^{50}Ti(α,nγ) 1973Gu04,1972Ca11,1982By01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Huo Junde	NDS 110,2689 (2009)	31-Mar-2007

1972Ca11: E=4.9-6.0 MeV, measured γ, $\gamma\gamma$, $\gamma(\theta)$, RDM, DSAM.
1973Gu04: E=10.2-14.2 MeV, measured γ, $\gamma\gamma$, $\gamma(\theta)$, linear polarization.
1974En04: E=8 MeV, measured g(θ), RDM, DSAM.
1979Ra05: E=9, 11 MeV, measured γ, $\gamma\gamma$, $\gamma(\theta)$, RDM, DSAM.
1982By01: E=11 MeV, linear polarization, measured $\gamma\gamma$, $\gamma(\theta)$.

^{53}Cr Levels

E(level)[@]	J$^\pi$[†]	$T_{1/2}$[‡]	Comments
0.0	3/2$^-$	stable	
564.07 *11*	1/2$^-$	0.58[#] ps *12*	
1006.28 *13*	5/2$^-$	<1.7 ps	$T_{1/2}$: RDM. Other: <2.1 ps (1974En04).
1289.5 *21*	7/2$^-$	<2.1 ps	$T_{1/2}$: from 1974En04.
1536.5 *2*	7/2$^-$	23.0 ps *11*	$T_{1/2}$: RDM. Others: >0.83 ps, DSAM (1972Ca11); 14.9 ps *24*, DSAM (1974En04).
1973.6[&] *2*	5/2$^-$	0.07[#] ps *2*	
2172.2 *5*	11/2$^-$	9.6 ps *10*	$T_{1/2}$: RDM. Others: >0.55 ps, DSAM (1972Ca11); 4.6 ps *21*, DSAM (1974En04); 4.8 ps *+55−21*, DSAM (1979Ra05).
2232.9 *4*	9/2$^-$	0.33 ps *9*	
2320.5[&] *5*	3/2$^-$	7.6[@] fs *35*	
2453.1[&] *10*			
2657.0 *3*	5/2$^-$,7/2$^-$	<0.017 ps	$T_{1/2}$: other: <0.031 ps (1972Ca11).
2669.6 *6*	1/2$^-$	<7[@] fs	
2707 *3*	11/2$^-$	2.4 ps *10*	$T_{1/2}$: RDM. Other: >3.5 ps, DSA (1979Ra05).
2708.0[&] *6*	3/2$^-$	10[@] fs *6*	
2826.7 *2*	11/2$^-$	0.15 ps *4*	
2993[&] *2*			
3083.2 *8*	15/2$^-$	>0.21[@] ps	
3138[&] *2*		0.04 ps *2*	
3179.3[&] *10*	(3/2)$^-$	<7[@] fs	
3243.4 *8*	13/2	0.6 ps *2*	
3261[&] *2*	(5/2)$^+$	<21[@] fs	J$^\pi$: adopted value.
3592.7 *6*	13/2$^-$	0.13 ps *4*	
4696? *2*			E(level): From 1973Gu04.

[†] J from $\gamma(\theta)$ (1972Ca11,1973Gu04,1982By01), π from linear polarization (1982By01,1973Gu04).
[‡] From 1979Ra05, DSAM, except as noted.
[#] From weighted average of values of 1979Ra05 and 1972Ca11.
[@] From 1972Ca11.
[&] Observed only by 1972Ca11.

$\gamma(^{53}Cr)$

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&b]	δ[†]	Comments
159[@]		3243.4	13/2	3083.2	15/2$^-$			
247.0 *3*	25 *1*	1536.5	7/2$^-$	1289.5	7/2$^-$	M1(+E2)	0.00 *2*	I_γ: 13 for Iγ(1289.8)=100 (1973Gu04). δ: other: +0.08 *9* (1972Ca11). Additional information 5.

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^{50}Ti(α,nγ) 1973Gu04,1972Ca11,1982By01 (continued)

$\gamma(^{53}Cr)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&b]	δ[†]	Comments
283.2 *3*	5 *1*	1289.5	7/2$^-$	1006.28	5/2$^-$	M1(+E2)		I_γ: 7.2 for Iγ(1289.8)=100 (1973Gu04). Additional information 3.
387.5[#]	<5	2708.0	3/2$^-$	2320.5	3/2$^-$			
442.21[#]	<2	1006.28	5/2$^-$	564.07	1/2$^-$			
530.2 *2*	65 *1*	1536.5	7/2$^-$	1006.28	5/2$^-$	M1(+E2)	−0.07 *3*	I_γ: 30 for Iγ(1289.8)=100 (1973Gu04). δ: other: −0.03 *2* (1972Ca11). Additional information 6.
534[@] *3*		2707	11/2$^-$	2172.2	11/2$^-$	M1(+E2)		Additional information 14. δ: +0.6 to +0.07 (1982By01).
564.07[#] *1*	100	564.07	1/2$^-$	0.0	3/2$^-$	M1		I_γ: 9 for Iγ(1289.8)=100 (1973Gu04). E_γ: other: 564.1 *2* (1973Gu04). Additional information 1.
593.8 *3*		2826.7	11/2$^-$	2232.9	9/2$^-$	M1(+E2)	−0.11 *4*	I_γ: 15 for Iγ(1289.8)=100 (1973Gu04). Additional information 17.
684.1[#] *2*	16 *2*	1973.6	5/2$^-$	1289.5	7/2$^-$	M1+E2	+0.23[a] *13*	Additional information 8.
696.4 *3*	100	2232.9	9/2$^-$	1536.5	7/2$^-$	M1(+E2)	−0.17 *3*	I_γ: 30 for Iγ(1289.8)=100 (1973Gu04). δ: other: −0.10 to −0.34 (1982By01). Additional information 11.
734.4[#] *1*	14 *3*	2708.0	3/2$^-$	1973.6	5/2$^-$			
766.0 *3*		3592.7	13/2$^-$	2826.7	11/2$^-$	M1(+E2)	−0.14 *5*	I_γ: 5 for Iγ(1289.8)=100 (1973Gu04). δ: other: −0.16 to −0.28 (1982By01). Additional information 21.
882.8 *3*	100	2172.2	11/2$^-$	1289.5	7/2$^-$	E2		I_γ: 50 for Iγ(1289.8)=100 (1973Gu04). δ: −0.01 *2* (1973Gu04), 0.00 *2* (1982By01), −0.002 *8* (1972Ca11). Additional information 10.
911.8 *3*	100	3083.2	15/2$^-$	2172.2	11/2$^-$	E2		I_γ: 16 for Iγ(1289.8)=100 (1973Gu04). δ: 0.00 *4* (1982By01), (1973Gu04). Additional information 18.
1006.3 *2*	100	1006.28	5/2$^-$	0.0	3/2$^-$	M1+E2	+0.36 *2*	I_γ: 64 for Iγ(1289.8)=100 (1973Gu04). δ: other: −0.34 *4* (1972Ca11). Additional information 2.
1071[@]		3243.4	13/2	2172.2	11/2$^-$			
1163.6[#] *10*	40 *8*	2453.1		1289.5	7/2$^-$			
1289.8 *3*	95 *1*	1289.5	7/2$^-$	0.0	3/2$^-$	E2		δ: 0.00 *2* (1982By01), (1973Gu04), 0.00 *4* (1972Ca11). Additional information 4.
1367.5 *2*	28 *6*	2657.0	5/2$^-$,7/2$^-$	1289.5	7/2$^-$	M1+E2[a]	+0.35[a] *12*	δ: −0.38 *6* (if J^π=7/2$^-$) (1972Ca11).
1446.8 *10*	60 *8*	2453.1		1006.28	5/2$^-$			
1536.5[#] *2*	10 *1*	1536.5	7/2$^-$	0.0	3/2$^-$	E2		E_γ: other: 1537.3 *8* (1973Gu04). Additional information 7.

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^{50}Ti(α,nγ) 1973Gu04,1972Ca11,1982By01 (continued)

$\gamma(^{53}Cr)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&b]	δ[†]	Comments
								I_γ: 5 for Iγ(1289.8)=100 (1973Gu04). (1972Ca11).
1613 *2*		4696?		3083.2	15/2$^-$			
1650.7 *3*	72 *6*	2657.0	5/2$^-$,7/2$^-$	1006.28	5/2$^-$	M1(+E2)[a]	+0.07[a] *8*	δ: −1.0 *4* (if J^π=7/2$^-$) (1972Ca11).
1701.7[#] *6*	29 *3*	2708.0	3/2$^-$	1006.28	5/2$^-$			
1703[#] *2*	58 *7*	2993		1289.5	7/2$^-$			
1724[#] *2*	20 *4*	3261	(5/2)$^+$	1536.5	7/2$^-$			
1848[#] *2*	100	3138		1289.5	7/2$^-$	D,E2		
1973.6 *2*	84 *2*	1973.6	5/2$^-$	0.0	3/2$^-$	M1+E2[a]	+0.48 *10*	Additional information 9. δ: alternate solution of +4.7 *+25−12* (1972Ca11) ruled out by comparison of B(E2) and $T_{1/2}$ in Coul. ex.
1987[#] *2*	42 *7*	2993		1006.28	5/2$^-$			
2105.5[#] *6*	40 *4*	2669.6	1/2$^-$	564.07	1/2$^-$			
2143.9 *6*	46 *5*	2708.0	3/2$^-$	564.07	1/2$^-$	M1+E2[a]		δ: +0.13 *10* or −2.4 *8* (1972Ca11). Additional information 15.
2173.0[#] *10*	24 *5*	3179.3	(3/2)$^-$	1006.28	5/2$^-$			
2255[#] *2*	23 *5*	3261	(5/2)$^+$	1006.28	5/2$^-$			
2320.5 *5*	100	2320.5	3/2$^-$	0.0	3/2$^-$	M1+E2[a]	−0.11[a] *7*	Additional information 12.
2615.2[#] *10*	35 *5*	3179.3	(3/2)$^-$	564.07	1/2$^-$			
2669.6[#] *6*	60 *4*	2669.6	1/2$^-$	0.0	3/2$^-$			Additional information 13.
2708.0 *6*	11 *2*	2708.0	3/2$^-$	0.0	3/2$^-$	M1+E2[a]		Additional information 16. δ: −0.5 to −5 (1972Ca11).
3179.3[#] *10*	41 *9*	3179.3	(3/2)$^-$	0.0	3/2$^-$	M1+E2[a]		Additional information 19. δ: 0.00 *7* or +3.7 −4+14 (1972Ca11).
3261[#] *2*	57 *5*	3261	(5/2)$^+$	0.0	3/2$^-$	M1+E2[a]		Additional information 20. δ: −0.22 *9* or −1.5 *3* (1972Ca11).

[†] From 1973Gu04, except as noted.
[‡] Branching rations for each level, from 1972Ca11, except as noted.
[#] From level energies in 1972Ca11.
[@] From 1982By01.
[&] Additional information 22.
[a] From $\gamma(\theta)$, 1972Ca11.
[b] From $\gamma(\theta)$, 1982By01 and 1973Gu04, except as noted.

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Level Scheme

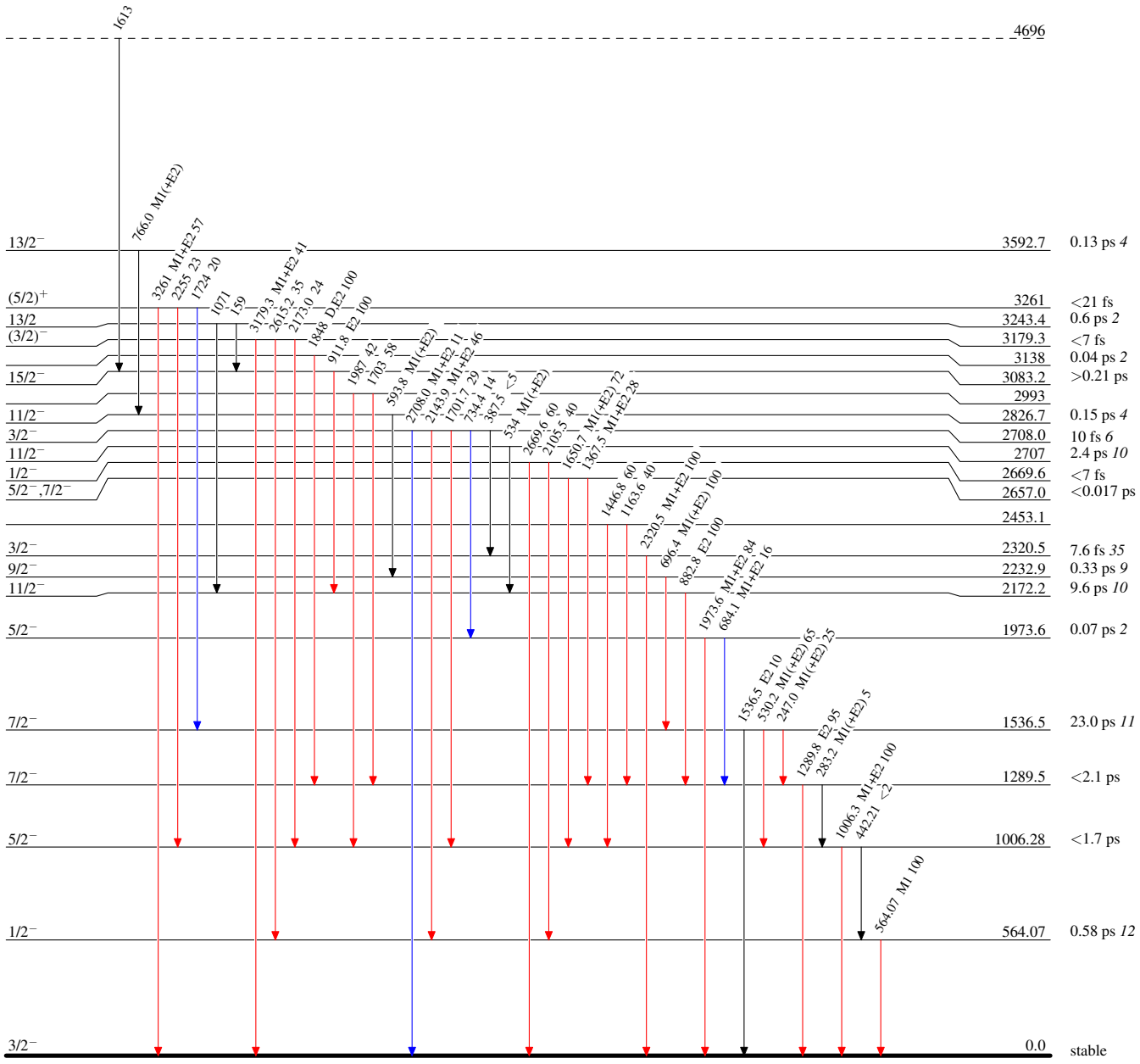
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{53}_{24}Cr_{29}$