10 ⁻⁴ 8	and 2232.0 <i>10</i> from $(\alpha, n\gamma)$. $\alpha(K)=2.11\times10^{-5} 3; \alpha(L)=1.94\times10^{-6} 3;$ $\alpha(M)=2.55\times10^{-7} 4$ $\alpha(N+)=0.000469 8$ $\alpha(N)=9.63\times10^{-9} 14; \alpha(IPF)=0.000469 8$ B(M1)(W.u.)>0.11 E_{γ} : weighted av (ext.) of 2504.8 <i>10</i> from β^+ decay and 2503 1.5 from $(\alpha, n\gamma)$
2578.1	$1/2^{+}$	596 ^a	20 ^{<i>a</i>} 6	1981.8	3/2+				and 2505.1 J 110111 ((a, a)).

						Adopt	ed Levels, Gamm	as (continued)
							γ ⁽⁴⁹ Cr) (contin	nued)
E _i (level)	\mathbf{J}_i^π	E_{γ}^{\dagger}	I_{γ}^{\dagger}	\mathbf{E}_{f}	\mathbf{J}_f^{π}	Mult. [‡]	α^{m}	Comments
2578.1	1/2+	836.5 ^a 6	100 ^a 8	1741.4	3/2-	(E1) ^g	9.67×10 ⁻⁵ 14	$\alpha(K) = 8.75 \times 10^{-5} \ 13; \ \alpha(L) = 8.07 \times 10^{-6} \ 12; \ \alpha(M) = 1.062 \times 10^{-6} \ 15; \\ \alpha(N+) = 3.99 \times 10^{-8} \ 6 \\ \alpha(N) = 3.99 \times 10^{-8} \ 6$
		875.3 ^{<i>a</i>} 6	60 ^a 8	1703.2	1/2-	(E1) ^g	8.81×10 ⁻⁵ 13	$\alpha(K) = 5.59 \times 10^{-5} 0$ $\alpha(K) = 7.97 \times 10^{-5} 12; \ \alpha(L) = 7.35 \times 10^{-6} 11; \ \alpha(M) = 9.67 \times 10^{-7} 14;$ $\alpha(N+) = 3.63 \times 10^{-8} 6$ $\alpha(N) = 3.63 \times 10^{-8} 6$
2613.1	3/2-	2341.7 ^{<i>a</i>} 6	100.0 ^{<i>a</i>} 10	271.72	7/2-	E2	0.000507 8	B(E2)(W.u.)=10 3 $\alpha(K)=2.48\times10^{-5} 4; \ \alpha(L)=2.28\times10^{-6} 4; \ \alpha(M)=3.00\times10^{-7} 5$ $\alpha(N+)=0.000480 7$ $\alpha(N)=1.131\times10^{-8} 16; \ \alpha(IPF)=0.000480 7$ Mult., δ : Q+O, -0.13 11, from $\gamma\gamma(\theta)$ and γ (linear pol) in (α ,n γ).
		2611.8 ^{<i>a</i>} 10	69 ^{<i>a</i>} 4	0.0	5/2-	M1 ^e	0.000537 8	Ne M2, δ (E2+M3)<0.00088 <i>14</i> from comparison to RUL. B(M1)(W.u.)=0.011 <i>4</i> α (K)=1.97×10 ⁻⁵ <i>3</i> ; α (L)=1.81×10 ⁻⁶ <i>3</i> ; α (M)=2.38×10 ⁻⁷ <i>4</i> α (N+)=0.000515 <i>8</i> α (N)=8.98×10 ⁻⁹ <i>13</i> : α (IPF)=0.000515 <i>8</i>
2911.7	$(7/2^+)$	480 ^{<i>a</i>}	100 ^a 15	2431.8	5/2+	D		Mult.: from comparison to RUL. Assigned as E1 by 2006Br03 in $(\alpha, n\gamma)$.
		930 ^a	39 ^a 9	1981.8	3/2+	E2 ^{<i>i</i>}	0.000186 3	$\alpha(K)=0.0001682\ 24;\ \alpha(L)=1.559\times10^{-5}\ 22;\ \alpha(M)=2.05\times10^{-6}\ 3$ $\alpha(N+)=7.67\times10^{-8}\ 11$ $\alpha(N)=7.67\times10^{-8}\ 11$ B(E2)(W.u.)=19 6 Mult: assigned as E1 by 2006Br03 in (α ,n γ).
		2640 ^{<i>a</i>}	94 ^a 15	271.72	7/2-	E1 ^h	0.001060 15	$\alpha(K)=1.292 \times 10^{-5} \ I8; \ \alpha(L)=1.186 \times 10^{-6} \ I7; \ \alpha(M)=1.560 \times 10^{-7} \ 22 \\ \alpha(N+)=0.001044 \ I5 \\ \alpha(N)=5.89 \times 10^{-9} \ 9; \ \alpha(IPF)=0.001044 \ I5 \\ B(E1)(Wu)=1.6 \times 10^{-5} \ 5 $
		2912 ^a	70 ^a 12	0.0	$5/2^{-}$			$D(E1)(W.u.) = 1.0 \times 10^{-5}$
2978.7	$(3/2^+)$	401 ^{<i>a</i>}	59 ^a 11	2578.1	$1/2^{+}$			
		547 ^a	100 ^a 11	2431.8	$5/2^{+}$			
		810 ^{<i>a</i>}	40 ^{<i>a</i>} 7	2168.5	5/2	(E1) ^j	0.0001030 <i>15</i>	$\begin{aligned} \alpha(\mathbf{K}) &= 9.36 \times 10^{-5} \ 14; \ \alpha(\mathbf{L}) &= 8.64 \times 10^{-6} \ 12; \ \alpha(\mathbf{M}) &= 1.136 \times 10^{-6} \ 16 \\ \alpha(\mathbf{N}+) &= 4.26 \times 10^{-8} \ 6 \\ \alpha(\mathbf{N}) &= 4.26 \times 10^{-8} \ 6 \\ \mathbf{B}(\mathbf{E}1)(\mathbf{W}.\mathbf{u}.) &< 0.00022 \end{aligned}$
		997 ^a	27 ^{<i>a</i>} 5	1981.8	3/2+	(M1) ^j	6.80×10 ⁻⁵ 10	α (K)=0.0001102 <i>16</i> ; α (L)=1.017×10 ⁻⁵ <i>15</i> ; α (M)=1.339×10 ⁻⁶ <i>19</i> α (N+)=5.05×10 ⁻⁸ <i>7</i> α (N)=5.05×10 ⁻⁸ <i>7</i> B(M1)(W.u.)<0.0035
		1237 ^a	25 ^a 5	1741.4	3/2-	(E1) j	1.22×10^{-4} 2	$\alpha(K) = 4.13 \times 10^{-5} 6$; $\alpha(L) = 3.81 \times 10^{-6} 6$; $\alpha(M) = 5.01 \times 10^{-7} 7$

	Adopted Levels, Gammas (continued)												
						-	γ(⁴⁹ Cr)	(continued)					
E _i (level)	\mathbf{J}_i^{π}	E_{γ}^{\dagger}	I_{γ}^{\dagger}	E_f	J_f^π	Mult. [‡]	δ#	α^{m}	Comments				
2978.7	(3/2+)	2979 ^{ap}		0.0	5/2-	(E1) ^j		0.001240 18	$\begin{aligned} \alpha(\text{N}+) &= 7.77 \times 10^{-5} \ 11 \\ \alpha(\text{N}) &= 1.88 \times 10^{-8} \ 3; \ \alpha(\text{IPF}) &= 7.77 \times 10^{-5} \ 11 \\ \text{B}(\text{E1})(\text{W.u.}) &< 3.9 \times 10^{-5} \\ \alpha(\text{K}) &= 1.100 \times 10^{-5} \ 16; \ \alpha(\text{L}) &= 1.009 \times 10^{-6} \ 15; \\ \alpha(\text{M}) &= 1.328 \times 10^{-7} \ 19 \\ \alpha(\text{N}+) &= 0.001227 \ 18 \\ \alpha(\text{N}) &= 5.02 \times 10^{-9} \ 7; \ \alpha(\text{IPF}) &= 0.001227 \ 18 \end{aligned}$				
3051.7	(9/2)-	1968 ^a 2780 ^a 3052 ^{ap}	100 ^a 9 79 ^a 9	1083.6 271.72 0.0	9/2 ⁻ 7/2 ⁻ 5/2 ⁻	D,E2 D,E2							
3190.1	15/2-	690.2 4	92 ^a 10	2500.1	13/2-	(M1(+E2)) [@]	<0.2	2.60×10 ⁻⁴ 5	$ α(K)=0.000236 5; α(L)=2.18×10^{-5} 4; α(M)=2.87×10^{-6} 6 α(N+)=1.079×10^{-7} 20 α(N)=1.079×10^{-7} 20 B(M1)(W.u.)>0.27; B(E2)(W.u.)<97 Mult,δ: from γ(θ) in 12C(40Ca,n2pγ),40Ca(12C,n2pγ), Δπ=no from level scheme.$				
		1627.8 <i>4</i>	100 ^{<i>a</i>} 10	1562.1	11/2-	(E2)		0.000194 3					
3201.7	(9/2 ⁻)	2118 ^a 2930 ^a 3202 ^{ap}	45 ^a 9 100 ^a 9	1083.6 271.72 0.0	9/2 ⁻ 7/2 ⁻ 5/2 ⁻	D,E2 D,E2							
3250.9	(5/2+)	819 ^a	100 ^{<i>a</i>} 14	2431.8	5/2+	(M1)		1.81×10 ⁻⁴ 3	α(K)=0.0001634 23; α(L)=1.511×10-5 22; α(M)=1.99×10-6 3 α(N+)=7.49×10-8 11 α(N)=7.49×10-8 11 B(M1)(W.u.)=0.12 4 Mult.: D from comparison to RUL. Δπ=no from level scheme.				
		1269 ^a 2979 ^a	100 ^a 14 <11.4 ^a	1981.8 271.72	3/2 ⁺ 7/2 ⁻	D,E2 ^j							
		3251 ^a	27 ^a 7	0.0	5/2-	(E1)		0.001370 20	$\begin{aligned} &\alpha(\mathrm{K}) = 9.82 \times 10^{-6} \ 14; \ \alpha(\mathrm{L}) = 9.01 \times 10^{-7} \ 13; \\ &\alpha(\mathrm{M}) = 1.185 \times 10^{-7} \ 17 \\ &\alpha(\mathrm{N}+) = 0.001362 \ 19 \end{aligned}$				

⁴⁹₂₄Cr₂₅-12

						Adopted 1	Levels, Gar	nmas (continued	<u>)</u>
						- -	γ(⁴⁹ Cr) (co	ntinued)	
E _i (level)	\mathbf{J}_i^{π}	E_{γ}^{\dagger}	I_{γ}^{\dagger}	E_f	\mathbf{J}_f^{π}	Mult. [‡]	$\delta^{\#}$	α^{m}	Comments
									$ α(N)=4.48 \times 10^{-9} $ 7; $α(IPF)=0.001362$ 19 B(E1)(W.u.)=1.2×10 ⁻⁵ 5 Mult.: D,Q from comparison to RUL. $Δπ$ =yes from level scheme.
3407 3499.7 3511	(5/2) ⁻ (11/2 ⁻) (7/2) ⁻	794^{ap} 2416^{a} 2.44×10^{3k} 3.24×10^{3kp}	$\frac{100^a}{92^k} 20$	2613.1 1083.6 1083.6 271.72	3/2 ⁻ 9/2 ⁻ 9/2 ⁻ 7/2 ⁻	D,E2			
3527.6	13/2-	3.51×10 ³ <i>k</i> 337.2 4	100 ^k 22 100.0 31	0.0 3190.1	5/2 ⁻ 15/2 ⁻	D(+Q) M1	-0.08 8	0.001260 18	Mult., δ : from $\alpha\gamma(\theta)$ in (³ He, $\alpha\gamma$). $\alpha(K)=0.001138\ 17;\ \alpha(L)=0.0001064\ 16;$ $\alpha(M)=1.400\times10^{-5}\ 20$ $\alpha(N+)=5.23\times10^{-7}\ 8$ $\alpha(N)=5.23\times10^{-7}\ 8$ $B(M1)(W.u.)=1.55\ 23$ I_{γ} : weighted av (int.) from ¹² C(⁴⁰ Ca,n2p\gamma), ⁴⁰ Ca(¹² C, math constraints)
		1027.6 4	20.9 21	2500.1	13/2-	D,E2			In 2py), and (α ,ir γ). I _{γ} : weighted av (int.) from ¹² C(⁴⁰ Ca,n2p γ), ⁴⁰ Ca(¹² C, n2p γ), and (α ,n γ). Mult.: Δ J=0 d or Δ J=2 Q γ from AD in ¹² C(⁴⁰ Ca,n2p γ), ⁴⁰ Ca(¹² C,n2p γ), Ne M2 from comparison to RU
		1965.4 <i>4</i>	5.1 6	1562.1	11/2-	(M1)		0.000272 4	$\alpha(K)=3.15\times10^{-5} 5; \ \alpha(L)=2.90\times10^{-6} 4; \ \alpha(M)=3.82\times10^{-7} 6$ $\alpha(N+)=0.000238 4$ $\alpha(N)=1.443\times10^{-8} 21; \ \alpha(IPF)=0.000238 4$ B(M1)(W.u.)=0.00040 8 Mult.: J \rightarrow J-1 γ from AD in ¹² C(⁴⁰ Ca,n2p γ), ⁴⁰ Ca(¹² C, n2p γ). $\Delta \pi$ =no from level scheme
		2444.0 4	2.1 6	1083.6	9/2-	(E2)		0.000555 8	
3628.6	(9/2+)	717 ^a 1197 ^a	97 ^a 17 37 ^a 7	2911.7 2431.8	(7/2 ⁺) 5/2 ⁺	D,E2 (E2) ^{<i>i</i>}		0.0001110 <i>16</i>	$\alpha(K)=9.24\times10^{-5} \ 13; \ \alpha(L)=8.55\times10^{-6} \ 12; \\ \alpha(M)=1.125\times10^{-6} \ 16 \\ \alpha(N+)=8.69\times10^{-6} \ 13 \\ \alpha(N)=4.22\times10^{-8} \ 6; \ \alpha(IPF)=8.65\times10^{-6} \ 13 \\ B(E2)(W.u)=19 \ 6$

Adopted Levels, Gammas (continued)											
							γ ⁽⁴⁹ Cr) (conti	nued)			
E _i (level)	\mathbf{J}_i^π	E_{γ}^{\dagger}	I_{γ}^{\dagger}	\mathbf{E}_{f}	\mathbf{J}_f^{π}	Mult. [‡]	α^{m}	Comments			
3628.6	(9/2+)	2066 ^a	13.3 ^{<i>a</i>} 20	1562.1	11/2-	(E1) ^g	0.000705 10	$\alpha(K)=1.82\times10^{-5} \ 3; \ \alpha(L)=1.673\times10^{-6} \ 24; \ \alpha(M)=2.20\times10^{-7} \ 3$ $\alpha(N+)=0.000685 \ 10$ $\alpha(N)=8.31\times10^{-9} \ 12; \ \alpha(IPF)=0.000685 \ 10$ $B(F1)(Wu)=1.8\times10^{-5} \ 6$			
		2545 ^a	83 ^{<i>a</i>} 14	1083.6	9/2-	(E1) ^g	0.001000 14	$\begin{aligned} \alpha(\mathbf{K}) &= 1.358 \times 10^{-5} \ 19; \ \alpha(\mathbf{L}) &= 1.246 \times 10^{-6} \ 18; \ \alpha(\mathbf{M}) &= 1.640 \times 10^{-7} \ 23 \\ \alpha(\mathbf{N}+) &= 0.000988 \ 14 \\ \alpha(\mathbf{N}) &= 6.19 \times 10^{-9} \ 9; \ \alpha(\mathbf{IPF}) &= 0.000988 \ 14 \\ \mathbf{P}(\mathbf{F}1) \otimes \mathbf{W} \ \mathbf{v} &= 6 \ 2 \times 10^{-5} \ 18 \end{aligned}$			
		3357 ^a	100 ^{<i>a</i>} 17	271.72	7/2-	(E1) ^g	0.001420 20	$\begin{aligned} \alpha(K) &= 9.43 \times 10^{-6} \ 14; \ \alpha(L) &= 8.64 \times 10^{-7} \ 13; \ \alpha(M) &= 1.138 \times 10^{-7} \ 16 \\ \alpha(N+) &= 0.001412 \ 20 \\ \alpha(N) &= 4.30 \times 10^{-9} \ 6; \ \alpha(IPF) &= 0.001412 \ 20 \\ B(E1)(Wu) &= 3.2 \times 10^{-5} \ 10 \end{aligned}$			
3687.4	(11/2 ⁻)	2125 ^a 2604 ^a	$45^{a} 6$ $100^{a} 6$	1562.1 1083.6	11/2 ⁻ 9/2 ⁻	D,E2 D.E2		D(L1)(W.u.)=5.2×10 10			
3802.4	$(11/2^{-})$	1301 ^{<i>a</i>} 2718 ^{<i>a</i>}	$27^{a}_{55a}^{a}_{8}^{6}$	2500.1	$\frac{13}{2^{-}}$	D,E2					
		3530 ^a	100 ^{<i>a</i>} 9	271.72	7/2 ⁻	(E2)	0.001010 <i>15</i>	$\alpha(K)=1.270\times10^{-5}$ 18; $\alpha(L)=1.166\times10^{-6}$ 17; $\alpha(M)=1.534\times10^{-7}$ 22 $\alpha(N+)=0.000999$ 14 $\alpha(N)=5.80\times10^{-9}$ 9; $\alpha(IPF)=0.000999$ 14 B(E2)(W.u)=0.8 3 Mult : D.O from comparison to RUL, $\Delta J^{\pi}=2$ no from level scheme.			
3843.9	$(7/2^+)$	1412 ^a	100 ^{<i>a</i>}	2431.8	5/2+	D,E2					
		3572 ^p		271.72	7/2-	(E1) ^j	0.001510 22	$\alpha(K)=8.72\times10^{-6}$ 13; $\alpha(L)=7.99\times10^{-7}$ 12; $\alpha(M)=1.051\times10^{-7}$ 15 $\alpha(N+)=0.001504$ 21 $\alpha(N)=3.97\times10^{-9}$ 6; $\alpha(IPF)=0.001504$ 21			
		3844 ^p		0.0	5/2-	(E1) ^j	0.001630 23	$\alpha(K)=7.95\times10^{-6}$ 12; $\alpha(L)=7.29\times10^{-7}$ 11; $\alpha(M)=9.59\times10^{-8}$ 14 $\alpha(N+)=0.001620$ 23 $\alpha(N)=3.63\times10^{-9}$ 5: $\alpha(IPF)=0.001620$ 23			
3892.2	13/2+	364.4 <i>4</i>	15.6	3527.6	13/2-	E1	0.000734 11	$\begin{aligned} \alpha(K) = 0.000664 \ 10; \ \alpha(L) = 6.14 \times 10^{-5} \ 9; \ \alpha(M) = 8.07 \times 10^{-6} \ 12 \\ \alpha(N+) = 3.00 \times 10^{-7} \ 5 \\ B(E1)(W.u.) < 0.00017 \\ Mult.: \ \Delta J = 0 \ D \ or \ \Delta J = 2 \ Q \ \gamma \ from \ AD \ in \\ {}^{12}C({}^{40}Ca, n2p\gamma), {}^{40}Ca({}^{12}C, n2p\gamma), \ E1 \ consistent \ with \ AD \ ratios \ for \\ 364 \ and \ 702 \ \gamma' \ s \ in \ {}^{12}C({}^{40}Ca, n2p\gamma), {}^{40}Ca({}^{12}C, n2p\gamma), \ E1 \ consistent \ with \ AD \ ratios \ for \\ 364 \ and \ 702 \ \gamma' \ s \ in \ {}^{12}C({}^{40}Ca, n2p\gamma), {}^{40}Ca({}^{12}C, n2p\gamma), \ (1999Br40). \end{aligned}$			
		702.2 5	9.6	3190.1	15/2-	(E1)	0.0001410 20	$\alpha(K)=0.0001277 \ 18; \ \alpha(L)=1.179\times10^{-5} \ 17; \ \alpha(M)=1.551\times10^{-6} \ 22$ $\alpha(N+)=5.81\times10^{-8} \ 9$ $\alpha(N)=5.81\times10^{-8} \ 9$ B(E1)(W.u.)<1.4×10^{-5}			

From ENSDF

 $^{49}_{24}\mathrm{Cr}_{25}$ -14

					2	(⁴⁹ Cr) (continue)	1)
E (11)	īπ	Б [†]	т †	E I	<u>/</u> π λι. ‡	- <i>m</i>	Commente
$E_i(level)$	J_i^{i}	Eγ	I_{γ}	E_f J	f Mult. •	α	
							Mult.: $\Delta J=1 D \gamma$ in ¹² C(⁴⁰ Ca,n2p γ), ⁴⁰ Ca(¹² C,n2p γ), $\Delta \pi$ =yes from level scheme.
3892.2	$13/2^{+}$	1395 <i>1</i>	15.6	2500.1 13/	$(E1)^{j}$	0.000221 4	$\alpha(K)=3.36\times10^{-5} 5; \alpha(L)=3.09\times10^{-6} 5; \alpha(M)=4.07\times10^{-7} 6$
							$\alpha(N+)=0.000184.5$ $\alpha(N)=1.533\times10^{-8}.22$; $\alpha(IPF)=0.000184.3$
							$B(E1)(W.u.) < 3.0 \times 10^{-6}$
		2332 1	100	1562.1 11/	2- (E1)	0.000878 13	$\alpha(K)=1.533\times10^{-5}$ 22; $\alpha(L)=1.407\times10^{-6}$ 20; $\alpha(M)=1.85\times10^{-7}$ 3
							α (N+)=0.000861 <i>12</i>
							$\alpha(n)=0.99\times10^{-7}$ 10; $\alpha(n)=0.000801$ 12 B(E1)(W n)<4 1×10 ⁻⁶
							Mult.: $J \rightarrow J-1 \gamma$ from AD in ¹² C(⁴⁰ Ca,n2p γ), ⁴⁰ Ca(¹² C, n2p γ),
							$\Delta \pi$ =yes from level scheme.
3899.1	$(15/2^{-})$	709^{a}	100^{a} 15	3190.1 15/	2 ⁻ D,E2		
		2337 ^a	86 ^{<i>a</i>} 15	1562.1 11/	2^{-} (E2)	0.000505 8	$\alpha(K)=2.48\times10^{-5}$ 4; $\alpha(L)=2.29\times10^{-6}$ 4; $\alpha(M)=3.01\times10^{-7}$ 5
			00 10	100211 11	- (2-)	010000000	α(N+)=0.000478 7
							α (N)=1.135×10 ⁻⁸ <i>16</i> ; α (IPF)=0.000478 7
							B(E2)(W.u.)=0.82 22 Mult : D O from comparison to BUL ΛI^{π} -2 no from level scheme
3913	$(3/2)^{-}$	$\approx 1.33 \times 10^{3} \frac{nkp}{c}$		2613.1 3/2	-		ware. D,Q from comparison to KOE. 25 –2,10 from level scheme.
5715	(3/2)	$\approx 1.33 \times 10^{3 nkp}$		2578.1 1/2	+		
		1.95×10^{3} k		1981.8 3/2	+		
		$\approx 2.20 \times 10^{3} nkp$		1741.4 3/2	-		
		$\approx 2.20 \times 10^{3} \frac{nkp}{p}$		1703.2 1/2	_		
3928.8	$\langle 0 2^{+} \rangle$	1947 ^a	15.00 22	1981.8 3/2	+		
4051.5	(9/2+)	1140 ⁴	$15.9^{4} 32$	2911.7 (7/2	Z^{+}) D,E2	0 000071 14	$\alpha(K) = 1.400 \times 10^{-5}$ 20; $\alpha(L) = 1.295 \times 10^{-6}$ 10; $\alpha(M) = 1.601 \times 10^{-7}$ 24
		2489	43 /	1302.1 11/	2 (E1) ^J	0.0009/1 14	$\alpha(\mathbf{N}) = 1.400 \times 10^{-2} 20; \ \alpha(\mathbf{L}) = 1.265 \times 10^{-5} 16; \ \alpha(\mathbf{M}) = 1.691 \times 10^{-7} 24$ $\alpha(\mathbf{N}+) = 0.000955 \ 14$
							$\alpha(N)=6.38\times10^{-9}$ 9; $\alpha(IPF)=0.000955$ 14
							$B(E1)(W.u.)=4.9\times10^{-5}$ 12
		2968 ^a	100 ^a 10	1083.6 9/2	- (E1) ^j	0.001230 18	$\alpha(\text{K})=1.106 \times 10^{-5}$ 16; $\alpha(\text{L})=1.014 \times 10^{-6}$ 15; $\alpha(\text{M})=1.334 \times 10^{-7}$ 19
							$\alpha(N+)=0.001221 I/\alpha(N)-5.04\times10^{-9} 7.\alpha(IPF)-0.001221 I7$
							$B(E1)(W.u.)=6.8\times10^{-5} 14$
4105.7	$(13/2)^{-}$	1604	100 9	2500.1 13/	2 ⁻ D,E2		
		3021	89 9	1083.6 9/2	- (E2) ^{<i>i</i>}	0.000810 12	$\alpha(\text{K})=1.621\times10^{-5}\ 23;\ \alpha(\text{L})=1.489\times10^{-6}\ 21;\ \alpha(\text{M})=1.96\times10^{-7}\ 3$
							$\alpha(N+)=0.000792$ 11 $\alpha(N)=7.40\times10^{-9}$ 11, $\alpha(DE)=0.000702.11$
							$\alpha(1N) = 1.40 \times 10^{-5} 11; \alpha(1PF) = 0.000/92/11$

						Adopte	d Levels, Gamma	as (continued)
							γ ⁽⁴⁹ Cr) (contin	ued)
E _i (level)	J_i^π	E_{γ}^{\dagger}	I_{γ}^{\dagger}	\mathbf{E}_{f}	\mathbf{J}_f^{π}	Mult. [‡]	α^{m}	Comments
4201.7	(13/2)-	1700 ^a	100 ^{<i>a</i>} 6	2500.1	13/2-	D,E2		
		3117 ^a	79 ^a 6	1083.6	9/2-	(E2) ^{<i>i</i>}	0.000850 12	$\alpha(\text{K})=1.542 \times 10^{-5} 22; \ \alpha(\text{L})=1.416 \times 10^{-6} 20; \ \alpha(\text{M})=1.86 \times 10^{-7} 3$ $\alpha(\text{N}+)=0.000833 \ I2$ $\alpha(\text{N})=7.04 \times 10^{-9} \ I0; \ \alpha(\text{IPF})=0.000832 \ I2$ B(F2)(W u) > 3.8
4218.1	17/2-	1027.8 4	100	3190.1	15/2-	D		Mult.: $J \rightarrow J-1 \gamma$ from AD and DCO in ${}^{12}C({}^{40}Ca,n2p\gamma),{}^{40}Ca({}^{12}C,n2p\gamma),$
		1717.4 4	38	2500.1	13/2-	(E2) ^{<i>l</i>}	0.000228 4	$\alpha(K)=4.36\times10^{-5}$ 7; $\alpha(L)=4.02\times10^{-6}$ 6; $\alpha(M)=5.29\times10^{-7}$ 8 $\alpha(N+)=0.000180$ 3 $\alpha(N)=1.99\times10^{-8}$ 3; $\alpha(IPF)=0.000180$ 3 B(E2)(W,u)=9 5
4279.5	$(11/2^+)$	651 ^a	67 ^a 10	3628.6	$(9/2^+)$	D		
		1368 ^a	100 ^{<i>a</i>} 12	2911.7	(7/2 ⁺)	(E2) ^{<i>i</i>}	0.0001220 18	$\alpha(K)=6.91\times10^{-5} \ 10; \ \alpha(L)=6.38\times10^{-6} \ 9; \ \alpha(M)=8.40\times10^{-7} \ 12$ $\alpha(N+)=4.56\times10^{-5} \ 7$ $\alpha(N)=3.16\times10^{-8} \ 5; \ \alpha(IPF)=4.55\times10^{-5} \ 7$ P(F2)(Wu)=22.6
		2717 ^a	44 ^a 7	1562.1	11/2-	(E1) ^g	0.001100 16	$\begin{array}{l} \alpha(K) = 1.243 \times 10^{-5} \ 18; \ \alpha(L) = 1.141 \times 10^{-6} \ 16; \ \alpha(M) = 1.501 \times 10^{-7} \ 21 \\ \alpha(N+) = 0.001090 \ 16 \\ \alpha(N) = 5.67 \times 10^{-9} \ 8; \ \alpha(IPF) = 0.001090 \ 16 \\ B(E1)(Wn) = 2.2 \times 10^{-5} \ 6 \end{array}$
		3196 ^{<i>a</i>}	31 ^{<i>a</i>} 5	1083.6	9/2-	(E1) ^g	0.001350 19	$\alpha(K)=1.004\times10^{-5} I4; \ \alpha(L)=9.21\times10^{-7} I3; \ \alpha(M)=1.212\times10^{-7} I7$ $\alpha(N+)=0.001335 I9$ $\alpha(N)=4.58\times10^{-9} 7; \ \alpha(IPF)=0.001335 I9$ $B(E1)(Wu)=9.4\times10^{-6} 25$
4296.8	$(9/2^+)$	1385 ^a	100 ^{<i>a</i>}	2911.7	$(7/2^+)$	D,E2		
		4025 <i>ap</i>		271.72	7/2-	(E1) j	0.001700 24	$\alpha(K)=7.51\times10^{-6}$ 11; $\alpha(L)=6.89\times10^{-7}$ 10; $\alpha(M)=9.06\times10^{-8}$ 13 $\alpha(N+)=0.001690$ 24 $\alpha(N+)=0.001690$ 24
4366.0	19/2-	148.1 4	5.8	4218.1	17/2-	D		$\alpha(N)=5.43\times10^{-5}$ 5; $\alpha(IPF)=0.001690\ 24^{-5}$ Mult.: J \rightarrow J-1 γ from AD and DCO in ${}^{12}C({}^{40}Ca,n2p\gamma), {}^{40}Ca({}^{12}C,n2p\gamma),$
		1176.6 4	100	3190.1	15/2-	E2	0.0001120 <i>16</i>	$\alpha(K)=9.61\times10^{-5} I4; \ \alpha(L)=8.89\times10^{-6} I3; \ \alpha(M)=1.169\times10^{-6} I7 \\ \alpha(N+)=6.04\times10^{-6} I0 \\ \alpha(N)=4.39\times10^{-8} 7; \ \alpha(IPF)=6.00\times10^{-6} I0 \\ B(E2)(W.u)=13.3 I2 \\ Mult.: J \rightarrow J D \text{ or } J \rightarrow J-2 Q \gamma \text{ from AD and DCO in} \\ {}^{12}C({}^{40}Ca,n2p\gamma), {}^{40}Ca({}^{12}C,n2p\gamma),; \text{ large Q component from } \gamma(\theta) \text{ in} \\ {}^{12}C({}^{40}Ca,n2p\gamma), {}^{40}Ca({}^{12}C,n2p\gamma), \text{ Ne M2 from comparison to RUL.} \end{cases}$
4426	5/2-,7/2-	2440 ^a		1981.8	3/2+			
4459.7	$(11/2^+)$	3376 ^a	100 a	1083.6	9/2-	(E1) j	0.001430 21	$\alpha(K)=9.36\times10^{-6}$ 14; $\alpha(L)=8.58\times10^{-7}$ 12; $\alpha(M)=1.129\times10^{-7}$ 16

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	Adopted Levels, Gammas (continued)											
	γ ⁽⁴⁹ Cr) (continued)											
E _i (level)	\mathbf{J}_i^π	E_{γ}^{\dagger}	I_{γ}^{\dagger}	\mathbf{E}_f J	\int_{f}^{π} Mult. [‡]	$\delta^{\#}$	α^{m}	Comments				
4467.1	15/2+	575.2 4	100.0 51	3892.2 13,	/2 ⁺ M1+E2	-0.20 5	3.92×10 ⁻⁴ 9	$\begin{aligned} &\alpha(\text{N}+)=0.001420\ 20\\ &\alpha(\text{N})=4.27\times10^{-9}\ 6;\ \alpha(\text{IPF})=0.001420\ 20\\ &\text{B(E1)(W.u.)}=8.3\times10^{-5}\ 15\\ &\alpha(\text{K})=0.000355\ 8;\ \alpha(\text{L})=3.29\times10^{-5}\ 8;\ \alpha(\text{M})=4.33\times10^{-6}\\ &10\\ &\alpha(\text{N}+)=1.63\times10^{-7}\ 4 \end{aligned}$				
		939.3 4	7.6.25	3527.6 13	/2- (E1) ^h		7.64×10 ⁻⁵ 11	α (N)=1.63×10 ⁻⁷ 4 B(M1)(W.u.)=0.073 20; B(E2)(W.u.)=21 12 Mult., δ : from AD in ¹² C(⁴⁰ Ca,n2p γ), ⁴⁰ Ca(¹² C,n2p γ), α (K)=6.92×10 ⁻⁵ 10: α (L)=6.38×10 ⁻⁶ 9:				
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1.0 23	3527.0 15	(2)		7.01X10 11	$\alpha(M) = 8.39 \times 10^{-7} \ I2; \ \alpha(N+) = 3.15 \times 10^{-8} \ 5$ $\alpha(N) = 3.15 \times 10^{-8} \ 5$ $B(E1)(W.u.) = 3.0 \times 10^{-5} \ I3$				
		1276.7 4	13.9 25	3190.1 15,	/2 ⁻ (E1)		0.0001480 21	$ α(K)=3.91\times10^{-5} 6; α(L)=3.60\times10^{-6} 5; α(M)=4.74\times10^{-7} $ $ α(N+)=0.0001049 15 $ $ α(N)=1.783\times10^{-8} 25; α(IPF)=0.0001049 15 $ $ B(E1)(W.u.)=2.2\times10^{-5} 7 $ Mult.: $ΔJ=0 d \text{ or } ΔJ=2 Q \gamma \text{ from AD in} $ $ {}^{12}C({}^{40}Ca,n2p\gamma),{}^{40}Ca({}^{12}C,n2p\gamma), \text{ Ne M2 from} $ comparison to RUL. $Δ\pi$ =yes from level scheme.				
4571.5	17/2-	1966.8 <i>4</i> 352 ^{<i>a</i>} 1382 ^{<i>a</i>}	5.1 25 < 10^{a} $100^{a} 14$	2500.1 13, 4218.1 17, 3190.1 15,	/2 ⁻ D,Q /2 ⁻ /2 ⁻ D,E2							
		2072 ^a	100 ^{<i>a</i>} 14	2500.1 13,	/2 ⁻ (E2) ⁱ		0.000382 6	$\alpha(K)=3.07\times10^{-5} 5; \alpha(L)=2.83\times10^{-6} 4; \alpha(M)=3.72\times10^{-7} 6$ $\alpha(N+)=0.000348 5$ $\alpha(N)=1.404\times10^{-8} 20; \alpha(IPF)=0.000348 5$ B(E2)(W.u.)=4.9 13				
4586.5		2605 ^a		1981.8 3/2	2+							
4716.2	(13/2+)	2216 ^a	100 ^a 15	2500.1 13,	/2 ⁻ (E1) ^h		0.000805 12	$\alpha(K)=1.647\times10^{-5}\ 23;\ \alpha(L)=1.512\times10^{-6}\ 22;\alpha(M)=1.99\times10^{-7}\ 3\alpha(N+)=0.000786\ 11\alpha(N)=7.51\times10^{-9}\ 11;\ \alpha(IPF)=0.000786\ 11B(E1)(Wu)=5\ 3\times10^{-5}\ 13$				
		3154 ^a	79 ^a 15	1562.1 11,	/2 ⁻ (E1) ^j		0.001330 19	$\alpha(K)=1.022\times10^{-5} \ 15; \ \alpha(L)=9.37\times10^{-7} \ 14; \alpha(M)=1.233\times10^{-7} \ 18 \alpha(N+)=0.001314 \ 19$				

From ENSDF

 $^{49}_{24}\mathrm{Cr}_{25}\text{--}17$

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					Ado	pted Level	s, Gammas (c	ontinued)				
	γ ⁽⁴⁹ Cr) (continued)											
E _i (level)	\mathbf{J}_i^π	E_{γ}^{\dagger}	I_{γ}^{\dagger}	E_f	\mathbf{J}_f^{π}	Mult. [‡]	δ [#]	α^{m}	Comments			
									$\alpha(N)=4.66\times10^{-9}$ 7; $\alpha(IPF)=0.001314$ 19			
4740 4		2248 <mark>a</mark>	60 ^a 11	2500.1	13/2-	DE2			$B(E1)(W.u.)=1.5\times10^{-5} 4$			
4/49.4		3186 ^a	100^{a} 14	1562.1	13/2 $11/2^{-}$	D,E2 D,E2						
4764	$(7/2)^{-}$	$\approx 3.69 \times 10^{3}$ k	47 ^k 10	1083.6	9/2-	,						
	,	$\approx 4.49 \times 10^{3}$ k	100 ^k 21	271.72	7/2-	D(+Q)	-0.052 90					
		≈4.76×10 ³ <i>k</i>	9.4 ^k 16	0.0	5/2-							
4809.1		1619 ^a	79 ^a 15	3190.1	$15/2^{-}$	D,E2						
1027 2		2309^{a}	100 ^{<i>a</i>} 15	2500.1	$\frac{13}{2^{-}}$	D,E2						
4857.2	$(11/2^+)$	1315 ^a	100 ^a	3628.6	$(9/2^+)$	D.E2						
.,	(11)=)	3860 ^{<i>ap</i>}	a	1083.6	9/2 ⁻	(E1) ^g		0.001630 23	$\alpha(K)=7.91\times10^{-6}$ 11; $\alpha(L)=7.25\times10^{-7}$ 11; $\alpha(M)=9.54\times10^{-8}$ 14			
									α (N+)=0.001626 23			
5032.3		34704		1562-1	11/2-				$\alpha(N)=3.61\times10^{-9}$ 5; $\alpha(IPF)=0.001626$ 23			
5048.4	$(13/2^+)$	769 ^a	<25 ^a	4279.5	$(11/2^+)$							
		1420 ^{<i>a</i>}	51 ^a 8	3628.6	$(9/2^+)$	D,E2						
		2548 ^{<i>a</i>}	93 ^a 10	2500.1	13/2-	D,E2			Mult.: from comparison to RUL. Assigned as (E1) by 2006Br03 in $(\alpha, n\gamma)$.			
		3486 ^a	100 ^{<i>a</i>} 13	1562.1	11/2-	(E1) ^j		0.001480 21	α (K)=8.99×10 ⁻⁶ 13; α (L)=8.24×10 ⁻⁷ 12; α (M)=1.084×10 ⁻⁷ 16 α (N+)=0.001468 21			
									$\alpha(N) = 4.10 \times 10^{-9} 6; \alpha(IPF) = 0.001468 21$			
5058		3500		1562-1	11/2-				$B(E1)(W.u.) > 6.7 \times 10^{-5}$			
5179.7		2677 ^a		2502.6	$7/2^{-}$							
5302.7	17/2+	835.5 4	100 4	4467.1	15/2+	M1+E2	-0.34 10	1.81×10 ⁻⁴ 5	$\alpha(\mathbf{K})=0.000164 \ 5; \ \alpha(\mathbf{L})=1.51\times10^{-5} \ 5; \\ \alpha(\mathbf{M})=1.99\times10^{-6} \ 6 \\ \alpha(\mathbf{N}+)=7.49\times10^{-8} \ 20$			
		1410.8 <i>4</i>	39 4	3892.2	13/2+	E2		0.0001290 <i>19</i>	$\alpha(N)=7.49\times10^{-8}\ 20$ B(M1)(W.u.)=0.032 7; B(E2)(W.u.)=13 8 Mult., δ : D+Q from AD in ${}^{12}C({}^{40}Ca,n2p\gamma),{}^{40}Ca({}^{12}C,n2p\gamma),$ Ne E1+M2 from δ and comparison to RUL. $\alpha(K)=6.48\times10^{-5}\ 9; \ \alpha(L)=5.98\times10^{-6}\ 9; \ \alpha(M)=7.87\times10^{-7}\ 11$ $\alpha(M)=7.87\times10^{-5}\ 9$			

	Adopted Levels, Gammas (continued)										
						γ ⁽⁴⁹ Cr) (co	ontinued)				
E _i (level)	J_i^π	${\rm E_{\gamma}}^{\dagger}$	I_{γ}^{\dagger}	\mathbf{E}_{f}	\mathbf{J}_f^{π}	Mult. [‡]	α^{m}	Comments			
5573	$(3/2)^+$	3.14×10^{3} k	50 ^k 10	2431.8	5/2+						
		3.59×10^{3k}	100 ^k 20	1981.8	3/2+	D+Q		δ: -0.01 7 or +4.1 9. Mult., $δ$: from $αγ(θ)$ in (³ He, $αγ$).			
		5.57×10^{3k}	50 ^k 10	0.0	$5/2^{-}$						
5962.4	23/2-	1596.3 <i>4</i>	100	4366.0	19/2-	(E2) ^{<i>l</i>}	0.000182 <i>3</i>	$\alpha(K)=5.04\times10^{-5}$ 7; $\alpha(L)=4.64\times10^{-6}$ 7; $\alpha(M)=6.11\times10^{-7}$ 9 $\alpha(N+)=0.0001268$ 18 $\alpha(N)=2.30\times10^{-8}$ 4; $\alpha(IPF)=0.0001268$ 18 B(E2)(W.u.)=11.5 8			
6134.1	$21/2^{-}$	171 <mark>P</mark> 1	<3.3	5962.4	$23/2^{-}$						
		1768.9 4	86.7	4366.0	19/2-	D		Mult.: $\Delta J=1$ d from AD in ${}^{12}C({}^{40}Ca,n2p\gamma),{}^{40}Ca({}^{12}C,n2p\gamma),$			
		1915.0 <i>4</i>	100	4218.1	17/2-	(E2)	0.000311 5	$ α(K)=3.55\times10^{-5} 5; α(L)=3.27\times10^{-6} 5; α(M)=4.30\times10^{-7} 6 α(N+)=0.000272 4 α(N)=1.622\times10^{-8} 23; α(IPF)=0.000272 4 B(E2)(W.u)=16 5 Mult: ΔJ=0 d or ΔJ=2 Q γ from AD in 12C(40Ca,n2pγ),40Ca(12C,n2pγ), Ne M2 from comparison to RUL. ΔJπ=2,no from level scheme.$			
6341.9	$19/2^{+}$	1039.4 4	54 8	5302.7	$17/2^{+}$	D,E2		1 y			
		1874.4 <i>4</i>	100 8	4467.1	15/2+	E2	0.000293 5	$ α(K)=3.70\times10^{-5} 6; α(L)=3.40\times10^{-6} 5; α(M)=4.48\times10^{-7} 7 $ $ α(N+)=0.000252 4 $ $ α(N)=1.688\times10^{-8} 24; α(IPF)=0.000252 4 $ B(E2)(W.u.)=5.3 15 Mult.: ΔJ=2 Q transition from AD in ${}^{12}C({}^{40}Ca,n2p\gamma),{}^{40}Ca({}^{12}C,n2p\gamma),$ Ne M2 from comparison to RUL.			
6423	(1/2 ⁻ ,3/2 ⁻)	$\approx 2.50 \times 10^{3kp}$ $\approx 3.83 \times 10^{3okp}$ $\approx 3.83 \times 10^{3okp}$ $\approx 4.70 \times 10^{3okp}$ $\approx 4.70 \times 10^{3okp}$	81 ^k 17 100 ^{ok} 22 100 ^{ok} 22 31.9 ^{ok} 22 31.9 ^{ok} 22	3913 2613.1 2578.1 1741.4 1703.2	(3/2) ⁻ 3/2 ⁻ 1/2 ⁺ 3/2 ⁻ 1/2 ⁻						
6470	$1/2^{+}$	$\approx 2.54 \times 10^{3} k$	40.5 ^k 24	3938	3/2+,5/2+						

⁴⁹₂₄Cr₂₅-19

From ENSDF

⁴⁹₂₄Cr₂₅-19

	Adopted Levels, Gammas (continued)												
	γ ⁽⁴⁹ Cr) (continued)												
E_i (level)	\mathbf{J}_i^{π}	E_{γ}^{\dagger}	I_{γ}^{\dagger}	E_f	\mathbf{J}_{f}^{π}	Mult. [‡]	a ^m	Comments					
6470	$1/2^{+}$	$\approx 3.87 \times 10^{3} okp$	100 ^{<i>ok</i>} 22	2613.1	3/2-								
		$\approx 3.87 \times 10^{3} okp$	100 ^{0k} 22	2578.1	$1/2^+$								
		$\approx 4.74 \times 10^3 okp$	98 <mark>0k</mark> 22	1741.4	3/2-								
		$\approx 4.74 \times 10^3 okp$	98 <mark>0k</mark> 22	1703.2	$1/2^{-}$								
6765	$1/2^{+}$	2.83×10^{3} k		3938	$3/2^+.5/2^+$								
	-/-	$\approx 4.16 \times 10^{3} nkp$		2613.1	3/2-								
		$\approx 4.16 \times 10^{3} nkp$		2578.1	$1/2^+$								
		$\approx 5.03 \times 10^{3} nkp$		1741.4	3/2-								
		$\approx 5.03 \times 10^{3} nkp$		1703.2	$1/2^{-}$								
7269.2	$21/2^{+}$	927.2 4	25 8	6341.9	$19/2^+$	D,E2							
		1966.6 4	100 8	5302.7	$17/2^{+}$	E2	0.000334 5	$\alpha(K)=3.38\times10^{-5} 5; \alpha(L)=3.11\times10^{-6} 5; \alpha(M)=4.10\times10^{-7}$					
								6					
								$\alpha(N+)=0.000297.5$					
								$a(11) = 1.344 \times 10^{-1} 22, a(111) = 0.000297 5$ B(E2)(W u) = 8.0.21					
								Mult.: D,E2 from comparison to RUL. Recoil- $\gamma(\theta)$ in					
								$^{12}C(^{40}Ca, n2p\gamma), ^{40}Ca(^{12}C, n2p\gamma), \dots$ Consistent with					
								pure Q.					
8007.4	$27/2^{-}$	2045 1	100	5962.4	$23/2^{-}$	(E2) ^{<i>l</i>}	0.000370 6	$\alpha(K)=3.15\times10^{-5} 5; \alpha(L)=2.90\times10^{-6} 4; \alpha(M)=3.81\times10^{-7}$					
								6 (N+) 0.000225 5					
								$\alpha(N+)=0.00055555$ $\alpha(N)=1.438\times10^{-8}21; \alpha(IDE)=0.000335.55$					
								$B(E_2)(W.u.) = 7.87$					
8333.3	$25/2^{-}$	325.9 4	100	8007.4	27/2-	M1	0.001360 20	$\alpha(K)=0.001232$ 18; $\alpha(L)=0.0001152$ 17;					
								$\alpha(M)=1.517\times10^{-5} 22$					
								$\alpha(N+)=5.66\times10^{-7} 8$					
								$\alpha(N) = 5.66 \times 10^{-7} 8$					
								B(MI)(W.u.)=1.8.5 Mult : $AI=1$ from AD and DCO in					
								$^{12}C(^{40}Ca n^2p_X) {}^{40}Ca(^{12}C n^2p_X)$ M1 from					
								comparison to RUL.					
		2199 ^{<i>p</i>} 1	<25	6134.1	$21/2^{-}$			-					
10000	a o / a -	2370 ^{<i>p</i>} 1	<25	5962.4	23/2-								
10222.4	29/2-	1889 ^µ 1	<12	8333.3	25/2-	D		Mult : L \ L 1 & from AD in					
		2215.1 9	100	8007.4	21/2	D		WITH: $J \rightarrow J^{-1} \gamma$ from AD in ${}^{12}C({}^{40}C_{2} n^{2}n^{2}) {}^{40}C_{2}({}^{12}C n^{2}n^{2})$					
10700-3	$31/2^{-}$	478 4 14	100	10222.4	29/2-	M1	5.68×10^{-4} 9	$\alpha(K) = 0.000514 \ 8; \ \alpha(L) = 4.78 \times 10^{-5} \ 8; \ \alpha(M) = 6.29 \times 10^{-6}$					
10/00.0	01/2	170.117	100	10222.1	_>/_		2.00/10 /	10					

 $^{49}_{24}\mathrm{Cr}_{25}$ -20

Adopted Levels, Gammas (continued)									
		γ ⁽⁴⁹ Cr) (continued)							
$E_i(\text{level}) \qquad E_{\gamma}^{\dagger} \qquad I_{\gamma}^{\dagger}$	$E_f J_f^{\pi} Mult.^{\ddagger}$	<i>α^m</i>	Comments						
10700.3 2692.6 <i>10</i> 100	8007.4 27/2 ⁻ (E2) ^l 0.0	$\begin{array}{rl} \alpha(\mathrm{N}+)=2.36\times10^{-7}~4\\ \alpha(\mathrm{N})=2.36\times10^{-7}~4\\ \mathrm{B}(\mathrm{M1})(\mathrm{W.u}.)=1.5~3\\ \mathrm{Mult.:}~J\rightarrow J-1~\gamma~\mathrm{from}~A\\ \mathrm{RUL.}\\ .000667~10 & \alpha(\mathrm{K})=1.96\times10^{-5}~3;~\alpha(\\ \alpha(\mathrm{N}+)=0.000646~9\\ \alpha(\mathrm{N})=8.93\times10^{-9}~13;~\alpha\\ \mathrm{B}(\mathrm{E2})(\mathrm{W.u}.)=2.7~6\\ \end{array}$	AD in ${}^{12}C({}^{40}Ca,n2p\gamma),{}^{40}Ca({}^{12}C,n2p\gamma),$ M1 from comparison to (L)=1.80×10 ⁻⁶ 3; α (M)=2.36×10 ⁻⁷ 4 x(IPF)=0.000646 9						
 [†] From ¹²C(⁴⁰Ca,n2pγ),⁴⁰Ca(¹ [‡] From comparison to RUL, e: [#] From γ(θ) and γγ(θ) in (α,n) [@] ΔJ=1 dipole transition from ^{&} As recommended by 1978Kr ^a From (α,nγ). ^b Unweighted ave of 1084.9 4 ^c ΔJ=2 quadrupole or ΔJ=0 di ^d Branching ratios from (³He, α) ^e From γ(θ) and γ(linear pol) ^f Unweighted average of Iγ(24 20 (1977Ka19) in (α,nγ). ^g Assigned as E1 by 2006Br03 ^h D,E2 from comparison to RU ^j J Assigned as (E1) by 2006Br04 ^k From (³He, αγ). ^l J→J D or J→J-2 Q γ from A ^m Total theoretical internal con multipolarities, and mixing ra ⁿ Multiply placed. ^o Multiply placed with undivid ^p Placement of transition in the 	¹² C,n2pγ),, except as noted. xcept as noted. γ), except as noted. recoil-γ(θ) in ¹² C(⁴⁰ Ca,n2pγ), ⁴⁰ Ca(¹² C,r ipole transition from recoil-Γ(Θ) is αγ) are discrepant. in (α,nγ). 40γ)/Iγ(279γ)/Iγ(1710γ)/Iγ(1982; 3 in (α,nγ). Parentheses added by UL. $\Delta \pi$ =yes from level scheme. UL. ΔJ^{π} =2,no from level scheme r03 in (α,nγ). AD in ¹² C(⁴⁰ Ca,n2pγ), ⁴⁰ Ca(¹² C,r nversion coefficients, calculated us ratios, unless otherwise specified. ded intensity. ne level scheme is uncertain.	$Ca(^{12}C,n2p\gamma),$ $(n2p\gamma),$ And 1083.0 <i>10</i> from $(\alpha,n\gamma)$ in $^{12}C(^{40}calc,N2P\Gamma),^{40}calc(^{12}C,N2P)$ $(2\gamma)=2.4 \ 6/10 \ 2/6 \ 2/81 \ 7 \ (2006Br03)$ by evaluator. e. $(n2p\gamma),$ Ne M2 from comparison to using the BrIcc code (2008Ki07) with).).). and Iγ(278.2γ)/Iγ(1709.5γ)/Iγ(1981.4γ)=18.5 20/11.4 20/70.1) RUL. ΔJ ^π =2,no from level scheme. h Frozen orbital approximation based on γ-ray energies, assigned						

 $^{49}_{24}\mathrm{Cr}_{25}$ -21

	Legend		
	Level Scheme		
	Intensities: Relative photon branching from each level & Multiply placed: undivided intensity given ► γ Decay (I	Jncertain)	
31/2- 29/2-		10700.3	0.069 ps <i>14</i> 0.0324 ps <i>8</i>
0 5 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Ş		
<u>25/2</u> ↓ $\tilde{\nabla}$ $\tilde{\nabla}$ $\tilde{\nabla}$ $\tilde{\nabla}$	1	8333.3	0.29 ps 6
	§- ⁵ / ₂	8007.4	0.190 ps 15
21/2+	2 2 2 2 2 2 2 2 2 2 2 2 2 2	7269.2	0.18 ps 4
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		6765 6470 6423 6341.9 6134.1 5962.4 5573 5302.7	0.28 ps 7 0.069 ps 21 0.444 ps 31
$ \frac{15/2^+}{19/2^-} \\ \frac{17/2^-}{3/2^+, 5/2^+} \\ (3/2)^- $		<u>4467.1</u> 4366.0 4218.1 3938 3913	1.2 ps 3 1.67 ps 14 0.107 ps 50
$\frac{3/2^-}{1/2^+}$		2613.1 2578.1 2431.8	45 fs <i>14</i> 0.66 ps <i>19</i>
<u>3/2+</u> <u>3/2-</u>		<u>1981.8</u> <u>1741.4</u>	>1.39 ps 1.1 ps <i>3</i>
<u>1/2</u>		0.0	>3.8 ps 42.3 min <i>1</i>
	⁴⁹ Cr		
	24 425		

Legend

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level & Multiply placed: undivided intensity given $\rightarrow \gamma$ Decay (Uncertain) - 8355 41,452 100 + 1410.8 E2 39 (E) 100 $o_{k_{2}^{0}g_{3}}$ D.E231 17/2+ 5302.7 0.76 ps 14 ŝ n s 90; Ś 5179.7 045 <u>_8</u> <u>_</u>_____ 5058 8 $(13/2^+)$ 2 -<u>3</u>0 Q. Q-Q-Q-5048.4 $< 0.069 \ \mathrm{ps}$ 5032.3 3 $(11/2^+)$ 3 4943.6 0.049 ps 14 4837.2 <0.035 ps 4809.1 $15/2^{+}$ 4467.1 1.2 ps 3 $(11/2^+)$ 4279.5 0.21 ps 4 $13/2^{+}$ 3892.2 >6.9 ps (9/2+) <u>3628.6</u> 0.125 ps 28 <u>3190.1</u> 0.083 ps 21 15/2-<u>7/2</u> 13/2 2502.6 2500.1 <8 fs 0.110 ps *18* <u>1562.1</u> 0.391 ps *34* 11/2-1083.6 0.15 ps 3 9/2 5/2-0.0 42.3 min 1 $^{49}_{24}{
m Cr}_{25}$

Level Scheme (continued)

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





Level Scheme (continued)

Legend

Intensities: Relative photon branching from each level

& Multiply placed: undivided intensity given

---- γ Decay (Uncertain)



Level Scheme (continued)

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

 $--- \rightarrow \gamma$ Decay (Uncertain)

Legend



Legend Level Scheme (continued) Intensities: Relative photon branching from each level & Multiply placed: undivided intensity given γ Decay (Uncertain) _ _ _ _ _ _ 231, 2640 70 2640 70 230 Et 94 480 Et 94 260 Et 94 $|\frac{3_{0_{1,8}}}{3_{34_{1,2}}} \frac{3_{0_{1,8}}}{2_{34_{1,2}}} \frac{1}{2_{2,2}} \frac{3_{0_{1,8}}}{0_{1,0}}$ 11 (23) 10 11 (23) 10 10 $(7/2^+)$ <u>2911.7</u> 0.52 ps *10* 001 (CANS) (20) 121 0x0 x0 x0 (C33)W 5.5 14592 0 (E) 2.4 (B) 2.4 ¥. $\frac{3/2^{-}}{1/2^{+}}$ 2613.1 45 fs 14 2578.1 $\frac{7/2^{-}}{13/2^{-}}$ 2502.6 $\frac{1}{100,30} \frac{100,3}{100,10} + \frac{100,3}{100,10} + \frac{100,30}{100,10} + \frac{100,30}{100,10} + \frac{100,00}{100,10} + \frac{100,00}{100$ <8 fs 0.110 ps *18* 243 2168.2 Dx 010 2500.1 0.66 ps 19 $5/2^{+}$ 2431.8 $\left| \begin{array}{c} 1^{2} q_{1,3} \\ 1^{4} q_{0,3} \\ 3^{4} q_{0,3} \\ 3^{2} q_{1,4} \\ q_{1,4} \\ q_{0} \end{array} \right| q_{0} \right|$ 5/2 2168.5 1.04 ps 35 1/03,2 5,2 100 3/2+ 1981.8 >1.39 ps $\frac{3/2^{-}}{1/2^{-}}$ 1741.4 1.1 ps 3 V V 1703.2 >3.8 ps _ -0027 20027 20027 11/2 1562.1 0.391 ps 34 $\exists \frac{1}{0_{02,0}} \frac{1}{0_{02,0}} \frac{1}{0_{02,0}} \frac{1}{0_{02,0}} \frac{1}{0_{02,0}} = 1$ 9/2-1083.6 0.15 ps 3 ŧ + 271, 78 M14E 2 100 7/2-271.72 13 ps 3 5/2-0.0 42.3 min 1

⁴⁹₂₄Cr₂₅



⁴⁹₂₄Cr₂₅



 $^{49}_{24}{\rm Cr}_{25}$



 $^{49}_{24}{\rm Cr}_{25}$