

$^{52}\text{Cr}(p,p')$ 1985Fu10,1967Ka11,1969Pe02

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde		NDS 128, 185 (2015)	10-Jul-2015

1985Fu10: E=65 MeV, ΔE -E counter, energy resolution 15-22 keV FWHM, measured $\sigma(\theta)$.

1967Ka11: E=12 MeV, single-gap magnetic spectrograph, 6-8 keV FWHM, measured spectrum of p' .

1966Ma42: E=11,12 MeV, FWHM=8, 12 keV single-channel spectrograph, measured Q values.

1969Pe02: E=17.5 MeV, energy resolution 20 keV, surface barrier silicon detector, measured $\sigma(\theta)$.

1970Pr08: E=40 MeV, Ge(Li), 40 keV FWHM, measured $\sigma(\theta)$.

1983Dj05: E=201 MeV, overall energy resolution 60-70 keV, measured $\sigma(\theta)$, DWIA calculations, deduced 1^+ states.

See 1970Pe09 for a study of relative contributions of direct and compound nucleus mechanisms at E(p)=11 MeV for excitation of 1.44 MeV 2^+ state and 4.56 MeV 3^- state.

Others: 1978An08, 1979AnZT, 1979KIZZ, 1980PrZV, 1980An35, 1983Og03, 1984KoZK, 1985Oz01, 1985Ko07.

All data are from 1985Fu10, except as noted.

 ^{52}Cr Levels

E(level)	J^{π}	L	β_{LR} (fm)	Comments
0.0	0^+			
1434 [@] 3	2^+	2^c	0.87^d 4	
2369 5	4^+	4	0.33	
2647 5	0^+	0	0.095	
2768 5	4^+	4	0.30	
2965 5	2^+	2	(0.08)	
3114 5	6^+	6	0.35^d 10	
3162 5	2^+	2	0.27	
3415 5	4^+	4	0.13	
3472 5	3^+	2+3		L: 1970Pr08 assign L=4 with $\beta_R=0.13$ 2.
3617 [@] 3				
3772 5	2^+	2	0.28	
3949 5	1^+	2		
4015 5	5^+	4+6		
4040 5	4^+	4	0.16	
4563 5	3^-	3	0.61	
4630 5	4^+	4	0.36	
4702 5				
4738 5	0^+	0	0.145	L: 1969Pe02 assign L=2 with $\beta_R=0.22$ 2.
4802 5	$5,6^+$	5,6		
4832 5	$(3^+)^{\dagger}$			
4951 [#] 4	4^+	4^c	0.20^d 5	
5095 5	4^+	4	0.15	
5139 5	$5,6^+$	5,6		
5211 [#] 4				
5285 5	$5,6^+$	5,6		1969Pe02 report L=(2) for a level at 5289.
5346 [#] 4				
5410 [#] 4				
5425 5	4^+	4	0.32	1969Pe02 report L=4 for E=5450.
5432 [#] 6				
5450 [#] 6				
5494 [#] 5				
5541 5	4^+	4	0.074	$\beta_{4R}=0.07$ (1989Fu07).
5546 [#] 6				
5569 5	$5,6^+$	5,6		1969Pe02 report L=3 for a level at 5571.

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$^{52}\text{Cr}(p,p')$ **1985Fu10,1967Ka11,1969Pe02** (continued) ^{52}Cr Levels (continued)

E(level)	J^{π}	L	β_{LR} (fm)	Comments
5584# 6				
5661 5	2 ⁺	2	0.095	
5727 5	5,6 ⁺	5,6		
5737 ^a 10	(4 ⁺)	(4) ^c	0.25 ^d 8	
5798# 5				
5811 5	5,6 ⁺	5,6		
5818# 6				1969Pe02 report L=(3) and $\beta_R=0.24$ 6 for E=5830.
5853# 5				1969Pe02 report L=(3) and $\beta_R=0.24$ 6 for E=5830.
5865# 6				
5873 5	3 ⁻	3	0.082	
5919 5		5,6		
5953# 5				1985Fu10 report L=2 and $\beta_R=0.17$ for E=5957.
5960# 5				1985Fu10 report L=2 and $\beta_R=0.17$ for E=5957.
5996 5	3 ⁻	3	0.087	
6026# 6				
6035& 10				
6055 5		2	0.13	
6065# 10				
6106# 6				
6143 5	(2 ⁺)	2	0.07	
6153# 8				
6164& 12				
6175# 7	2 ⁺	2 ^c	0.21 ^d 3	
6193# 6				
6205# 5		3		L=3 is reported by 1985Fu10 for E=6201, by 1969Pe02 for E=6220, and by 1970Pr08 for E=6210.
6210& 10				L: L=3 is reported by 1985Fu10 for E=6201, by 1969Pe02 for E=6220, and by 1970Pr08 for E=6210.
6220# 6				
6233# 10				
6243 5		3	0.074	Probably a composite of the 6233 and 6252.
6252# 6				
6272# 6				
6282& 10				Probably a composite of the 6272 and 6293.
6293# 7				
6324 ^a 10				
6349 5				1970Pr08 report L=4 for E=6350.
6372 ^a 10				
6392 ^a 10				1985Fu10 report L=3 and $\beta_R=0.048$ for E=6382, and 1969Pe02 report L=(3) and $\beta_R=0.28$ for E=6380.
6426 5				
6437 ^a 10				
6458 5				
6482 5	5,6 ⁺	5,6		
6493 ^a 10	2 ⁺	2 ^c	0.21 ^d 5	
6541 ^a 10				
6568 ^a 10				
6580 5	3 ⁻	3	0.34	
6637 5				

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$^{52}\text{Cr}(p,p')$ **1985Fu10,1967Ka11,1969Pe02** (continued) ^{52}Cr Levels (continued)

E(level)	J^π	L	β_{LR} (fm)	Comments
6678 5				
6704 5	5,6 ⁺	5,6		
6786 5	3 ⁻	3	0.26	
6810 [#] 30	(2 ⁺)	2 ^c	0.22 ^d 3	
6871 5	5 ⁻	5	0.16	
6956 5	5,6 ⁺	5,6		
6993 5	3 ⁻	3	0.18	
7080 10	3 ⁻	3	0.34	
7140 10	4 ⁺	4	0.14	
7217 10	2 ⁺	2	0.10	
7278 10	4 ⁺	4	0.13	
7344 10	2 ⁺	2	0.074	
7376 10	5 ⁻	5	0.11	
7409 10	3 ⁻	3	0.091	
7458 10	5,6 ⁺	5,6		
7482 10	3 ⁻	3	0.13	
7540 ^b 20	1 ⁺ ^b	0		
7585 10	3 ⁻	3	0.074	
7679 10	5,6 ⁺	5,6		
7738 10	3 ⁻	3	0.26	
7823 10	3 ⁻	3	0.12	
7848 10	4 ⁺	4	0.11	
7893 10	4 ⁺	4	0.12	
7967 10	3 ⁻	3	0.095	
8022 10	2 ⁺	2	0.10	
8089 10	3 ⁻	3	0.091	
8121 10	1 ⁺	0		
8181 10	1 ⁺	0		
8213 10	1 ⁺	0		
8281 10	3 ⁻	3	0.15	
8337 10	4 ⁺ ,5 ⁻	4,5		
8374 10	3 ⁻	3	(0.06)	
8412 10	1 ⁺	0		
8457 10	3 ⁻	3	0.13	
8505 10	3 ⁻	3	0.10	
8569 10	1 ⁺	0		
8617 10		2,3,4		
8679 10	3 ⁻	3	0.10	
8728 10	3 ⁻	3	0.10	
8778 10	3 ⁻	3	0.13	
8827 10				
9020 ^b 20	1 ⁺ ^b	0		
9143 10	1 ⁺	0		
9221 10	1 ⁺	0		
9245 10	1 ⁺	0		
9320 ^b 20	1 ⁺ ^b	0		
9440 10	3 ⁻	3	0.095	J^π : 1983Dj05 reported $J^\pi=1^+$.
9620 ^b 20	1 ⁺ ^b	0		
9740 ^b 20	1 ⁺ ^b	0		
9870 ^b 20	1 ⁺ ^b	0		
10000 ^b 20	1 ⁺ ^b	0		
10380 ^b 20	1 ⁺ ^b	0		
10480 ^b 20	1 ⁺ ^b	0		

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$^{52}\text{Cr}(\text{p,p}')$ [1985Fu10](#), [1967Ka11](#), [1969Pe02](#) (continued) ^{52}Cr Levels (continued)

<u>E(level)</u>	<u>J^π[‡]</u>	<u>L</u>	<u>E(level)</u>	<u>J^π[‡]</u>	<u>L</u>	<u>E(level)</u>	<u>J^π[‡]</u>	<u>L</u>
10580 ^b 20	1+ ^b	0	10970 ^b 20	1+ ^b	0	11410 ^b 20	1+ ^b	0
10790 ^b 20	1+ ^b	0	11120 ^b 20	1+ ^b	0	12560 ^b 20	1+ ^b	0
						12900 ^b 20	1+ ^b	0

[†] J^π assigned by [1985Fu10](#) but no angular distribution or discussion is given by the authors.

[‡] Based on $\sigma(\theta)$ and DWBA analysis ([1985Fu10](#)).

From weighted average of values from [1966Ma42](#) and [1967Ka11](#).

@ From weighted average of values from [1966Ma42](#), [1967Ka11](#), [1968Ra17](#).

& From [1967Ka11](#).

^a From [1966Ma42](#).

^b From [1983Dj05](#).

^c From [1969Pe02](#).

^d From [1969Pe02](#). Uncertainties given for βR do not include 10% uncertainty due to normalization.