

$^{52}\text{Cr}(\text{d,p}), (\text{d,p}\gamma)$ 1968Ra17,1970Ca05

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

1968Ra17: E=7.5 MeV, measured: $\sigma(E,\theta)$.

1970Ca05: E=4.0-5.5 MeV, measured γ , $p\gamma(\theta)$.

Measured $\sigma(E,\theta)$, see also 1969De17, 1970Br27, 1966Ma42, 1965Bo20.

Measured $p\gamma(\theta)$, see also 1972Mc15, 1974Ey03, 1975Ey01, and 1976Ey03.

Measured polarization transfer coefficients, see 1990Na34.

Polarized beam, see 1991MaZP, 1977Bo01, 1973Ro16, 1972Ko41, 1968Yu01, and 1977St01.

Others: 1974Lu02, 1973Ga24, 1971Te09, 1970Al04, 1967Po07, 1966Le15, 1966Al14, 1965Si08, 1964Bj01, 1964An11, 1963Pa16, 1960El06, 1959Si92, 1959Sc43, 1958Ma46, 1958El41.

 ^{53}Cr Levels

E(level) [#]	$J^{\pi\dagger}$	L [#]	S [‡]	Comments
0.0	$3/2^-$	1	2.22	
565 ^b 10	$1/2^-$	1	0.71	
1009 ^b 10	$5/2^-$	3	1.50	
1281 10	$7/2^-$	(3)	0.43	
1535 10	$7/2^-$	(3)	0.13	
1968 10	$5/2^-$			
2165 10	$11/2^-$			
2221 10	$9/2^-$			
2327 ^b 10	$3/2^-$	1	0.96	
2454 10	$(1/2^-, 3/2^-)$	(1)	0.006	
2664 ^b 10	$5/2^-, 7/2^-$	3	0.58	
2676 10	$1/2^-$	1	0.11	E(level): 1970Ca05 gives 2700.
2723 ^b 10	$1/2^-, 3/2^-$	1	0.04	
2793 10				
2825 10				
3005 10	$(5/2^-, 7/2^-)$	(3)	0.13	
3155 10		(2)	0.01	
3196 10	$(3/2)^-$	(1)	0.04	
3276 10	$(5/2)^+$	2	0.03	
3358 10		(3)	0.15	
3442 10				L=(1), S'=0.013; L=(3), S'=0.18.
3587? [@] 10	$1/2^-, 3/2^-$	1	0.06	
3629 ^b 10	$1/2^-$	1	0.77	
3719 10	$9/2^+$	4	5.20	
3972 10				
3985 ^{&} 10	$3/2^+, 5/2^+$	2	0.08	
4047 10		(1)	0.01	
4067 10		(1)	0.03	
4136 ^b 10	$3/2^+, 5/2^+$	2	0.54	
4204 10				
4228 ^b 10	$3/2^+, 5/2^+$	2	0.21	
4290 10				
4308 10				
4340 10				
4356 ^a 10				
4390 10				
4435 ^b 10	$(1/2^+)$	(0)	0.03	
4489 10	$(1/2^+)$	(0)	0.08	

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$^{52}\text{Cr}(\text{d,p}), (\text{d,p}\gamma)$ 1968Ra17,1970Ca05 (continued) ^{53}Cr Levels (continued)

E(level) [#]	$J^{\pi\dagger}$	L [#]	S [‡]	E(level) [#]	$J^{\pi\dagger}$	L [#]	S [‡]
4496 ^a 10				6068 10			
4516 10				6114 10			
4551 10				6135 ^a 10			
4610 ^b 10	1/2 ⁻ ,3/2 ⁻	1	0.18	6154 10			
4639 10	3/2 ⁺ ,5/2 ⁺	2	0.17	6180 10			
4666 10	5/2 ⁻ ,7/2 ⁻	3	0.68	6216 ^a 10			
4671 ^a 10				6231 ^a 10	(1/2 ⁺)	(0)	
4696 ^b 10	1/2 ⁺	0	0.115	6258 ^b 10			
4736 10				6305 10		0 [@]	0.15 [@]
4802 ^a 10				6335 10			
4812 ^a 10				6370 10			
4850 10				6387 10			
4873 10				6415 10			
4906 10				6430 10			
4934 10				6445 10			
4967 10				6460 10			
5001 10				6495 10			
5047 10				6524 10		2 [@]	0.16 [@]
5093 10		(2)		6550 10			
5123 10		2 [@]	0.06 [@]	6575 10			
5140? [@] 10				6600 10			
5174 10				6630 10		2 [@]	0.18 [@]
5208 10				6665 10		0 [@]	0.03 [@]
5225 10				6700 10		0 [@]	0.03 [@]
5265 10				6735 10		2 [@]	0.2 [@]
5274 ^a 10				6781 ^a 10			
5310 10				6800 ^a 10			
5330 10				6831 ^a 10	1/2 ⁺	0 [@]	
5397 ^b 10		1 [@]	0.1 [@]	6873 ^a 10			
5420 10		2 [@]	0.12 [@]	6896 ^a 10			
5452 ^b 10		1 [@]	0.07 [@]	6927 ^a 10	3/2 ⁺ ,5/2 ⁺	2 [@]	
5471 10				6961 ^a 10	1/2 ⁺	0 [@]	
5514 [@] 15				7004 ^a 10			
5557 ^a 10	(1/2 ⁻ ,3/2 ⁻)	(1) [@]	0.02 [@]	7025 ^a 10			
5584 ^a 10				7056 ^a 10			
5596 10				7080 ^a 10			
5624 10				7120 ^a 10			
5674 10				7140 [@] 10			
5701 10				7167 ^a 10	1/2 ⁺	0 [@]	
5736 10				7225 ^a 10			
5750 10				7288 ^a 10			
5805 10				7300 ^a 10			
5843 10				7321 ^a 10			
5862 ^a 10				7385 ^a 10			
5877 10				7440 ^a 10			
5900 10				7484 ^a 10			
5937 ^a 10				7500 ^a 10			
5951 10				7542 ^a 10			
5962 10				7573 ^a 10			
5976 ^a 10				7605 ^a 10			
5996 10				7619 ^a 10			
6039 10							

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$^{52}\text{Cr}(\text{d,p}), (\text{d,p}\gamma)$ 1968Ra17,1970Ca05 (continued) ^{53}Cr Levels (continued)

† Adopted values.

‡ S'; $\Delta S'=15\%$ from 1968Ra17, except as noted.

From 1968Ra17, except as noted.

@ From 1965Bo20.

& From 1970Ca05.

^a From 1966Ma42.^b Value used for calibration taken from 1958Ma46 ($\Delta E=10$ keV).

E_γ †	I_γ ‡#	$E_i(\text{level})$	J_i^π	E_f	J_f^π	$\gamma(^{53}\text{Cr})$		δ #	Comments
						Mult. #			
252	32 3	1535	$7/2^-$	1281	$7/2^-$				
279	9 4	1281	$7/2^-$	1009	$5/2^-$				
531	57 3	1535	$7/2^-$	1009	$5/2^-$	M1+(E2)		-0.27 -33+28	Additional information 4.
564.1 2	100	565	$1/2^-$	0.0	$3/2^-$				E_γ : from 1970Ca05. Additional information 1.
686	15 5	1968	$5/2^-$	1281	$7/2^-$				
690	100	2221	$9/2^-$	1535	$7/2^-$	M1+E2			Additional information 5. $\delta=-0.23 -25+15$ or $-1.8 -7+6$ (1970Ca05).
1006	100	1009	$5/2^-$	0.0	$3/2^-$	M1+E2		+0.27 -9+31	Additional information 2.
1169	40 8	2454	$(1/2^-, 3/2^-)$	1281	$7/2^-$				
1285	91 6	1281	$7/2^-$	0.0	$3/2^-$	E2			Additional information 3. $\delta=0.00 -15+18$.
1448	60 8	2454	$(1/2^-, 3/2^-)$	1009	$5/2^-$				
1522	30 4	4228	$3/2^+, 5/2^+$	2723	$1/2^-, 3/2^-$				
1537	11 2	1535	$7/2^-$	0.0	$3/2^-$				
1713	58 7	3005	$(5/2^-, 7/2^-)$	1281	$7/2^-$				
1734	20 4	3276	$(5/2)^+$	1535	$7/2^-$				
1812	46 4	4136	$3/2^+, 5/2^+$	2327	$3/2^-$	D+(Q)			Additional information 11.
1971	85 5	1968	$5/2^-$	0.0	$3/2^-$				
1992	42 6	3005	$(5/2^-, 7/2^-)$	1009	$5/2^-$				
2265	23 5	3276	$(5/2)^+$	1009	$5/2^-$				
2324	100	2327	$3/2^-$	0.0	$3/2^-$	M1+E2			Additional information 6. $\delta=+5.7$ to -0.09 or -0.47 to -5.7 (1970Ca05).
2430	100	3719	$9/2^+$	1281	$7/2^-$	D+(Q)		0.00 -9+4	Additional information 9. δ : see 1970Ca05, 1975Ey01.
2616		3196	$(3/2)^-$	565	$1/2^-$	D+Q			Additional information 7.
2944	11 2	4228	$3/2^+, 5/2^+$	1281	$7/2^-$				
3130	37 3	4136	$3/2^+, 5/2^+$	1009	$5/2^-$				
3224	59 6	4228	$3/2^+, 5/2^+$	1009	$5/2^-$	Q+D			Additional information 12.
3271	57 5	3276	$(5/2)^+$	0.0	$3/2^-$	D+Q			δ : +10 to -0.6 if $J=5/2$ (1970Ca05). Additional

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$^{52}\text{Cr}(\text{d,p}), (\text{d,p}\gamma)$ 1968Ra17,1970Ca05 (continued) $\gamma(^{53}\text{Cr})$ (continued)

E_γ^\dagger	$I_\gamma^{\ddagger\#}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
						information 8. $\delta: -0.06$ to -1.8 .
3407	100	3972		565	$1/2^-$	Additional information 10.
3421	75 5	3985	$3/2^+, 5/2^+$	565	$1/2^-$	
3625	100	3629	$1/2^-$	0.0	$3/2^-$	
3985	25 5	3985	$3/2^+, 5/2^+$	0.0	$3/2^-$	
4136	17 2	4136	$3/2^+, 5/2^+$	0.0	$3/2^-$	

† From level energies in 1970Ca05.

‡ % photon branching from each level.

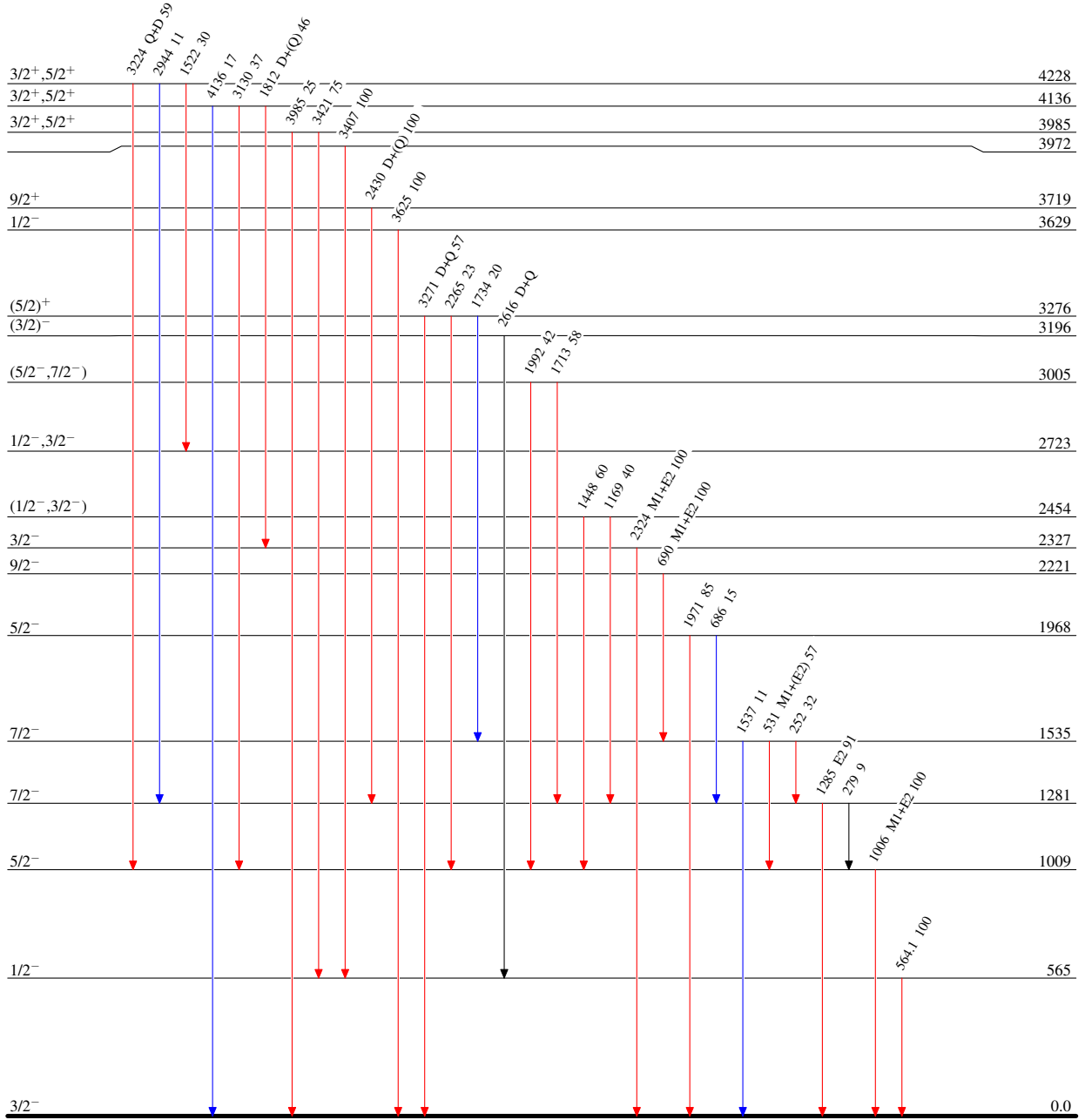
$^\#$ From $\gamma(\theta)$ (1970Ca05).

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Level Scheme
Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$



$^{53}_{24}\text{Cr}_{29}$