

$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#)

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

Includes $^{52}\text{Cr}(\text{p},\text{p}),(\text{p},\text{p}'),(\text{p},\text{p}'\gamma)$ res.

[1994Sz01](#): E=4.06-4.28 MeV, measured: γ , $\gamma(\theta)$.

[1991Di07](#): E=1.66-2.91 MeV, measured: γ , $\gamma(\theta)$.

[1990Al22](#): E=1.38-1.66 MeV, measured: γ , $\gamma(\theta)$.

[1988Bo35](#): E=1.5-3.5 MeV, polarized p, measured: γ , $\sigma(\text{E}(\text{p}))$.

[1986Ra19](#): E=1388, 1395, 1608, 1901 keV; measured: γ , $\gamma(\theta)$.

[1985Di09](#): E=2680, 2686 MeV; measured: $\gamma(\theta)$, IAS.

[1983Ki03](#): E=2775, 2789, 3154, 4090, $\approx$ 4170, 4597, 4688 keV; $\sigma(\text{E})$, IAR analysis.

[1982Ki06](#): E=4157, 4165, 4176, 4182, 4597, 4612, 4618, 4626, 4638, 4656, 4667, 4677, 4688 keV; measured: $\sigma(\text{E})$, $\text{I}\gamma$, $\gamma(\theta)$.

[1979Fo19](#): E=4115, 4134, 4140, 4157, 4165, 4176, 4182, 4188, 4197 keV; measured: $\text{E}\gamma$, $\text{I}\gamma$, $\gamma(\theta)$, see [1974Be73](#).

[1975Sc08](#): E=918, 953, 987 keV; γ , $\gamma(\theta)$; E=1005 keV; γ , $\gamma(\theta)$ DSAM.

[1975Si08](#): E=1724 keV; measured: $\gamma(\theta, \text{H})$.

[1974Ne12](#): E=2250 keV; measured: $\gamma\gamma(\theta)$.

[1971Sp07](#): E=1005, 1247, 1386, 1445, 1475, 1606 keV; measured: $\sigma(\text{E})$, γ .

[1970Ma25](#): E=1005, 1497, 1724, 1736, 1767, 1803 keV; γ , $\gamma(\theta)$ DSAM.

[1966Vu01](#): E=1360-2260 keV; $\sigma(\text{E}(\text{p}), \text{E}\gamma)$ for 199 resonances; γ , $\gamma\gamma$ for 20 resonances.

[1993Ca12](#): used the method of nonmetric multidimensional scaling to attribute spins.

Others: [1986SzZZ](#), [1986ShZT](#), [1980Fo03](#), [1969Ab08](#), [1967Vu01](#), [1966St10](#), [1964Ar14](#), [1962Ar03](#).

$^{52}\text{Cr}(\text{p},\text{p}),(\text{p},\text{p}'),(\text{p},\text{p}'\gamma)$ res:

[1971Mo28](#): (p,p) E=2.0-3.0 MeV; energy resolution: 300-400 eV, measured $\sigma(\text{E})$, 147 resonances are reported.

[1982Ki06](#): (p,p') E=4.59-4.72 MeV; (p,p' γ) E=4.14-4.20 MeV, measured $\sigma(\text{E},\theta)$.

[1983Ki03](#): (p,p), (p,p'), (p,p' γ) E=4.06-4.12, 4.57-4.62, 4.65-4.71 MeV, measured $\sigma(\text{E},\theta)$.

[1985Oz01](#): (p,p), (p,p') E=3.2-4.76 MeV; FWHM: 300-600 eV, measured $\sigma(\text{E},\theta)$, about 550 resonances are observed.

Others: [1970Ru07](#), [1971Wy03](#), [1979KIZZ](#), [1980An35](#), [1980Fa07](#), [1986SzZZ](#), and [1987Ra23](#).

 ^{53}Mn Levels

E(level) [†] _#	J ^π _i	T _{1/2} ^m	Comments
0.0	7/2 ⁻		
377.8 ³	5/2 ⁻		$\mu=+3.25$ 30 (1975Si08) μ : If T _{1/2} =117 ps 6.
1289.9 ³	3/2 ⁻		
1440.9 ^b 12	11/2 ⁻		
1621.1 ^b 7	9/2 ⁻		
2274.0 ⁴	5/2 ⁻	>70 fs	T _{1/2} : other: >84 fs (1970Ma25).
2407.1 ⁴	3/2 ⁻	$\approx$ 84 fs	T _{1/2} : 84 fs +182-42 (1975Sc08). Other: >84 fs (1970Ma25).
2447.9 ¹¹			
2573.0 ⁶	7/2 ⁻	$\approx$ 42 fs	T _{1/2} : from 1970Ma25 (42 fs +63-21).
2671.1 ⁵	1/2 ⁻	21 fs +17-10	T _{1/2} : from 1970Ma25 . Other: >70 fs (1975Sc08).
2688.0 ⁶	7/2 ⁻		
2706.7 ¹¹	1/2 ⁺	>70 fs	
2760.7 ¹¹			
2875.6 ⁵	3/2 ⁻	41 fs +14-11	T _{1/2} : other: 28 fs 5 (1970Ma25).
2912.6 ⁶	3/2 ⁻	58 fs +35-21	T _{1/2} : other: 35 fs +63-14 (1970Ma25).
2967.4 ¹⁰			
2978.2 ¹⁰			
3007.4 ⁶	(5/2) ⁺		
3096.9 ⁵	3/2 ⁻	53 fs +46-21	
3102.0 [@] 8			
3128.0 ^c 6	(5/2 ⁻)		

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$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued) ^{53}Mn Levels (continued)

E(level) [†] #	J ^π ^{†i}	T _{1/2} ^m	Comments
3182.0 6	(3/2 ⁻ ,5/2 ⁻)	29 fs 7	T _{1/2} : other: 16 fs 4 (1970Ma25).
3200.8 6	5/2 ^j		
3381.0 8	5/2 ⁻ ,7/2 ^{-j}		
3466.0 8	(3/2 ⁻ ,5/2,7/2 ⁻) ^j		
3479.9 5	1/2 ⁻	27 fs +21-10	T _{1/2} : other: <4 fs (1970Ma25).
3532.3 6	(3/2 ⁻ ,5/2,7/2 ⁻) ^j		
3595.3 8	3/2 ⁻ ,5/2,7/2 ^j		
3666.2 8	5/2 ⁻		
3710.0 7	7/2 ^{-j}		
3897.8 6	1/2 ⁻		
3955.6 6	7/2 ^{-j}		
3960.0 6	(3/2 ⁻ ,5/2,7/2 ⁻) ^j		
3998.9 11	(3/2 ⁻ ,5/2,7/2 ⁻) ^j		
4062.2 5	(7/2 ⁻)		
4066.2 7			
4068.9 ^a 11			
4082.9 8	(3/2,5/2,7/2 ⁻) ^j		
4266.1 6	(5/2 ⁻ ,7/2 ⁻)		
4348.0 7	(1/2 ⁻ ,3/2 ⁻)		
4362.0 [@] 7	1/2 ⁻ ,3/2,5/2,7/2 ^{-j}		
4427.7 6	3/2 ⁻		
4522.0 [@] 11	1/2 ⁻ ,3/2,5/2,7/2 ^{-j}		
4552.1 8	(5/2,7/2 ⁻) ^j		
4560.1 [@] 8	3/2 ⁻ ,5/2 ^j		
4572.5 8	1/2 ⁻ ,3/2 ⁻		
4635.1 [@] 6	(5/2 ⁻ ,7/2 ⁻) ^j		
4719.0 [@] 8			
4763.7 [@] 6	(3/2 ⁻ ,5/2,7/2 ⁻) ^j		
4780.3 6	(1/2 ⁻ ,3/2 ⁻)		
4794.0 [@] 8	(3/2 ⁻ ,5/2,7/2 ⁻) ^j		
4988.2 [@] 8	1/2,3/2 ⁻ ,5/2 ^{-j}		
5094.6 8			
5316.2 8			
5370.7 7			
5434.4 6			
5490.4 7			
5578.6 8			
5592.1 [@] 6			
5998.2 [@] 7	3/2 ⁻ ,5/2,7/2 ^{-j}		
S(p)+918.4 ^f			
S(p)+952.6 ^f			
S(p)+986.9 ^f			
S(p)+1005.8 10	1/2 ⁻		E(level): from 1970Ma25 . Others: E(p)=1005.0 (1975Sc08), E(p)=1006 (1971Sp07). IAS of 1/2 ⁻ 564 level in ^{53}Cr . J ^π : from $\gamma(\theta)$ (1970Ma25).
S(p)+1384 [@]			
S(p)+1387.5 ^g 14	5/2 ^{-j}		E(level): others: E(p)=1388 (1986Ra19), E(p)=1386 (1971Sp07), E(p)=1390 (1990Al22).
S(p)+1394.8 ^g 14	5/2 ⁻		E(level): others: E(p)=1395 (1986Ra19), E(p)=1397 (1990Al22).
S(p)+1402 [@]			
S(p)+1428 [@]			

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$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued) ^{53}Mn Levels (continued)

E(level) [†] #	J^{π} ^{†i}	Comments
S(p)+1432 [@]		
S(p)+1444 [@]	$3/2^{-}, 5/2^{-} j$	
S(p)+1462 [@]		
S(p)+1475 [@]	$5/2^{-} j$	
S(p)+1480 [@]		
S(p)+1484 [@]		
S(p)+1494 [@]	$5/2 j$	
S(p)+1496.8 ^g 15	$5/2^{-}$	E(level): others: E(p)=1497 (1970Ma25), E(p)=1497 (1990Al22).
S(p)+1507 [@]	$5/2^{-}, 3/2^{-} j$	
S(p)+1516 [@]		
S(p)+1522 [@]	$5/2^{-} j$	IAS of $5/2^{-}$ 1006 level in ^{53}Cr .
S(p)+1526 [@]	$5/2^{-} j$	
S(p)+1534 [@]		
S(p)+1541 [@]		
S(p)+1546 [@]		
S(p)+1552 [@]	$5/2^{-} j$	
S(p)+1557 [@]	$5/2^{-} j$	
S(p)+1565 [@]	$3/2$ to $7/2^{-} j$	
S(p)+1570 [@]		
S(p)+1578 [@]		
S(p)+1588 [@]		
S(p)+1592 [@]		
S(p)+1603 [@]		
S(p)+1605 [@]	$3/2^{-} j$	
S(p)+1608.5 ^g 16	$3/2^{-} j$	E(level): others: E(p)=1608 (1986Ra19), E(p)=1606 (1971Sp07), E(p)=1610 (1990Al22).
S(p)+1628 [@]	$5/2^{+} j$	
S(p)+1648 [@]	$3/2^{-}, 5/2^{-} j$	
S(p)+1655 [@]		
S(p)+1660 ^{&}		
S(p)+1663 ^{&}		
S(p)+1669 ^{&}		
S(p)+1686 ^{&}		
S(p)+1691 ^{&}		
S(p)+1702 ^{&}		
S(p)+1713 ^{&}		
S(p)+1720 ^{&}	$3/2^{-}, 5/2^{-} k$	
S(p)+1723.6 ^g 17	$5/2, 3/2$	E(level): others: E(p)=1724 (1970Ma25), (1975Si08), E(p)=1725 (1991Di07).
S(p)+1735.7 ^g 17	$5/2^{-}$	E(level): other: E(p)=1736 (1970Ma25).
S(p)+1740 ^{&}	$(3/2^{-}, 5/2^{-}) k$	
S(p)+1744 ^{&}		
S(p)+1747 ^{&}		
S(p)+1764 ^{&}	$(3/2^{-}, 5/2^{-}) k$	
S(p)+1767.2 ^g 17	$(3/2^{-}, 5/2^{-}) k$	E(level): others: E(p)=1767 (1970Ma25), E(p)=1767 (1991Di07).
S(p)+1776 ^{&}	$5/2^{-} k$	
S(p)+1786 ^{&}		

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$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued) ^{53}Mn Levels (continued)

E(level) [†] #	J ^π [†] i	Comments
S(p)+1794 ^{&}		
S(p)+1800 ^{&}	7/2 ^{-k}	IAS of 7/2 ⁻ 1290 level in ^{53}Cr (1991Di07).
S(p)+1803.1 ^g 17	5/2	E(level): other: E(p)=1803 (1970Ma25).
S(p)+1810 ^{&}	3/2 ^{-k}	
S(p)+1821 ^{&}		
S(p)+1823 ^{&}		
S(p)+1826 ^{&}		
S(p)+1830 ^{&}		
S(p)+1832 ^{&}		
S(p)+1849 ^{&}		
S(p)+1855 ^{&}		
S(p)+1870 ^{&}		
S(p)+1875 ^{&}	(3/2 ⁻ , 5/2 ⁻) ^k	
S(p)+1878 ^{&}	3/2 ^{-k}	
S(p)+1882 ^{&}		
S(p)+1896 ^{&}	3/2 ^{-k}	
S(p)+1901.1 ^g 18	7/2 ⁻	E(level): other: E(p)=1901 (1986Ra19).
S(p)+1909 ^{&}		
S(p)+1919 ^{&}		
S(p)+1927 ^{&}		
S(p)+1930 ^{&}	5/2 ⁽⁺⁾ ^k	
S(p)+1936 ^{&}		
S(p)+1943 ^{&}		
S(p)+1954 ^{&}		
S(p)+1960 ^{&}	3/2 ⁽⁻⁾ ^k	
S(p)+1966 ^{&}		
S(p)+1971 ^{&}	7/2 ^{-k}	IAS of 7/2 ⁻ 1290 level in ^{53}Cr , see 1991Di07 .
S(p)+1978 ^{&}	(3/2 ⁻ , 5/2 ⁻) ^k	
S(p)+1983 ^{&}	(3/2 ⁻ , 5/2, 7/2 ⁻) ^k	IAS of 7/2 ⁻ 1537 level in ^{53}Cr , see 1991Di07 .
S(p)+1991 ^{&}	3/2 ⁻ , 5/2 ^{-k}	E(level): doublet with S(p)+1993.
S(p)+1993 ^{&}	7/2 ^{-k}	E(level): doublet with S(p)+1991. IAS of 7/2 ⁻ 1537 level in ^{53}Cr , see 1991Di07 .
S(p)+1997 ^{&}		
S(p)+2013 ^{&}		
S(p)+2017 ^{&}		
S(p)+2023 ^{&}		J ^π : 1/2 to 5/2 and 7/2 ⁻ , 9/2 ⁺ (1991Di07).
S(p)+2026 ^{&}		
S(p)+2034 ^{&}		
S(p)+2037 ^{&}	(3/2 ⁻ , 5/2 ⁻) ^k	
S(p)+2042 ^{&}	(3/2 ⁻ , 5/2, 7/2 ⁻) ^k	
S(p)+2052 ^{&}		
S(p)+2058 ^{&}		
S(p)+2072 ^{&}		
S(p)+2075 ^{&}		
S(p)+2087 ^{&}	(3/2 ⁻ , 5/2 ⁻) ^k	
S(p)+2088 ^{&}		

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$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08,1979Fo19,1970Ma25](#) (continued) ^{53}Mn Levels (continued)

<u>E(level)[†]#</u>	<u>J[†]π^i</u>
S(p)+2091&	(3/2 ⁻ ,5/2,7/2 ⁻) ^k
S(p)+2103&	
S(p)+2112&	
S(p)+2117&	
S(p)+2124&	
S(p)+2128&	
S(p)+2133&	(3/2 ⁻) ^k
S(p)+2144&	
S(p)+2149&	
S(p)+2154&	(3/2 ⁻) ^k
S(p)+2164&	
S(p)+2172&	(3/2 ⁻ ,5/2,7/2 ⁻) ^k
S(p)+2184&	
S(p)+2187&	
S(p)+2194&	(3/2 ⁻ ,5/2,7/2 ⁻) ^k
S(p)+2201&	
S(p)+2210&	
S(p)+2213&	5/2 ⁻ ^k
S(p)+2226&	(3/2 ⁻ ,5/2,7/2 ⁻)
S(p)+2235&	
S(p)+2238&	
S(p)+2243&	
S(p)+2251&	
S(p)+2267&	(3/2 ⁻ ,5/2,7/2 ⁻) ^k
S(p)+2273&	
S(p)+2279&	
S(p)+2286&	
S(p)+2291&	(3/2 ⁻ ,5/2,7/2 ⁻) ^k
S(p)+2296&	
S(p)+2300&	5/2 ^k
S(p)+2305&	
S(p)+2308&	
S(p)+2311&	
S(p)+2318&	
S(p)+2321&	5/2 ^k
S(p)+2329&	(3/2 ⁻ ,5/2 ⁺)
S(p)+2335&	
S(p)+2344&	(3/2 ⁻ ,5/2 ⁺) ^k
S(p)+2348&	5/2 ^k
S(p)+2352&	
S(p)+2364&	5/2 ^k
S(p)+2374&	
S(p)+2379&	
S(p)+2383&	
S(p)+2386&	(3/2 ⁻ ,5/2,7/2 ⁻) ^k

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$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued) ^{53}Mn Levels (continued)

E(level) [†] #	$J\pi^{\dagger i}$	Comments
S(p)+2397&		
S(p)+2404&	$(3/2^-, 5/2^+)^k$	
S(p)+2407&	$(3/2^-, 5/2, 7/2^-)^k$	
S(p)+2409&	$7/2^-^k$	
S(p)+2410&	$5/2^-, 7/2^-^k$	
S(p)+2422&	$5/2^-^k$	IAS of $5/2^-$ 1974 level in ^{53}Cr (1991Di07).
S(p)+2427&		
S(p)+2431&	$5/2^-^k$	IAS of $5/2^-$ 1974 level in ^{53}Cr , see 1991Di07 .
S(p)+2439&	$5/2^-^k$	IAS of $5/2^-$ 1974 level in ^{53}Cr , see 1991Di07 .
S(p)+2446&		
S(p)+2452&		
S(p)+2459&	$(3/2^-, 5/2, 7/2^-)^k$	
S(p)+2464&	$(3/2^-, 5/2, 7/2^-)^k$	
S(p)+2468&	$(3/2^-, 5/2, 7/2)^k$	
S(p)+2472&		
S(p)+2480&	$3/2^-, 5/2^k$	
S(p)+2483&	$(5/2^-, 7/2)$	
S(p)+2490&	$(3/2^-, 5/2, 7/2^-)^k$	
S(p)+2499&		
S(p)+2503&		
S(p)+2508&		
S(p)+2511&		
S(p)+2515&	$(3/2^-, 5/2, 7/2^-)^k$	
S(p)+2523&		
S(p)+2529&		
S(p)+2532&		
S(p)+2538&		
S(p)+2541&		
S(p)+2552&		
S(p)+2555&		
S(p)+2559&	$3/2^-^k$	
S(p)+2571&		
S(p)+2580&		
S(p)+2585&	$3/2^-, 5/2^-^k$	
S(p)+2589&		
S(p)+2597&		
S(p)+2604&	$3/2^-, 5/2, 7/2^-^k$	
S(p)+2610&	$3/2^-, 5/2^-^k$	
S(p)+2617&		
S(p)+2629&	$3/2^-, 5/2^+^k$	
S(p)+2639&		
S(p)+2643&	$3/2^-, 5/2^+^k$	
S(p)+2646&		
S(p)+2650&		
S(p)+2659&	$3/2^-, 5/2, 7/2^-^k$	

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$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued) ^{53}Mn Levels (continued)

E(level) [†] #	J ^π ^{†i}	Comments
S(p)+2664 ^{&}		
S(p)+2670 ^{&}	5/2 ^{-k}	
S(p)+2673 ^{&}		
S(p)+2681 ^{&}	5/2 ^k	E(level): other: E(p)=2680 (1985Di09).
S(p)+2684 ^{&}	9/2 ^{+k}	E(level): other: E(p)=2686 (1985Di09).
S(p)+2688 ^{&}	3/2 ⁻ , 5/2, 7/2 ^{-k}	
S(p)+2691 ^{&}	3/2 ⁻ , 5/2, 7/2 ^{-k}	
S(p)+2695 ^{&}	9/2 ^{+k}	
S(p)+2699 ^{&}	5/2 ^{-k}	
S(p)+2706 ^{&}		
S(p)+2710 ^{&}	3/2 ⁻ , 5/2 ⁻ , 7/2 ^{-k}	
S(p)+2716 ^{&}	3/2 ⁻ , 5/2, 7/2 ^{-k}	
S(p)+2721 ^{&}	5/2 ^{-k}	
S(p)+2724 ^{&}		
S(p)+2733 ^{&}	3/2 ⁻ , 5/2, 7/2 ^{-k}	
S(p)+2737 ^{&}	3/2 ⁻ , 5/2 ^{-k}	
S(p)+2742 ^{&}	5/2 ^k	
S(p)+2775 ^{&}	3/2 ⁻	E(level): E(p)≈2775 (1983Kl03). IAS of ^{53}Cr 2321, 3/2 ⁻ (1983Kl03). E(level): Observes in $^{52}\text{Cr}(\text{p},\text{p}), (\text{p},\text{p}'), (\text{p},\text{p}'\gamma)$ res too.
S(p)+2760 ^{&}		
S(p)+2770 ^{&}	5/2 ^{-k}	
S(p)+2775 ^d 3	3/2 ⁻	E(level): other: E(p)=2776 (1991Di07). E(level): Observes in $^{52}\text{Cr}(\text{p},\text{p}), (\text{p},\text{p}'), (\text{p},\text{p}'\gamma)$ res too. J ^π : from comparison of the single-particle proton strength ($^3\text{He},\text{d}$) of the low-lying levels in ^{53}Mn with the corresponding γ strength from the deexcitation of the resonance (1983Kl03). IAS of 3/2 ⁻ 2321 level in ^{53}Cr , see 1991Di07 .
S(p)+2783 ^{&}		
S(p)+2789 ^d 3	3/2 ⁻	E(level): other: E(p)=2789 (1991Di07). J ^π : from comparison of the single-particle proton strength ($^3\text{He},\text{d}$) of the low-lying levels in ^{53}Mn with the corresponding γ strength from the deexcitation of the resonance (1983Kl03). IAS of 3/2 ⁻ 2321 level in ^{53}Cr , see 1991Di07 .
S(p)+2796 ^{&}		
S(p)+2800 ^{&}	7/2 ^{-k}	
S(p)+2807 ^{&}	5/2 ^{-k}	
S(p)+2812 ^{&}		
S(p)+2820 ^{&}		
S(p)+2826 ^{&}		
S(p)+2837 ^{&}	3/2 ^{-k}	
S(p)+2840 ^{&}	3/2 ⁻ , 5/2, 7/2 ^{-k}	
S(p)+2846 ^{&}		
S(p)+2855 ^{&}	3/2 ⁻ , 5/2, 7/2 ^{-k}	
S(p)+2859 ^{&}		
S(p)+2865 ^{&}		
S(p)+2872 ^{&}		
S(p)+2875 ^{&}		

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$^{52}\text{Cr}(p,\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued) ^{53}Mn Levels (continued)

E(level) ^{†#}	J ^{π†i}	Comments
S(p)+2883 ^{&}		
S(p)+2894 ^{&}		
S(p)+2898 ^{&}		
S(p)+2901 ^{&}		
S(p)+2906 ^{&}		
S(p)+2911 ^{&}	(3/2 ⁻) ^k	
S(p)+3154 ^d 3	5/2 ⁻ , 7/2 ⁻	J ^π : from $\gamma(\theta)$, excitation functions (1983KI03). IAS of 5/2 ⁻ , 7/2 ⁻ 2657 level in ^{53}Cr , see 1991Di07 . E(level): Observes in $^{52}\text{Cr}(p,p),(p,p'),(p,p'\gamma)$ res too.
S(p)+3684 ^h	3/2 ⁻	E(level): E(p)=3684 3 (1985Oz01). J ^π : the inelastic proton angular distribution was anisotropic (1985Oz01). IAS of ^{53}Cr 3180, 3/2 ⁻ (1985Oz01). S(p,p)=0.011 (1985Oz01).
S(p)+4069.2 ^e 20		
S(p)+4074 ^h	1/2 ⁻	E(level): E(p)=4074 3 (1985Oz01), E(p)≈4090 (1983KI03). IAS of ^{53}Cr 3617, 1/2 ⁻ (1985Oz01). S(p,p)=0.17 (1985Oz01), s(p,p)=0.03 (1983KI03).
S(p)+4087 ^d 3	1/2 ⁻	J ^π : from $\gamma(\theta)$, excitation functions L=1 resonance (1983KI03) IAS of 1/2 ⁻ 3617 level in ^{53}Cr (1991Di07).
S(p)+4100.3 ^e 20		
S(p)+4115 ^b 3	9/2 ⁺ ^l	E(level): other: E(p)=4117.6 20 (1994Sz01).
S(p)+4125.1 ^e 20		
S(p)+4129.8 ^e 20	9/2 ⁺ ^l	E(level): other: E(p)=4134 3 (1979Fo19).
S(p)+4138.5 ^e 20	9/2 ⁺ ^l	E(level): other: E(p)=4140 3 (1979Fo19).
S(p)+4145.1 ^e 20		
S(p)+4157 ^b 3	9/2 ⁺ ^l	
S(p)+4163.5 ^e 20	9/2 ⁺ ^l	E(level): other: E(p)=4165 3 (1979Fo19).
S(p)+4170.1 ^e 20	9/2 ⁺	E(level): Observes in $^{52}\text{Cr}(p,p),(p,p'),(p,p'\gamma)$ res too. E(level): E(p)≈4170 (1983KI03). IAS of ^{53}Cr 3707, 9/2 ⁺ (1983KI03).
S(p)+4176 ^b 3	9/2 ⁺ ^l	
S(p)+4181.3 ^e 20	9/2 ⁺ ^l	IAS of 9/2 ⁺ 3707 level in ^{53}Cr , see 1991Di07 .
S(p)+4186.9 ^e 20	9/2 ⁺ ^l	
S(p)+4192.4 ^e 20		
S(p)+4197 ^b 3	9/2 ⁺	J ^π : The state is the component of the fragmented γ 9/2 analogue resonance on the basis of the structure of the excitation function (1979Fo19).
S(p)+4205.7 ^e 20		
S(p)+4211.3 ^e 20		
S(p)+4217.2 ^e 20		
S(p)+4241.3 ^e 20		
S(p)+4241.9 ^e 20		
S(p)+4256.9 ^e 20		
S(p)+4268.1 ^e 20		
S(p)+4479 ^h	5/2 ⁺	E(level): E(p)=4479 3 (1985Oz01). J ^π : 1985Oz01 assumed (5/2) ⁺ . IAS of ^{53}Cr 3985, 5/2 ⁺ (1985Oz01). S(p,p)=0.020 (1985Oz01).
S(p)+4597 ^d 3	3/2 ⁺ , 5/2 ⁺	J ^π : from excitation function (1983KI03) IAS of 3/2 ⁺ , 5/2 ⁺ 4135 level in ^{53}Cr (1991Di07). $\Gamma_p=4.0$ keV, $\Gamma=8.0$ keV (1982KI06). E(level): Observes in $^{52}\text{Cr}(p,p),(p,p'),(p,p'\gamma)$ res too.

Continued on next page (footnotes at end of table)

$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued) ^{53}Mn Levels (continued)

E(level) [‡] [#]	J ^π ^{†i}	Comments
S(p)+4688 ^d 3	3/2 ⁺ , 5/2 ⁺	J ^π : from excitation function (1983Kl03) IAS of 3/2 ⁺ , 5/2 ⁺ 4231 level in ^{53}Cr (1991Di07). $\Gamma_p=2.0$ keV, $\Gamma=6.0$ keV (1982Kl06). S(p,p)=0.023 (1983Kl03). E(level): Observes in $^{52}\text{Cr}(\text{p,p}),(\text{p,p}'),(\text{p,p}'\gamma)$ res too.

[†] From $\gamma(\theta)$, excitation functions ([1983Kl03](#)), except as noted.

[‡] E(level)=S(p)+E(p) where E(p) are lab energies and S(p)=6559.9 3 ([1995Au04](#)), except as noted.

[#] E<6000 from [1975Sc08](#). For resonance states, E(level)=S(p)+E(p) where E(p) are lab energies and S(p)=6559.9 3 ([2003Au03](#)), except as noted. ΔE assigned by the evaluators to the data of [1979Fo19](#) are based on the uncertainties quoted in [1983Kl03](#). For time-structure in IAR; see [1966Vu01](#) and [1971Mo28](#).

@ From [1990Al22](#).

& From [1991Di07](#).

^a From [1986Ra19](#).

^b From [1979Fo19](#).

^c From [1988Bo35](#).

^d From [1983Kl03](#).

^e From [1994Sz01](#).

^f From [1975Sc08](#).

^g From [1966Vu01](#).

^h From $^{52}\text{Cr}(\text{p,p}),(\text{p,p}'),(\text{p,p}'\gamma)$ res.

ⁱ Adopted values, except as noted.

^j From $\gamma(\theta)$, [1990Al22](#).

^k from $\gamma(\theta)$, [1991Di07](#).

^l from $\gamma(\theta)$, [1979Fo19](#).

^m From [1975Sc08](#) by DSAM, except as noted.

$\gamma(^{53}\text{Mn})$								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
263.9	23	2671.1	1/2 ⁻	2407.1	3/2 ⁻	M1		
297.7	10	3479.9	1/2 ⁻	3182.0	(3/2 ⁻ , 5/2 ⁻)	M1		
378.0	100	377.8	5/2 ⁻	0.0	7/2 ⁻	M1+E2	+0.61 8	δ : from 1967Vu01 . Others: +0.69 6 (1970Ma25), +0.55 6 (1974Ne12), +0.47 10 (1969Ab08).
425.6	4	3096.9	3/2 ⁻	2671.1	1/2 ⁻	D		
468.4	1	2875.6	3/2 ⁻	2407.1	3/2 ⁻	D		
567.0	2	3479.9	1/2 ⁻	2912.6	3/2 ⁻	D,E2		
604.1	4	3479.9	1/2 ⁻	2875.6	3/2 ⁻	D,E2		
793.8	2	3200.8	5/2	2407.1	3/2 ⁻			
800.7		3897.8	1/2 ⁻	3096.9	3/2 ⁻			I_γ : I(800):I(2608):I(3520)=16:54:30, see 1975Sc08 .
911.6	46	1289.9	3/2 ⁻	377.8	5/2 ⁻	M1+E2	+0.18 2	δ : from 1967Vu01 . Other: +0.18 7 (1974Ne12).
984.0	4	2274.0	5/2 ⁻	1289.9	3/2 ⁻	M1+E2	+0.8 ^e 3	
1072.5	44	3479.9	1/2 ⁻	2407.1	3/2 ⁻	D+E2	-0.01 ^e 11	
1117.5	47	2407.1	3/2 ⁻	1289.9	3/2 ⁻	M1+(E2)	-0.10 ^e 7	
1227	24 ^a	3897.8	1/2 ⁻	2671.1	1/2 ⁻			
1269	14 ^a	3955.6	7/2 ⁻	2688.0	7/2 ⁻			Additional information 2.
1289.8	54	1289.9	3/2 ⁻	0.0	7/2 ⁻			
1381.4	31	2671.1	1/2 ⁻	1289.9	3/2 ⁻	D,E2		
(1399)		2688.0	7/2 ⁻	1289.9	3/2 ⁻			
1416.8	100	2706.7	1/2 ⁺	1289.9	3/2 ⁻			
(1476)		3096.9	3/2 ⁻	1621.1	9/2 ⁻			
1489.4		4062.2	(7/2 ⁻)	2573.0	7/2 ⁻			I_γ : I(1489):I(2772):I(4062)=9:20:71, see 1975Sc08 .
1491	8 ^a	3897.8	1/2 ⁻	2407.1	3/2 ⁻			
1515.4	30	4427.7	3/2 ⁻	2912.6	3/2 ⁻			
1586.1	2	2875.6	3/2 ⁻	1289.9	3/2 ⁻	D,E2		
1622.7	70	2912.6	3/2 ⁻	1289.9	3/2 ⁻	M1+E2	-0.5 ^e 3	
1655	2 ^a	4062.2	(7/2 ⁻)	2407.1	3/2 ⁻			
1659	12 ^a	4066.2		2407.1	3/2 ⁻			
1717.5	50	3007.4	(5/2) ⁺	1289.9	3/2 ⁻			
1756.5	7	4427.7	3/2 ⁻	2671.1	1/2 ⁻			
1788	9 ^a	4062.2	(7/2 ⁻)	2274.0	5/2 ⁻			
1807.0	6	3096.9	3/2 ⁻	1289.9	3/2 ⁻	D,E2		
1839	3 ^a	3128.0	(5/2 ⁻)	1289.9	3/2 ⁻			
1868.1	20	4780.3	(1/2 ⁻ , 3/2 ⁻)	2912.6	3/2 ⁻			
1892.0	23	3182.0	(3/2 ⁻ , 5/2 ⁻)	1289.9	3/2 ⁻	M1+E2	-0.51 ^e 21	
1896.3	20	2274.0	5/2 ⁻	377.8	5/2 ⁻			
1910.7	32	3200.8	5/2	1289.9	3/2 ⁻			
1968.0	1	S(p)+1005.8	1/2 ⁻	5592.1				
1992	16 ^a	4266.1	(5/2 ⁻ , 7/2 ⁻)	2274.0	5/2 ⁻			
2020.6	14	4427.7	3/2 ⁻	2407.1	3/2 ⁻			
2029.4	13	2407.1	3/2 ⁻	377.8	5/2 ⁻	D,E2		
2056.1	2	S(p)+1005.8	1/2 ⁻					

$\gamma(^{53}\text{Mn})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
2060.0	2	S(p)+952.6						
2070.1	100	2447.9		377.8	5/2 ⁻			
2074	26 ^a	4348.0	(1/2 ⁻ ,3/2 ⁻)	2274.0	5/2 ⁻			
2085	6 ^a	S(p)+1552	5/2 ⁻					
2088	26 ^a	4362.0	1/2 ⁻ ,3/2,5/2,7/2 ⁻	2274.0	5/2 ⁻			
2089	40 ^a	3710.0	7/2 ⁻	1621.1	9/2 ⁻			
2090	2 ^a	S(p)+1557	5/2 ⁻					
2107	31 ^a	4794.0	(3/2 ⁻ ,5/2,7/2 ⁻)	2688.0	7/2 ⁻			I_γ : I(2107):I(3493)=17:37, see 1990Al22 .
2157.4	3	S(p)+986.9						
2165.3	54	4572.5	1/2 ⁻ ,3/2 ⁻	2407.1	3/2 ⁻			
2178.1	0.5	S(p)+952.6						
2190.6	40	3479.9	1/2 ⁻	1289.9	3/2 ⁻	D+E2	-0.00 ^e 5	
2195.2	62	2573.0	7/2 ⁻	377.8	5/2 ⁻	D,E2		
2211.9	1	S(p)+986.9						
2228	20 ^a	4635.1	(5/2 ⁻ ,7/2 ⁻)	2407.1	3/2 ⁻			
2230.2	1	S(p)+1005.8	1/2 ⁻					
2242.9	72 ^a	3532.3	(3/2 ⁻ ,5/2,7/2 ⁻)	1289.9	3/2 ⁻			
2269	10 ^a	3710.0	7/2 ⁻	1440.9	11/2 ⁻			
2274.0	76	2274.0	5/2 ⁻	0.0	7/2 ⁻	M1+(E2)	+0.3 ^e 2	
2293.4	46	2671.1	1/2 ⁻	377.8	5/2 ⁻	D,E2		
2308.5	35	5316.2		3007.4	(5/2) ⁺			
2311		2688.0	7/2 ⁻	377.8	5/2 ⁻	M1+E2	-0.3 ^e 3	
2317	40 ^a	4988.2	1/2,3/2 ⁻ ,5/2 ⁻	2671.1	1/2 ⁻			
2334	31 ^a	3955.6	7/2 ⁻	1621.1	9/2 ⁻			Additional information 3.
2373		4780.3	(1/2 ⁻ ,3/2 ⁻)	2407.1	3/2 ⁻			E_γ : from 1990Al22 .
2382.9	100	2760.7		377.8	5/2 ⁻			
2406.8	40	2407.1	3/2 ⁻	0.0	7/2 ⁻	D,E2		
2420	16 ^a	3710.0	7/2 ⁻	1289.9	3/2 ⁻			
2445	10 ^a	4719.0		2274.0	5/2 ⁻			
2452.0	1	S(p)+1005.8	1/2 ⁻					
2497.6	83	2875.6	3/2 ⁻	377.8	5/2 ⁻	M1+(E2)	-0.36 ^e 25	
2506.6	17	4780.3	(1/2 ⁻ ,3/2 ⁻)	2274.0	5/2 ⁻			
2535.0	30	2912.6	3/2 ⁻	377.8	5/2 ⁻	D,E2		
2573.3	38	2573.0	7/2 ⁻	0.0	7/2 ⁻	D,E2		
2581	60 ^a	4988.2	1/2,3/2 ⁻ ,5/2 ⁻	2407.1	3/2 ⁻			
2591	5 ^a	S(p)+1552	5/2 ⁻					
2607.5	46 ^a	3897.8	1/2 ⁻	1289.9	3/2 ⁻			
2629.3	36	3007.4	(5/2) ⁺	377.8	5/2 ⁻			
2670	17	3960.0	(3/2 ⁻ ,5/2,7/2 ⁻)	1289.9	3/2 ⁻			
2687.2	21	5094.6		2407.1	3/2 ⁻	D+Q	-0.86 21	
2688.6	100	2688.0	7/2 ⁻	0.0	7/2 ⁻	M1+E2	-0.9 ^e 3	
2719.0	72	3096.9	3/2 ⁻	377.8	5/2 ⁻	M1+E2		δ : $\delta=+0.8$ 5 or -1.2 40 (1970Ma25).

⁵²Cr(p,γ) E=res [1975Sc08,1979Fo19,1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ^d	Comments
2724	38 ^a	3102.0		377.8	5/2 ⁻			
2747.9	4	S(p)+986.9		4794.0	(3/2 ⁻ ,5/2,7/2 ⁻)			
2750	87 ^a	3128.0	(5/2 ⁻)	377.8	5/2 ⁻			
2772.3	16 ^a	4062.2	(7/2 ⁻)	1289.9	3/2 ⁻			
2776.6	23 ^a	4066.2		1289.9	3/2 ⁻			I _γ : I(2777):I(3688)=53:47, see 1975Sc08 .
2779	100	4068.9		1289.9	3/2 ⁻			
2793	15 ^a	4082.9	(3/2,5/2,7/2 ⁻)	1289.9	3/2 ⁻			
2797.9	30	5370.7		2573.0	7/2 ⁻			
2804.1	68	3182.0	(3/2 ⁻ ,5/2 ⁻)	377.8	5/2 ⁻	M1+(E2)	-0.1 ^e 3	
2822.7	36	3200.8	5/2	377.8	5/2 ⁻			
2833.8		S(p)+1394.8	5/2 ⁻					I _γ : I(2835):I(7929)=9.1:56.6, see 1986Ra19 .
2875.3	14	2875.6	3/2 ⁻	0.0	7/2 ⁻			
2921.5	0.5	S(p)+952.6						
2967.3	100	2967.4		0.0	7/2 ⁻			
2978.1	100	2978.2		0.0	7/2 ⁻			
3003	90	3381.0	5/2 ⁻ ,7/2 ⁻	377.8	5/2 ⁻			Additional information 1.
3007.3	14	3007.4	(5/2) ⁺	0.0	7/2 ⁻			
3027.5	8	5434.4		2407.1	3/2 ⁻			
3058	23 ^a	4348.0	(1/2 ⁻ ,3/2 ⁻)	1289.9	3/2 ⁻			
3066.4	6	S(p)+952.6						
3072	28 ^a	4362.0	1/2 ⁻ ,3/2,5/2,7/2 ⁻	1289.9	3/2 ⁻			
3082.7	24	5490.4		2407.1	3/2 ⁻			
3088	42	3466.0	(3/2 ⁻ ,5/2,7/2 ⁻)	377.8	5/2 ⁻			
3096.7	18	3096.9	3/2 ⁻	0.0	7/2 ⁻	D,E2		
3096.8	10	5370.7		2274.0	5/2 ⁻			
3102	62 ^a	3102.0		0.0	7/2 ⁻			
3102		3479.9	1/2 ⁻	377.8	5/2 ⁻			I _γ : I(3102):I(3480)=42:58, see 1990A122 .
3112.9	6	S(p)+918.4		4362.0	1/2 ⁻ ,3/2,5/2,7/2 ⁻			
3127	10 ^a	3128.0	(5/2 ⁻)	0.0	7/2 ⁻			
3137		4427.7	3/2 ⁻	1289.9	3/2 ⁻			I _γ : I(2021):I(3137):I(4050)=22:44:34, see 1990A122 .
3147	4 ^a	S(p)+1605	3/2 ⁻					
3154	10 ^a	3532.3	(3/2 ⁻ ,5/2,7/2 ⁻)	377.8	5/2 ⁻			
3159.5	62	5434.4		2274.0	5/2 ⁻			
3181.9	9	3182.0	(3/2 ⁻ ,5/2 ⁻)	0.0	7/2 ⁻	D,E2		
3185	22 ^a	5592.1		2407.1	3/2 ⁻			
3200.8	30	3200.8	5/2	0.0	7/2 ⁻			
3217.1	39	5490.4		2274.0	5/2 ⁻			
3217.6	81 ^a	3595.3	3/2 ⁻ ,5/2,7/2	377.8	5/2 ⁻			
3228.0	5	S(p)+952.6						
3261.8	2	S(p)+986.9						
3262	14 ^a	4552.1	(5/2,7/2 ⁻)	1289.9	3/2 ⁻			
3270	81 ^a	4560.1	3/2 ⁻ ,5/2	1289.9	3/2 ⁻			Additional information 5.

$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08,1979Fo19,1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Comments
3282.5	46	4572.5	$1/2^-, 3/2^-$	1289.9	$3/2^-$	
3288	17 ^a	3666.2	$5/2^-$	377.8	$5/2^-$	
3303	1 ^a	S(p)+1552	$5/2^-$			
3304.3	26	5578.6		2274.0	$5/2^-$	
3318	19 ^a	5592.1		2274.0	$5/2^-$	
3332	34 ^a	3710.0	$7/2^-$	377.8	$5/2^-$	
3345	43 ^a	4635.1	$(5/2^-, 7/2^-)$	1289.9	$3/2^-$	Additional information 6.
3364	2 ^a	S(p)+1552	$5/2^-$			
3381	10	3381.0	$5/2^-, 7/2^-$	0.0	$7/2^-$	
3393.6	1 ^a	S(p)+1496.8	$5/2^-$			
3394.8	3	S(p)+918.4		4082.9	$(3/2, 5/2, 7/2^-)$	
3404	5 ^a	S(p)+1507	$5/2^-, 3/2^-$			Additional information 28.
3419.3	1 ^a	S(p)+1608.5	$3/2^-$			
3428.0	2	S(p)+952.6		4082.9	$(3/2, 5/2, 7/2^-)$	
3429	90 ^a	4719.0		1289.9	$3/2^-$	
3458	1 ^a	S(p)+1648	$3/2^-, 5/2^-$			
3465.7	3	S(p)+986.9		4082.9	$(3/2, 5/2, 7/2^-)$	
3466	58	3466.0	$(3/2^-, 5/2, 7/2^-)$	0.0	$7/2^-$	
3472	29 ^a	4763.7	$(3/2^-, 5/2, 7/2^-)$	1289.9	$3/2^-$	
3479	10 ^a	S(p)+1507	$5/2^-, 3/2^-$			Additional information 29.
3480		3479.9	$1/2^-$	0.0	$7/2^-$	
3480.5	0.5	S(p)+1005.8	$1/2^-$	4082.9	$(3/2, 5/2, 7/2^-)$	
3494.1	1 ^a	S(p)+1387.5	$5/2^-$			
3500	10 [@]	S(p)+2023				
3503	69 ^a	4794.0	$(3/2^-, 5/2, 7/2^-)$	1289.9	$3/2^-$	
3506.6	1 ^a	S(p)+1496.8	$5/2^-$	4552.1	$(5/2, 7/2^-)$	
3519.9	22 ^a	3897.8	$1/2^-$	377.8	$5/2^-$	
3528	2 ^a	S(p)+1648	$3/2^-, 5/2^-$			
3531	8 ^a	S(p)+1552	$5/2^-$	4572.5	$1/2^-, 3/2^-$	
3532	18 ^a	3532.3	$(3/2^-, 5/2, 7/2^-)$	0.0	$7/2^-$	
3536	2 ^a	S(p)+1557	$5/2^-$	4572.5	$1/2^-, 3/2^-$	
3546	10 [@]	S(p)+1978	$(3/2^-, 5/2)$	4988.2	$1/2, 3/2^-, 5/2^-$	
3550	2 ^a	S(p)+1444	$3/2^-, 5/2^-$			
3577	36 ^a	3955.6	$7/2^-$	377.8	$5/2^-$	Additional information 4.
3582	38	3960.0	$(3/2^-, 5/2, 7/2^-)$	377.8	$5/2^-$	
3591	28 ^a	5998.2	$3/2^-, 5/2, 7/2^-$	2407.1	$3/2^-$	I_γ : 1(3591):I(4708):I(5620)=18:20:27, see 1990Al22 .
3595.0	19 ^a	3595.3	$3/2^-, 5/2, 7/2$	0.0	$7/2^-$	
3601.6	1 ^a	S(p)+1496.8	$5/2^-$			
3621	100 ^a	3998.9	$(3/2^-, 5/2, 7/2^-)$	377.8	$5/2^-$	
3629	1 ^a	S(p)+1444	$3/2^-, 5/2^-$			

$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
3630	1 ^a	S(p)+1526	5/2 ⁻			
3630.5	6	S(p)+986.9				
3666.3	87 ^a	3666.2	5/2 ⁻	0.0	7/2 ⁻	
3684	13 ^a	4062.2	(7/2 ⁻)	377.8	5/2 ⁻	
3687.9	65 ^a	4066.2		377.8	5/2 ⁻	
3705	85 ^a	4082.9	(3/2,5/2,7/2 ⁻)	377.8	5/2 ⁻	
3708	3 [@]	S(p)+1978	(3/2 ⁻ ,5/2)			
3721	1 [@]	S(p)+1978	(3/2 ⁻ ,5/2)			
3726	1 ^a	S(p)+1494	5/2			
3728.6	7 ^a	S(p)+1496.8	5/2 ⁻			Additional information 24.
3731	1 ^a	S(p)+1628	5/2 ⁺			
3739	1 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻			
3740	2 ^a	S(p)+1557	5/2 ⁻			
3751	3 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻			
3761.6	2 ^a	S(p)+1496.8	5/2 ⁻			
3764	6 [@]	S(p)+1960	3/2 ⁽⁻⁾	4763.7	(3/2 ⁻ ,5/2,7/2 ⁻)	
3779	10 [@]	S(p)+2037	(3/2 ⁻ ,5/2 ⁻)			
3788	3 ^a	S(p)+1557	5/2 ⁻			
3791	1 ^a	S(p)+1526	5/2 ⁻			
3819	1 [@]	S(p)+1720	3/2 ⁻ ,5/2 ⁻			
3819	2 [@]	S(p)+2091	(3/2 ⁻ ,5/2,7/2 ⁻)			
3854.1	1 ^a	S(p)+1387.5	5/2 ⁻			
3861.8	1	S(p)+986.9				
3869	1 [@]	S(p)+1896	3/2 ⁻			
3878	4 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻			
3888.1	34 ^a	4266.1	(5/2 ⁻ ,7/2 ⁻)	377.8	5/2 ⁻	I_γ : I(3888):I(4266)=43:57, see 1975Sc08 .
3894	1 ^a	S(p)+1444	3/2 ⁻ ,5/2 ⁻			
3912	4 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻			
3915	3 ^a	S(p)+1444	3/2 ⁻ ,5/2 ⁻	4082.9	(3/2,5/2,7/2 ⁻)	
3931	2 [@]	S(p)+1960	3/2 ⁽⁻⁾			
3932.8	2	S(p)+986.9				
3938	1 [@]	S(p)+2213	5/2 ⁻			
3941	1 ^a	S(p)+1475	5/2 ⁻			
3943	3 [@]	S(p)+1764	(3/2 ⁻ ,5/2 ⁻)			
3955	19 ^a	3955.6	7/2 ⁻	0.0	7/2 ⁻	
3960	48	3960.0	(3/2 ⁻ ,5/2,7/2 ⁻)	0.0	7/2 ⁻	
3961.6	3	S(p)+952.6				
3962.6	2 ^a	S(p)+1496.8	5/2 ⁻			
3966.1	1 ^a	S(p)+1387.5	5/2 ⁻			

⁵²Cr(p,γ) E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
3970	1 ^a	S(p)+1522	5/2 ⁻					
3970.0	51 ^a	4348.0	(1/2 ⁻ ,3/2 ⁻)	377.8	5/2 ⁻			
3977	5 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻	4082.9	(3/2,5/2,7/2 ⁻)			
3981.1	1	S(p)+986.9						
3984	46 ^a	4362.0	1/2 ⁻ ,3/2,5/2,7/2 ⁻	377.8	5/2 ⁻			
4004	1 [@]	S(p)+2267	(3/2 ⁻ ,5/2,7/2 ⁻)					
4017	1 ^a	S(p)+1444	3/2 ⁻ ,5/2 ⁻					
4021	10 ^a	S(p)+1552	5/2 ⁻	4082.9	(3/2,5/2,7/2 ⁻)			
4026.5	65	5316.2		1289.9	3/2 ⁻			
4027.0	2 [@]	S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)					
4048.3	9	S(p)+986.9				D+(Q)	+0.20 <i>I</i>	δ : $\gamma(\theta)$ is also consistent with $\delta=-2.9$ <i>I</i> (1975Sc08).
4050.0	49	4427.7	3/2 ⁻	377.8	5/2 ⁻			
4052	1 ^a	S(p)+1605	3/2 ⁻					
4055	2 [@]	S(p)+1878	3/2 ⁻					
4055.3	3 ^a	S(p)+1608.5	3/2 ⁻					
4062.4	60 ^a	4062.2	(7/2 ⁻)	0.0	7/2 ⁻			
4066.7	6	S(p)+1005.8	1/2 ⁻					
4071	3 ^a	S(p)+1494	5/2					
4073	3 ^a	S(p)+1605	3/2 ⁻	4082.9	(3/2,5/2,7/2 ⁻)			
4073.6	17.7 ^a	S(p)+1496.8	5/2 ⁻					Additional information 25.
4075	7 ^a	S(p)+1628	5/2 ⁺					
4076.3	5 ^a	S(p)+1608.5	3/2 ⁻	4082.9	(3/2,5/2,7/2 ⁻)			
4084	5 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻					
4086	1 [@]	S(p)+1991	3/2 ⁻ ,5/2 ⁻					
4088	1 [@]	S(p)+1993	7/2 ⁻					
4089	1 ^a	S(p)+1557	5/2 ⁻					
4092	2 ^a	S(p)+1628	5/2 ⁺					
4098	2 ^a	S(p)+1522	5/2 ⁻					
4102	3 ^a	S(p)+1526	5/2 ⁻					
4109	1 ^a	S(p)+1475	5/2 ⁻					
4112	2 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻					
4128	1 ^a	S(p)+1557	5/2 ⁻	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)			
4144	100 ^a	4522.0	1/2 ⁻ ,3/2,5/2,7/2 ⁻	377.8	5/2 ⁻			
4153	4 [@]	S(p)+1978	(3/2 ⁻ ,5/2)					
4155	1 [@]	S(p)+2023		4427.7	3/2 ⁻			
4183	6 [@]	S(p)+1960	3/2 ⁽⁻⁾					
4198	3 ^a	S(p)+1628	5/2 ⁺	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)			
4201	6 [@]	S(p)+1978	(3/2 ⁻ ,5/2)					
4217	4 [@]	S(p)+1960	3/2 ⁽⁻⁾					

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ **1975Sc08,1979Fo19,1970Ma25** (continued)

$\gamma(^{53}\text{Mn})$ (continued)								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
4218.6	8 ^a	S(p)+1394.8	5/2 ⁻					
4227.0	1 [@]	S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)					
4240	3 [@]	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)					
4240.3	5 ^a	S(p)+1608.5	3/2 ⁻					
4241	1 [@]	S(p)+1776	5/2 ⁻					
4263	1 [@]	S(p)+2172	(3/2 ⁻ ,5/2,7/2 ⁻)					
4266	2 [@]	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)					
4266.1	50 ^a	4266.1	(5/2 ⁻ ,7/2 ⁻)	0.0	7/2 ⁻			
4278.8	3	S(p)+918.4		3200.8	5/2			
4286	1 [@]	S(p)+2733	3/2 ⁻ ,5/2,7/2 ⁻					
4292	1 [@]	S(p)+1720	3/2 ⁻ ,5/2 ⁻					
4293.5	3	S(p)+952.6						
4302	29 ^a	5592.1		1289.9	3/2 ⁻			
4325	1 [@]	S(p)+2154	(3/2 ⁻)					
4326.1	1 ^a	S(p)+1387.5	5/2 ⁻					
4327.3	4	S(p)+986.9						
4337	2 [@]	S(p)+1878	3/2 ⁻					
4341	1 [@]	S(p)+2789	3/2 ⁻	4988.2	1/2,3/2 ⁻ ,5/2 ⁻			
4343	1 [@]	S(p)+2172	(3/2 ⁻ ,5/2,7/2 ⁻)					
4356.0	3.0 [#]	S(p)+1901.1	7/2 ⁻					
4359	1 [@]	S(p)+1896	3/2 ⁻					
4359.0		S(p)+1901.1	7/2 ⁻					I _γ : I _γ (4358+4362)=3.0.
4363.9	5	S(p)+918.4						
4364.5	20	S(p)+1005.8	1/2 ⁻	3200.8	5/2			
4373	1 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻					
4389	1 [@]	S(p)+2023						
4389	36 ^a	4763.7	(3/2 ⁻ ,5/2,7/2 ⁻)	377.8	5/2 ⁻			
4393	3 [@]	S(p)+1764	(3/2 ⁻ ,5/2 ⁻)					
4395.0	3 [@]	S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)					
4395.6	1 ^a	S(p)+1394.8	5/2 ⁻					
4397.4	13	S(p)+952.6				D+(Q)	-0.07 2	δ : $\gamma(\theta)$ is also consistent with $\delta=-5.1$ 5 (1975Sc08).
4401.8	63	4780.3	(1/2 ⁻ ,3/2 ⁻)	377.8	5/2 ⁻			
4417	3 ^a	S(p)+1552	5/2 ⁻					
4417	2 [@]	S(p)+1960	3/2 ⁽⁻⁾					
4422	1 ^a	S(p)+1557	5/2 ⁻					
4425	1 [@]	S(p)+2172	(3/2 ⁻ ,5/2,7/2 ⁻)					
4428	5 [@]	S(p)+1971	7/2 ⁻					
4431	1 ^a	S(p)+1494	5/2					

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ [1975Sc08,1979Fo19,1970Ma25](#) (continued) $\gamma(^{53}\text{Mn})$ (continued)

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
4431.2	2	S(p)+986.9				
4433.6	7 ^a	S(p)+1496.8	5/2 ⁻			
4435	7 [@]	S(p)+1978	(3/2 ⁻ ,5/2)			
4436	1 [@]	S(p)+2348	5/2			
4444	5 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻			
4448	3 ^a	S(p)+1628	5/2 ⁺			
4448	1 [@]	S(p)+1991	3/2 ⁻ ,5/2 ⁻			
4449.6	5	S(p)+1005.8	1/2 ⁻			
4450	1 [@]	S(p)+1993	7/2 ⁻			
4452	1 [@]	S(p)+1991	3/2 ⁻ ,5/2 ⁻			
4453.9	1	S(p)+918.4				
4454	1 [@]	S(p)+1993	7/2 ⁻			
4462	3 ^a	S(p)+1526	5/2 ⁻			Additional information 37.
4471.7	14 ^a	S(p)+1608.5	3/2 ⁻			
4487.1	8	S(p)+952.6				
4501	5 [@]	S(p)+1875	(3/2 ⁻ ,5/2 ⁻)			
4502	2 [@]	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)			
4503	1 [@]	S(p)+2789	3/2 ⁻			
4505	7 [@]	S(p)+1878	3/2 ⁻			
4507	2 [@]	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)			
4512	1 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻			
4523	2 [@]	S(p)+1896	3/2 ⁻			
4523	2 [@]	S(p)+1960	3/2 ⁽⁻⁾	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)	
4527.0	1	S(p)+952.6		2978.2		
4527.4	8.8 [#]	S(p)+1901.1	7/2 ⁻			
4539	1 [@]	S(p)+1971	7/2 ⁻	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)	
4541	5 ^a	S(p)+1475	5/2 ⁻			
4542	1 [@]	S(p)+2087	(3/2 ⁻ ,5/2 ⁻)			
4546	3 [@]	S(p)+2091	(3/2 ⁻ ,5/2,7/2 ⁻)			
4546.6	2 ^a	S(p)+1394.8	5/2 ⁻			Additional information 10.
4548.1	7	S(p)+918.4				
4550.0	3	S(p)+986.9				
4551	1 [@]	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)	
4552	86 ^a	4552.1	(5/2,7/2 ⁻)	0.0	7/2 ⁻	
4560	19 ^a	4560.1	3/2 ⁻ ,5/2	0.0	7/2 ⁻	
4565	3 [@]	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)			
4581.0	1	S(p)+952.6				
4585	18 [@]	S(p)+1960	3/2 ⁽⁻⁾			Additional information 63.

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
4585.2	6	S(p)+918.4						
4587	1 @	S(p)+2133	(3/2 ⁻)					
4589	3 @	S(p)+2515	(3/2 ⁻ , 5/2, 7/2 ⁻)					
4596	7 ^a	S(p)+1444	3/2 ⁻ , 5/2 ⁻					
4603	12 @	S(p)+1978	(3/2 ⁻ , 5/2)					
4607	1 @	S(p)+2154	(3/2 ⁻)					
4615.4	1	S(p)+986.9						
4618.7	5	S(p)+952.6				D+(Q)	-0.1 3	δ : $\gamma(\theta)$ is also consistent with $\delta=+6.6 -10+20$ (1975Sc08).
4622	2 ^a	S(p)+1557	5/2 ⁻					
4626	6 ^a	S(p)+1475	5/2 ⁻					
4633.8	13	S(p)+1005.8	1/2 ⁻					
4635	37 ^a	4635.1	(5/2 ⁻ , 7/2 ⁻)	0.0	7/2 ⁻			Additional information 7.
4652.5	1	S(p)+986.9						
4655	4 @	S(p)+2490	(3/2 ⁻ , 5/2, 7/2 ⁻)					
4656	3 @	S(p)+1983	(3/2 ⁻ , 5/2, 7/2 ⁻)					
4658	9 ^a	S(p)+1507	5/2 ⁻ , 3/2 ⁻					
4658.2	9 ^a	S(p)+1608.5	3/2 ⁻					
4661	2 @	S(p)+2037	(3/2 ⁻ , 5/2 ⁻)					
4665	1 @	S(p)+2213	5/2 ⁻					
4669	4 @	S(p)+1810	3/2 ⁻	3710.0	7/2 ⁻			
4670	1 @	S(p)+2422	5/2 ⁻					
4671.0	26	S(p)+1005.8	1/2 ⁻					
4672.3	3 ^a	S(p)+1608.5	3/2 ⁻					
4676	1 ^a	S(p)+1526	5/2 ⁻					
4682	3 @	S(p)+2226	(3/2 ⁻ , 5/2, 7/2 ⁻)					
4699.8	1	S(p)+918.4						
4708	31 ^a	5998.2	3/2 ⁻ , 5/2, 7/2 ⁻	1289.9	3/2 ⁻			
4716.7	79	5094.6		377.8	5/2 ⁻			
4718	1 @	S(p)+2267	(3/2 ⁻ , 5/2, 7/2 ⁻)					
4721.1	1 ^a	S(p)+1387.5	5/2 ⁻					
4730	7 @	S(p)+2483	(5/2 ⁻ , 7/2)					
4731	3 @	S(p)+2659	3/2 ⁻ , 5/2, 7/2 ⁻					
4739.1	1 ^a	S(p)+1387.5	5/2 ⁻	3200.8	5/2			
4754.3	2	S(p)+918.4						
4755	1 @	S(p)+1896	3/2 ⁻	3710.0	7/2 ⁻			
4755	1 @	S(p)+2133	(3/2 ⁻)					
4762	35 ^a	4763.7	(3/2 ⁻ , 5/2, 7/2 ⁻)	0.0	7/2 ⁻			
4771	1 @	S(p)+1776	5/2 ⁻					

$\gamma(^{53}\text{Mn})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
4772.7	1	S(p)+918.4		2706.7	1/2 ⁺			
4775	1 @	S(p)+2154	(3/2 ⁻)					
4779	1 @	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)					
4784	4 @	S(p)+2226	(3/2 ⁻ ,5/2,7/2 ⁻)	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)			
4787.8	3	S(p)+952.6						
4793	3 @	S(p)+2344	(3/2 ⁻ ,5/2 ⁺)					
4798	1 @	S(p)+2348	5/2					
4802	1 @	S(p)+2721	5/2 ⁻					
4803	2 @	S(p)+1810	3/2 ⁻					
4811	18 @	S(p)+1764	(3/2 ⁻ ,5/2 ⁻)					
4813	4 @	S(p)+2733	3/2 ⁻ ,5/2,7/2 ⁻					
4813.9	11 @	S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)			D+(Q)	-0.07 ^e 3	δ : $\gamma(\theta)$ is also consistent with $\delta=+1.5$ I.
4817	3 @	S(p)+1960	3/2 ⁽⁻⁾	3710.0	7/2 ⁻			
4821	6 @	S(p)+2659	3/2 ⁻ ,5/2,7/2 ⁻					
4822	1 @	S(p)+2742	5/2					
4823.2	10	S(p)+952.6		2688.0	7/2 ⁻	D+(Q)	+0.1 I	δ : $\gamma(\theta)$ is also consistent with $\delta=-2.3$ 3 (1975Sc08).
4825	1 ^a	S(p)+1475	5/2 ⁻	3200.8	5/2			
4826	4 ^a	S(p)+1494	5/2					
4828.6	28.6 ^a	S(p)+1496.8	5/2 ⁻					Additional information 26.
4829.6	1 ^a	S(p)+1394.8	5/2 ⁻	3128.0	(5/2 ⁻)			
4835	6 @	S(p)+1978	(3/2 ⁻ ,5/2)	3710.0	7/2 ⁻			
4835	4 @	S(p)+2386	(3/2 ⁻ ,5/2,7/2 ⁻)					
4837	1 @	S(p)+1776	5/2 ⁻					
4839	14 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻					
4839.6	0.5	S(p)+986.9		2706.7	1/2 ⁺			
4840.0	3	S(p)+1005.8	1/2 ⁻					
4844	1 ^a	S(p)+1494	5/2	3200.8	5/2			
4846	2 @	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)					
4846.4	12 ^a	S(p)+1496.8	5/2 ⁻	3200.8	5/2	D+Q	+0.28 ^e 3	
4848	4 @	S(p)+2604	3/2 ⁻ ,5/2,7/2 ⁻					
4855		S(p)+2775	3/2 ⁻					
4857.0	3	S(p)+986.9		2688.0	7/2 ⁻	D+Q	+0.30 5	δ : $\gamma(\theta)$ is also consistent with $\delta=-3.3$ 4 (1975Sc08).
4857	7 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻	3200.8	5/2			
4868	1 @	S(p)+2789	3/2 ⁻					
4869	7 @	S(p)+1810	3/2 ⁻					
4875	3 ^a	S(p)+1526	5/2 ⁻					
4875.4	9	S(p)+1005.8	1/2 ⁻	2688.0	7/2 ⁻			

$\gamma(^{53}\text{Mn})$ (continued)								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
4879	4 ^a	S(p)+1444	3/2 ⁻ ,5/2 ⁻	3128.0	(5/2 ⁻)			
4883	3 ^a	S(p)+1552	5/2 ⁻					
4885	3 [@]	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)			
4889	2 [@]	S(p)+1896	3/2 ⁻					
4892.3	2.0 [#]	S(p)+1901.1	7/2 ⁻					
4893	3 [@]	S(p)+2733	3/2 ⁻ ,5/2,7/2 ⁻					
4901	1 ^a	S(p)+1552	5/2 ⁻					
4906	1 ^a	S(p)+1557	5/2 ⁻					
4909	2 ^a	S(p)+1475	5/2 ⁻	3128.0	(5/2 ⁻)			
4911	2 [@]	S(p)+2468	(3/2 ⁻ ,5/2,7/2)					
4924	2 ^a	S(p)+1522	5/2 ⁻					
4925	2 ^a	S(p)+1494	5/2	3128.0	(5/2 ⁻)			
4928	17 ^a	S(p)+1526	5/2 ⁻					
4931.5	7.9 ^a	S(p)+1496.8	5/2 ⁻	3128.0	(5/2 ⁻)	D+(Q)	+0.09 ^e 7	Additional information 38. δ : $\gamma(\theta)$ is also consistent with $\delta=+3.2$ 8. Additional information 27.
4935	3 ^a	S(p)+1605	3/2 ⁻					
4941	6 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻	3128.0	(5/2 ⁻)			
4951	2 [@]	S(p)+1960	3/2 ⁽⁻⁾					
4953	24 ^a	S(p)+1605	3/2 ⁻					
4954.4	0.5	S(p)+986.9						
4955	3 ^a	S(p)+1522	5/2 ⁻	3128.0	(5/2 ⁻)			
4955	1 [@]	S(p)+1896	3/2 ⁻					
4956.3	4 ^a	S(p)+1608.5	3/2 ⁻					
4959	9 ^a	S(p)+1557	5/2 ⁻					
4961	2 [@]	S(p)+2515	(3/2 ⁻ ,5/2,7/2 ⁻)					
4964	7 [@]	S(p)+2410	5/2 ⁻ ,7/2 ⁻	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)			
4964	1 [@]	S(p)+2721	5/2 ⁻					
4969	7 [@]	S(p)+1978	(3/2 ⁻ ,5/2)					
4970	2 ^a	S(p)+1444	3/2 ⁻ ,5/2 ⁻					
4985	14 ^a	S(p)+1552	5/2 ⁻	3128.0	(5/2 ⁻)			
4987	1 [@]	S(p)+2133	(3/2 ⁻)	3710.0	7/2 ⁻			
4988	1 [@]	S(p)+2911	(3/2 ⁻)					
4989	1 [@]	S(p)+2023		3595.3	3/2 ⁻ ,5/2,7/2			
4990	8 ^a	S(p)+1557	5/2 ⁻	3128.0	(5/2 ⁻)			
4992.3	60	5370.7		377.8	5/2 ⁻			
4996	1 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻					
4996	1 [@]	S(p)+2789	3/2 ⁻	4348.0	(1/2 ⁻ ,3/2 ⁻)			
5006	7 ^a	S(p)+1605	3/2 ⁻					

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ [1975Sc08,1979Fo19,1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ^d	Comments
5009.3	1 ^a	S(p)+1608.5	3/2 ⁻					
5027	1 [@]	S(p)+2037	(3/2 ⁻ ,5/2 ⁻)					
5029	2 ^a	S(p)+1628	5/2 ⁺					
5030	1 [@]	S(p)+2585	3/2 ⁻ ,5/2 ⁻					
5030	1 [@]	S(p)+2789	3/2 ⁻					
5037	6 ^a	S(p)+1605	3/2 ⁻	3128.0	(5/2 ⁻)			
5038	4 [@]	S(p)+2610	3/2 ⁻ ,5/2 ⁻					
5040.3	2 ^a	S(p)+1608.5	3/2 ⁻	3128.0	(5/2 ⁻)			
5041	8 [@]	S(p)+2483	(5/2 ⁻ ,7/2)	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)			
5049	2 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻					
5051.6	4 ^a	S(p)+1394.8	5/2 ⁻					
5053.8	3	S(p)+918.4						
5055	2 [@]	S(p)+2610	3/2 ⁻ ,5/2 ⁻					
5056	5 [@]	S(p)+2629	3/2 ⁻ ,5/2 ⁺					
5060	12 ^a	S(p)+1628	5/2 ⁺	3128.0	(5/2 ⁻)			
5064	2 ^a	S(p)+1444	3/2 ⁻ ,5/2 ⁻					
5074	2 [@]	S(p)+2023						
5080	2 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻	3128.0	(5/2 ⁻)			
5081	4 ^a	S(p)+1557	5/2 ⁻					
5087.4	19	S(p)+952.6				D+(Q)	-0.07 5	δ : $\gamma(\theta)$ is also consistent with $\delta=+5.0 -8+10$ (1975Sc08).
5094	1 ^a	S(p)+1475	5/2 ⁻					
5098.5	1	S(p)+1005.8	1/2 ⁻					
5101	10 ^a	S(p)+1444	3/2 ⁻ ,5/2 ⁻					Additional information 14.
5109	6 [@]	S(p)+1764	(3/2 ⁻ ,5/2 ⁻)					
5111.7		S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)			D+(Q)	-0.11 11	I_γ : I(5113):I(7005)=5:15, see 1984Pe20 .
5112.1	37	5490.4		377.8	5/2 ⁻			
5115.7	1.5	S(p)+1496.8	5/2 ⁻			D+(Q)	+0.05 7	
5118	1 [@]	S(p)+2267	(3/2 ⁻ ,5/2,7/2 ⁻)	3710.0	7/2 ⁻			
5121	1 [@]	S(p)+1776	5/2 ⁻					
5121.2	1	S(p)+986.9						
5124	13 [@]	S(p)+2681	5/2					
5125	6 [@]	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)					
5127	2 [@]	S(p)+2087	(3/2 ⁻ ,5/2 ⁻)					
5128	1 ^a	S(p)+1605	3/2 ⁻					
5131	1 ^a	S(p)+1475	5/2 ⁻	2912.6	3/2 ⁻			
5133	1 [@]	S(p)+1991	3/2 ⁻ ,5/2 ⁻					
5134	2 [@]	S(p)+2691	3/2 ⁻ ,5/2,7/2 ⁻					
5135	1 [@]	S(p)+1993	7/2 ⁻					

$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ^d	Comments
5136	2@	S(p)+2585	3/2 ⁻ ,5/2 ⁻	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)			
5139.6	7	S(p)+1005.8	1/2 ⁻					
5150	2@	S(p)+2911	(3/2 ⁻)					
5152.6	<1 ^a	S(p)+1496.8	5/2 ⁻	2912.6	3/2 ⁻			
5163	12 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻	2912.6	3/2 ⁻			Additional information 30.
5163	2@	S(p)+2716	3/2 ⁻ ,5/2,7/2 ⁻					
5167	2@	S(p)+2742	5/2					
5167.3		S(p)+1394.8	5/2 ⁻					I _γ : I(5168):I(7929)=(<1.0):56.6, see 1986Ra19.
5168	2@	S(p)+2721	5/2 ⁻					
5170	7@	S(p)+2659	3/2 ⁻ ,5/2,7/2 ⁻					
5171	2 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻					
5173	2@	S(p)+2133	(3/2 ⁻)					
5176	3@	S(p)+1776	5/2 ⁻					
5181	2 ^a	S(p)+1526	5/2 ⁻	2912.6	3/2 ⁻			
5183	3@	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)					
5184	2@	S(p)+2742	5/2					
5193	1@	S(p)+2154	(3/2 ⁻)					
5196.0	1@	S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)	3128.0	(5/2 ⁻)			
5198	2@	S(p)+2585	3/2 ⁻ ,5/2 ⁻	3955.6	7/2 ⁻			
5200.7	74	5578.6		377.8	5/2 ⁻			
5201	1@	S(p)+2691	3/2 ⁻ ,5/2,7/2 ⁻					
5212	14 ^a	S(p)+1557	5/2 ⁻	2912.6	3/2 ⁻			
5214	30 ^a	5592.1		377.8	5/2 ⁻			
5220.3	1	S(p)+952.6						
5224	4@	S(p)+1800	7/2 ⁻	3128.0	(5/2 ⁻)			
5230	1@	S(p)+2789	3/2 ⁻					
5235.4	1 ^a	S(p)+1387.5	5/2 ⁻	2706.7	1/2 ⁺			
5238	7@	S(p)+1810	3/2 ⁻	3128.0	(5/2 ⁻)			
5239	1@	S(p)+1896	3/2 ⁻					
5241.6	2 ^a	S(p)+1394.8	5/2 ⁻	2706.7	1/2 ⁺			
5252	2@	S(p)+2267	(3/2 ⁻ ,5/2,7/2 ⁻)					
5254.1	11	S(p)+986.9				D+(Q)	-0.07 3	δ: γ(θ) is also consistent with δ=-3.5 3 (1975Sc08).
5255	3@	S(p)+2643	3/2 ⁻ ,5/2 ⁺	3955.6	7/2 ⁻			
5258	8@	S(p)+2410	5/2 ⁻ ,7/2 ⁻	3710.0	7/2 ⁻			
5259	3 ^a	S(p)+1605	3/2 ⁻	2912.6	3/2 ⁻			
5262.3	7 ^a	S(p)+1608.5	3/2 ⁻	2912.6	3/2 ⁻			
5264	3@	S(p)+2710	3/2 ⁻ ,5/2 ⁻ ,7/2 ⁻	3998.9	(3/2 ⁻ ,5/2,7/2 ⁻)			

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ [1975Sc08,1979Fo19,1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
5270	4 ^a	S(p)+1444	3/2 ⁻ , 5/2 ⁻					
5270	2 [@]	S(p)+2422	5/2 ⁻	3710.0	7/2 ⁻			
5278	2 [@]	S(p)+2226	(3/2 ⁻ , 5/2, 7/2 ⁻)					
5282	3 ^a	S(p)+1628	5/2 ⁺	2912.6	3/2 ⁻			
5283	2 [@]	S(p)+1960	3/2 ⁽⁻⁾					
5284	2 [@]	S(p)+1764	(3/2 ⁻ , 5/2 ⁻)					
5286.0	3 [@]	S(p)+1767.2	(3/2 ⁻ , 5/2 ⁻)					
5291	2 ^a	S(p)+1444	3/2 ⁻ , 5/2 ⁻	2706.7	1/2 ⁺			
5294	1 [@]	S(p)+1896	3/2 ⁻					
5301	3 [@]	S(p)+1960	3/2 ⁽⁻⁾					
5302	1 [@]	S(p)+2691	3/2 ⁻ , 5/2, 7/2 ⁻	3955.6	7/2 ⁻			
5306	4 ^a	S(p)+1444	3/2 ⁻ , 5/2 ⁻	2688.0	7/2 ⁻			
5306	2 [@]	S(p)+2695	9/2 ⁺	3955.6	7/2 ⁻			
5319	2 [@]	S(p)+1896	3/2 ⁻	3128.0	(5/2 ⁻)			
5321	2 ^a	S(p)+1475	5/2 ⁻	2706.7	1/2 ⁺			Additional information 17.
5321.6	<1 ^a	S(p)+1496.8	5/2 ⁻					
5324	3 [@]	S(p)+1983	(3/2 ⁻ , 5/2, 7/2 ⁻)					
5328	4 [@]	S(p)+1810	3/2 ⁻					
5332	2 [@]	S(p)+1991	3/2 ⁻ , 5/2 ⁻					
5334	1 [@]	S(p)+1720	3/2 ⁻ , 5/2 ⁻					
5334	2 [@]	S(p)+1993	7/2 ⁻					
5342.6	1 ^a	S(p)+1496.8	5/2 ⁻	2706.7	1/2 ⁺			
5347	7 [@]	S(p)+2737	3/2 ⁻ , 5/2 ⁻	3955.6	7/2 ⁻			
5348.1	2 ^a	S(p)+1387.5	5/2 ⁻					
5350	4 [@]	S(p)+2911	(3/2 ⁻)					
5350.1	15	S(p)+1735.7	5/2 ⁻			D+(Q)	-0.01 ^e 7	
5352	1 [@]	S(p)+2742	5/2	3955.6	7/2 ⁻			
5353	5 ^a	S(p)+1507	5/2 ⁻ , 3/2 ⁻	2706.7	1/2 ⁺			
5353	4 [@]	S(p)+2023						
5354	9 [@]	S(p)+1740	(3/2 ⁻ , 5/2 ⁻)					
5354	4 [@]	S(p)+2911	(3/2 ⁻)					
5355.0		S(p)+1394.8	5/2 ⁻					I _γ : I(5356):I(7929)=1.6:56.6, see 1986Ra19 .
5367	8 ^a	S(p)+1522	5/2 ⁻	2706.7	1/2 ⁺			Additional information 31.
5369	4 [@]	S(p)+2386	(3/2 ⁻ , 5/2, 7/2 ⁻)					
5371	6 ^a	S(p)+1526	5/2 ⁻	2706.7	1/2 ⁺			
5371	11 [@]	S(p)+1720	3/2 ⁻ , 5/2 ⁻	2912.6	3/2 ⁻			Additional information 47.
5375.3	10	S(p)+1723.6	5/2, 3/2	2912.6	3/2 ⁻	D+(Q)	-0.05 ^e 5	

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ **1975Sc08,1979Fo19,1970Ma25** (continued)

$\gamma(^{53}\text{Mn})$ (continued)								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
5377	2 [@]	S(p)+2037	(3/2 ⁻ ,5/2 ⁻)					
5378	9 [@]	S(p)+1764	(3/2 ⁻ ,5/2 ⁻)					
5380	2 [@]	S(p)+2770	5/2 ⁻	3955.6	7/2 ⁻			
5381.0	6 [@]	S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)			D+Q	-0.9 ^e 3	
5382	3 [@]	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)					
5386	9 [@]	S(p)+1960	3/2 ⁽⁻⁾	3128.0	(5/2 ⁻)			Additional information 64.
5387	1 [@]	S(p)+1991	3/2 ⁻ ,5/2 ⁻					
5389	1 [@]	S(p)+1993	7/2 ⁻					
5392	6 [@]	S(p)+1971	7/2 ⁻					
5396	3 [@]	S(p)+1878	3/2 ⁻					
5399	2 [@]	S(p)+1978	(3/2 ⁻ ,5/2)					
5402	19 ^a	S(p)+1557	5/2 ⁻	2706.7	1/2 ⁺			
5404	10 [@]	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)					
5404	1 [@]	S(p)+2422	5/2 ⁻					
5417	2 [@]	S(p)+1991	3/2 ⁻ ,5/2 ⁻	3128.0	(5/2 ⁻)			
5419	2 [@]	S(p)+1993	7/2 ⁻	3128.0	(5/2 ⁻)			
5421	1 [@]	S(p)+2439	5/2 ⁻					
5422	13 [@]	S(p)+1810	3/2 ⁻					Additional information 56.
5427	2 [@]	S(p)+1776	5/2 ⁻	2912.6	3/2 ⁻			
5430	4 [@]	S(p)+2585	3/2 ⁻ ,5/2 ⁻	3710.0	7/2 ⁻			
5431.5	4 ^a	S(p)+1608.5	3/2 ⁻					
5432	1 [@]	S(p)+2037	(3/2 ⁻ ,5/2 ⁻)					
5434.5	30	5434.4		0.0	7/2 ⁻			
5437	4 [@]	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)					
5445	1 [@]	S(p)+2468	(3/2 ⁻ ,5/2,7/2)					
5446	46 [@]	S(p)+1930	5/2 ⁽⁺⁾					Additional information 62.
5448	1 [@]	S(p)+2023		3128.0	(5/2 ⁻)			
5448	3 [@]	S(p)+2604	3/2 ⁻ ,5/2,7/2 ⁻	3710.0	7/2 ⁻			
5449	1 ^a	S(p)+1605	3/2 ⁻	2706.7	1/2 ⁺			
5451	1 ^a	S(p)+1628	5/2 ⁺					
5452.3	2 ^a	S(p)+1608.5	3/2 ⁻					
5453	4 ^a	S(p)+1494	5/2					
5453	1 [@]	S(p)+2133	(3/2 ⁻)					
5456	2 [@]	S(p)+2911	(3/2 ⁻)					
5459	6 [@]	S(p)+1810	3/2 ⁻	2912.6	3/2 ⁻			
5464	5 ^a	S(p)+1605	3/2 ⁻	2688.0	7/2 ⁻			

$\gamma(^{53}\text{Mn})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
5466.9	24 ^a	S(p)+1608.5	3/2 ⁻	2706.7	1/2 ⁺	D+Q	+0.17 ^f	
5471	2 [@]	S(p)+2133	(3/2 ⁻)					
5471	5 [@]	S(p)+2490	(3/2 ⁻ ,5/2,7/2 ⁻)					
5476	3 [@]	S(p)+1960	3/2 ⁽⁻⁾					
5480	8 ^a	S(p)+1522	5/2 ⁻					Additional information 32.
5481	1 [@]	S(p)+2087	(3/2 ⁻ ,5/2 ⁻)					
5484	2 ^a	S(p)+1526	5/2 ⁻					
5487	1 [@]	S(p)+2439	5/2 ⁻					
5491	2 [@]	S(p)+2172	(3/2 ⁻ ,5/2,7/2 ⁻)					
5492	13 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻	2706.7	1/2 ⁺			Additional information 44.
5494	2 [@]	S(p)+1978	(3/2 ⁻ ,5/2)					
5506	3 [@]	S(p)+2087	(3/2 ⁻ ,5/2 ⁻)					
5506	2 [@]	S(p)+2459	(3/2 ⁻ ,5/2,7/2 ⁻)					
5507	1 [@]	S(p)+1991	3/2 ⁻ ,5/2 ⁻					
5508	1 [@]	S(p)+1896	3/2 ⁻					
5509	1 [@]	S(p)+1993	7/2 ⁻					
5511	2 [@]	S(p)+2468	(3/2 ⁻ ,5/2,7/2)					
5521.4	6	S(p)+1394.8	5/2 ⁻			M1+E2	-1.9	Additional information 11.
5527	3 [@]	S(p)+1878	3/2 ⁻	2912.6	3/2 ⁻			
5531	1 [@]	S(p)+2213	5/2 ⁻					
5537	8 [@]	S(p)+2490	(3/2 ⁻ ,5/2,7/2 ⁻)					
5538	3 [@]	S(p)+2404	(3/2 ⁻ ,5/2 ⁺)					
5540	7 [@]	S(p)+2407	(3/2 ⁻ ,5/2,7/2 ⁻)					
5542	8 [@]	S(p)+2409	7/2 ⁻					
5545	1 [@]	S(p)+1896	3/2 ⁻	2912.6	3/2 ⁻			
5549	3 [@]	S(p)+2213	5/2 ⁻					
5549.4	2.2 [#]	S(p)+1901.1	7/2 ⁻	2912.6	3/2 ⁻			
5555	2 [@]	S(p)+2422	5/2 ⁻					
5557	7 [@]	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)					
5564	2 [@]	S(p)+2585	3/2 ⁻ ,5/2 ⁻					
5564	1 [@]	S(p)+2721	5/2 ⁻	3710.0	7/2 ⁻			
5570	1 ^a	S(p)+1444	3/2 ⁻ ,5/2 ⁻					
5570	2 [@]	S(p)+1960	3/2 ⁽⁻⁾					
5572	2 [@]	S(p)+2439	5/2 ⁻					
5574.7	30	S(p)+1735.7	5/2 ⁻			D+Q	-0.53 ^e 9	
5576	2 [@]	S(p)+2154	(3/2 ⁻)					

$\gamma(^{53}\text{Mn})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ^d	Comments
5581	24 @	S(p)+1740	(3/2 ⁻ ,5/2 ⁻)					
5581	1 @	S(p)+1971	7/2 ⁻					
5591	4 @	S(p)+2459	(3/2 ⁻ ,5/2,7/2 ⁻)					
5594	2 @	S(p)+2172	(3/2 ⁻ ,5/2,7/2 ⁻)					
5596	6 @	S(p)+1740	(3/2 ⁻ ,5/2 ⁻)	2706.7	1/2 ⁺			
5602	9 @	S(p)+2267	(3/2 ⁻ ,5/2,7/2 ⁻)					
5605	19 @	S(p)+1764	(3/2 ⁻ ,5/2 ⁻)					
5605.6	7 @	S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)			Q+(D)	-3.6 ^e 7	
5607	3 @	S(p)+1960	3/2 ⁽⁻⁾	2912.6	3/2 ⁻			
5617	5 @	S(p)+2226	(3/2 ⁻ ,5/2,7/2 ⁻)					
5620	41 ^a	5998.2	3/2 ⁻ ,5/2,7/2 ⁻	377.8	5/2 ⁻			
5622.0	4 @	S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)	2706.7	1/2 ⁺			
5622	3 @	S(p)+2490	(3/2 ⁻ ,5/2,7/2 ⁻)					
5625	4 @	S(p)+1978	(3/2 ⁻ ,5/2)	2912.6	3/2 ⁻			
5628	5 @	S(p)+1810	3/2 ⁻					
5630	3 @	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)	2912.6	3/2 ⁻			
5630	2 @	S(p)+2585	3/2 ⁻ ,5/2 ⁻					
5634	2 @	S(p)+2300	5/2					
5638	1 @	S(p)+1991	3/2 ⁻ ,5/2 ⁻	2912.6	3/2 ⁻			
5640	1 @	S(p)+1993	7/2 ⁻	2912.6	3/2 ⁻			
5645	5 @	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)					
5646	21 ^a	S(p)+1522	5/2 ⁻					Additional information 33.
5646	1 @	S(p)+2133	(3/2 ⁻)					
5647	2 @	S(p)+2670	5/2 ⁻					
5647.1	4 ^a	S(p)+1387.5	5/2 ⁻					
5648	3 @	S(p)+2604	3/2 ⁻ ,5/2,7/2 ⁻					
5649	6 @	S(p)+1810	3/2 ⁻					
5650	9 ^a	S(p)+1526	5/2 ⁻					Additional information 39.
5653.6	2 ^a	S(p)+1394.8	5/2 ⁻					
5659	3 @	S(p)+2344	(3/2 ⁻ ,5/2 ⁺)					
5663	10 @	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)					
5664	10 @	S(p)+1810	3/2 ⁻	2706.7	1/2 ⁺			
5664.0	1.0 [#]	S(p)+1901.1	7/2 ⁻					
5674	2 @	S(p)+1720	3/2 ⁻ ,5/2 ⁻					
5676	2 ^a	S(p)+1552	5/2 ⁻					

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ [1975Sc08,1979Fo19,1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)								
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d	Comments
5680	3 @	S(p)+2364	5/2					
5680	3 @	S(p)+2840	3/2 ⁻ , 5/2, 7/2 ⁻					
5683	1 @	S(p)+2037	(3/2 ⁻ , 5/2 ⁻)	2912.6	3/2 ⁻			
5684	1 @	S(p)+2172	(3/2 ⁻ , 5/2, 7/2 ⁻)					
5687	1 @	S(p)+2267	(3/2 ⁻ , 5/2, 7/2 ⁻)					
5687	7 @	S(p)+2710	3/2 ⁻ , 5/2 ⁻ , 7/2 ⁻					
5688	8 @	S(p)+2042	(3/2 ⁻ , 5/2, 7/2 ⁻)	2912.6	3/2 ⁻			
5689	3 @	S(p)+2300	5/2					
5695	1 @	S(p)+2855	3/2 ⁻ , 5/2, 7/2 ⁻					
5696	6 @	S(p)+1878	3/2 ⁻					
5698	5 @	S(p)+2364	5/2					
5698	1 @	S(p)+2721	5/2 ⁻					
5703	47 ^a	S(p)+1444	3/2 ⁻ , 5/2 ⁻					Additional information 15.
5713	5 @	S(p)+1875	(3/2 ⁻ , 5/2 ⁻)					
5713	1 @	S(p)+2670	5/2 ⁻					
5717	6 @	S(p)+1878	3/2 ⁻					
5718	3 @	S(p)+2329	(3/2 ⁻ , 5/2 ⁺)					
5723	13 @	S(p)+2409	7/2 ⁻					
5728	12 ^a	S(p)+1605	3/2 ⁻					
5728	2 @	S(p)+1875	(3/2 ⁻ , 5/2 ⁻)	2706.7	1/2 ⁺			
5730	1 @	S(p)+1776	5/2 ⁻					
5731.1	10 ^a	S(p)+1608.5	3/2 ⁻	2447.9				
5732	11 @	S(p)+1878	3/2 ⁻	2706.7	1/2 ⁺			Additional information 57.
5732	2 @	S(p)+2087	(3/2 ⁻ , 5/2 ⁻)	2912.6	3/2 ⁻			
5733	6 ^a	S(p)+1475	5/2 ⁻					Additional information 18.
5735	1 @	S(p)+1896	3/2 ⁻					
5741	2 @	S(p)+2409	7/2 ⁻					
5743	3 @	S(p)+2329	(3/2 ⁻ , 5/2 ⁺)					
5746	23 @	S(p)+1930	5/2 ⁽⁺⁾					
5750	2 @	S(p)+2721	5/2 ⁻	3532.3	(3/2 ⁻ , 5/2, 7/2 ⁻)			
5751	2 ^a	S(p)+1628	5/2 ⁺					
5752	16 ^a	S(p)+1494	5/2					Additional information 21.
5753	9 @	S(p)+1800	7/2 ⁻					Additional information 52.
5753	5 @	S(p)+2439	5/2 ⁻					
5754.6	1 ^a	S(p)+1496.8	5/2 ⁻					
5755.5	10	S(p)+1803.1	5/2			D+(Q)	-0.01 ^e 6	

$\gamma(^{53}\text{Mn})$ (continued)

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Comments
5757	3 @	S(p)+2344	$(3/2^-, 5/2^+)$			
5758	5 @	S(p)+2629	$3/2^-, 5/2^+$			
5759	2 @	S(p)+2716	$3/2^-, 5/2, 7/2^-$			
5764	2 @	S(p)+2721	$5/2^-$			
5767	3 @	S(p)+2348	$5/2$			
5771	8 ^a	S(p)+1648	$3/2^-, 5/2^-$			Additional information 45.
5771	2 @	S(p)+2439	$5/2^-$			
5777	1 @	S(p)+2267	$(3/2^-, 5/2, 7/2^-)$			
5779	34 ^a	S(p)+1522	$5/2^-$			Additional information 34.
5783	8 ^a	S(p)+1526	$5/2^-$			Additional information 40.
5783	1 @	S(p)+2364	$5/2$			
5794	1 @	S(p)+1978	$(3/2^-, 5/2)$			
5795	12 @	S(p)+2464	$(3/2^-, 5/2, 7/2^-)$			
5795	1 @	S(p)+2468	$(3/2^-, 5/2, 7/2)$			
5796	6 @	S(p)+2409	$7/2^-$			
5797	3 @	S(p)+1960	$3/2^{(-)}$			
5797	4 @	S(p)+2410	$5/2^-, 7/2^-$			
5798	2 @	S(p)+2770	$5/2^-$	3532.3	$(3/2^-, 5/2, 7/2^-)$	
5799	3 @	S(p)+1983	$(3/2^-, 5/2, 7/2^-)$			
5803	7 @	S(p)+2490	$(3/2^-, 5/2, 7/2^-)$			
5804	3 @	S(p)+2386	$(3/2^-, 5/2, 7/2^-)$			
5809	28 ^a	S(p)+1552	$5/2^-$			
5812	4 @	S(p)+1960	$3/2^{(-)}$	2706.7	$1/2^+$	
5812	1 @	S(p)+2770	$5/2^-$			
5815	16 @	S(p)+1978	$(3/2^-, 5/2)$			
5819	1 @	S(p)+2691	$3/2^-, 5/2, 7/2^-$			
5827	3 @	S(p)+2515	$(3/2^-, 5/2, 7/2^-)$			
5828	4 @	S(p)+1991	$3/2^-, 5/2^-$			
5830	4 @	S(p)+1993	$7/2^-$			
5830	2 @	S(p)+2789	$3/2^-$	3532.3	$(3/2^-, 5/2, 7/2^-)$	
5840	1 @	S(p)+1720	$3/2^-, 5/2^-$	2447.9		
5842	4 @	S(p)+1991	$3/2^-, 5/2^-$	2706.7	$1/2^+$	
5845	4 @	S(p)+1993	$7/2^-$	2706.7	$1/2^+$	
5848	1 @	S(p)+2431	$5/2^-$			
5849	2 @	S(p)+2721	$5/2^-$			

$\gamma(^{53}\text{Mn})$ (continued)							
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ^d
5850	1 @	S(p)+2468	(3/2 ⁻ ,5/2,7/2)	3182.0	(3/2 ⁻ ,5/2 ⁻)		
5851	2 @	S(p)+2439	5/2 ⁻				
5857	2 @	S(p)+2348	5/2				
5860	14 @	S(p)+1740	(3/2 ⁻ ,5/2 ⁻)	2447.9			
5860	7 @	S(p)+2733	3/2 ⁻ ,5/2,7/2 ⁻				
5863	5 @	S(p)+2837	3/2 ⁻	3532.3	(3/2 ⁻ ,5/2,7/2 ⁻)		
5864.0	7 ^a	S(p)+1608.5	3/2 ⁻				
5871	3 @	S(p)+2267	(3/2 ⁻ ,5/2,7/2 ⁻)				
5875	1 @	S(p)+2468	(3/2 ⁻ ,5/2,7/2)				
5876	4 @	S(p)+2490	(3/2 ⁻ ,5/2,7/2 ⁻)	3182.0	(3/2 ⁻ ,5/2 ⁻)		
5878	11 @	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)				
5880	1 @	S(p)+2468	(3/2 ⁻ ,5/2,7/2)				
5884	4 @	S(p)+2911	(3/2 ⁻)	3595.3	3/2 ⁻ ,5/2,7/2		
5894	5 @	S(p)+2386	(3/2 ⁻ ,5/2,7/2 ⁻)				
5900	2 @	S(p)+2515	(3/2 ⁻ ,5/2,7/2 ⁻)	3182.0	(3/2 ⁻ ,5/2 ⁻)		
5904	2 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻				
5906	6 @	S(p)+2490	(3/2 ⁻ ,5/2,7/2 ⁻)				
5912	1 @	S(p)+2404	(3/2 ⁻ ,5/2 ⁺)				
5914	3 @	S(p)+2585	3/2 ⁻ ,5/2 ⁻				
5916	5 @	S(p)+2409	7/2 ⁻				
5917	18 @	S(p)+2410	5/2 ⁻ ,7/2 ⁻				
5919	18 @	S(p)+1800	7/2 ⁻	2447.9			
5921	6 @	S(p)+1971	7/2 ⁻				
5921.9	30	S(p)+1803.1	5/2	2447.9		D+(Q)	-0.00 ^e 3
5929	2 @	S(p)+2422	5/2 ⁻				
5932	2 @	S(p)+2291	(3/2 ⁻ ,5/2,7/2 ⁻)	2912.6	3/2 ⁻		
5932	2 @	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)				
5932	7 @	S(p)+2604	3/2 ⁻ ,5/2,7/2 ⁻				
5937	5 @	S(p)+2087	(3/2 ⁻ ,5/2 ⁻)	2706.7	1/2 ⁺		
5939	9 @	S(p)+2610	3/2 ⁻ ,5/2 ⁻				
5941	2 @	S(p)+1991	3/2 ⁻ ,5/2 ⁻				
5943	2 @	S(p)+1993	7/2 ⁻				
5946	3 @	S(p)+2133	(3/2 ⁻)				
5946	3 @	S(p)+2439	5/2 ⁻				
5950	4 @	S(p)+2911	(3/2 ⁻)				

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ [1975Sc08,1979Fo19,1970Ma25](#) (continued)

 $\gamma(^{53}\text{Mn})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ ^d
5957	4 @	S(p)+2629	3/2 ⁻ , 5/2 ⁺				
5965	7 @	S(p)+2840	3/2 ⁻ , 5/2, 7/2 ⁻				
5966	2 @	S(p)+2154	(3/2 ⁻)				
5969	2 @	S(p)+2329	(3/2 ⁻ , 5/2 ⁺)	2912.6	3/2 ⁻		
5970	8 @	S(p)+2464	(3/2 ⁻ , 5/2, 7/2 ⁻)				
5973	1 @	S(p)+1720	3/2 ⁻ , 5/2 ⁻				
5979	6 @	S(p)+2670	5/2 ⁻				
5983	7 @	S(p)+2344	(3/2 ⁻ , 5/2 ⁺)	2912.6	3/2 ⁻		
5986	13 @	S(p)+2037	(3/2 ⁻ , 5/2 ⁻)				
5987	10 @	S(p)+2659	3/2 ⁻ , 5/2, 7/2 ⁻				
5988	2 @	S(p)+2348	5/2	2912.6	3/2 ⁻		
5988		S(p)+3154	5/2 ⁻ , 7/2 ⁻	3710.0	7/2 ⁻		
5991	7 @	S(p)+2042	(3/2 ⁻ , 5/2, 7/2 ⁻)				
5994	7 @	S(p)+2585	3/2 ⁻ , 5/2 ⁻				
5994	4 @	S(p)+2610	3/2 ⁻ , 5/2 ⁻	3182.0	(3/2 ⁻ , 5/2 ⁻)		
5996	4 @	S(p)+1878	3/2 ⁻	2447.9			
5997	5 @	S(p)+2670	5/2 ⁻				
6000	2 @	S(p)+2691	3/2 ⁻ , 5/2, 7/2 ⁻				
6002	2 @	S(p)+2154	(3/2 ⁻)	2706.7	1/2 ⁺		
6004	1 @	S(p)+2364	5/2	2912.6	3/2 ⁻		
6004	3 @	S(p)+2695	9/2 ⁺				
6008	13 @	S(p)+2681	5/2				
6011	11 @	S(p)+2410	5/2 ⁻ , 7/2 ⁻	2967.4			
6015	5 @	S(p)+2688	3/2 ⁻ , 5/2, 7/2 ⁻				
6017	19 @	S(p)+1764	(3/2 ⁻ , 5/2 ⁻)				
6017	1 @	S(p)+2604	3/2 ⁻ , 5/2, 7/2 ⁻				
6019	10 @	S(p)+2610	3/2 ⁻ , 5/2 ⁻				
6019.7	7 @	S(p)+1767.2	(3/2 ⁻ , 5/2 ⁻)			D+(Q)	+0.04 ^e 5
6020	6 @	S(p)+2515	(3/2 ⁻ , 5/2, 7/2 ⁻)				
6022	2 @	S(p)+2695	9/2 ⁺				
6035	4 @	S(p)+2911	(3/2 ⁻)				
6043	6 @	S(p)+2404	(3/2 ⁻ , 5/2 ⁺)	2912.6	3/2 ⁻		
6045	11 @	S(p)+2407	(3/2 ⁻ , 5/2, 7/2 ⁻)	2912.6	3/2 ⁻		
6045	4 @	S(p)+2737	3/2 ⁻ , 5/2 ⁻				
6048	6 @	S(p)+2410	5/2 ⁻ , 7/2 ⁻	2912.6	3/2 ⁻		

$\gamma(^{53}\text{Mn})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ^d	Comments
6048	2 @	S(p)+2721	5/2 ⁻					
6050	2 @	S(p)+2742	5/2					
6052	10 @	S(p)+1800	7/2 ⁻					Additional information 53.
6052	2 @	S(p)+2670	5/2 ⁻	3182.0	(3/2 ⁻ ,5/2 ⁻)			
6054.8	10	S(p)+1803.1	5/2			D+(Q)	+0.24 ^e 16	
6056	12 @	S(p)+2643	3/2 ⁻ ,5/2 ⁺					
6059	7 @	S(p)+2733	3/2 ⁻ ,5/2,7/2 ⁻					
6063	3 @	S(p)+2559	3/2 ⁻					
6063	6 @	S(p)+2681	5/2	3182.0	(3/2 ⁻ ,5/2 ⁻)			
6063	8 @	S(p)+2737	3/2 ⁻ ,5/2 ⁻					
6068	2 @	S(p)+2742	5/2					
6076	4 @	S(p)+1960	3/2 ⁽⁻⁾	2447.9				
6077	1 @	S(p)+2439	5/2 ⁻	2912.6	3/2 ⁻			
6080	3 @	S(p)+2133	(3/2 ⁻)					
6082	5 @	S(p)+2670	5/2 ⁻					
6087	2 @	S(p)+1971	7/2 ⁻	2447.9				
6088	4 @	S(p)+2681	5/2					
6089	10 @	S(p)+2585	3/2 ⁻ ,5/2 ⁻					
6096	2 @	S(p)+2770	5/2 ⁻					
6096	2 @	S(p)+2789	3/2 ⁻					
6098	5 @	S(p)+2267	(3/2 ⁻ ,5/2,7/2 ⁻)					
6098	1 @	S(p)+2691	3/2 ⁻ ,5/2,7/2 ⁻					
6099	5 @	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)	2447.9				
6103	3 @	S(p)+2721	5/2 ⁻	3182.0	(3/2 ⁻ ,5/2 ⁻)			
6107	1 @	S(p)+1991	3/2 ⁻ ,5/2 ⁻	2447.9				
6107	3 @	S(p)+2695	9/2 ⁺					
6109	1 @	S(p)+1993	7/2 ⁻	2447.9				
6133	1 @	S(p)+2721	5/2 ⁻					
6138	3 @	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)	2760.7				
6146	7 @	S(p)+2840	3/2 ⁻ ,5/2,7/2 ⁻					
6147	22 @	S(p)+1896	3/2 ⁻					Additional information 60.
6148	5 @	S(p)+2737	3/2 ⁻ ,5/2 ⁻					
6151	9 @	S(p)+2515	(3/2 ⁻ ,5/2,7/2 ⁻)					
6151	3 @	S(p)+2770	5/2 ⁻	3182.0	(3/2 ⁻ ,5/2 ⁻)			
6152	2 @	S(p)+2037	(3/2 ⁻ ,5/2 ⁻)	2447.9				

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ [1975Sc08,1979Fo19,1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ^d	Comments
6152	6 @	S(p)+2344	(3/2 ⁻ ,5/2 ⁺)	2760.7				
6152.2	28.0 #	S(p)+1901.1	7/2 ⁻			M1+E2	-0.01 ^f	
6155	9	S(p)+2775	3/2 ⁻	3182.0	(3/2 ⁻ ,5/2 ⁻)			
6157	6 @	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)	2447.9				
6157	1 @	S(p)+2348	5/2	2760.7				
6161	1 @	S(p)+2855	3/2 ⁻ ,5/2,7/2 ⁻					
6162	9 @	S(p)+2659	3/2 ⁻ ,5/2,7/2 ⁻					
6169	2 @	S(p)+2789	3/2 ⁻	3182.0	(3/2 ⁻ ,5/2 ⁻)			
6171.1	59	S(p)+918.4						
6179	2 @	S(p)+2855	3/2 ⁻ ,5/2,7/2 ⁻					
6180	7 @	S(p)+2800	7/2 ⁻	3182.0	(3/2 ⁻ ,5/2 ⁻)			
6181	4 @	S(p)+2770	5/2 ⁻					
6183	14 @	S(p)+2681	5/2					
6185		S(p)+2775	3/2 ⁻					
6190	5 @	S(p)+2688	3/2 ⁻ ,5/2,7/2 ⁻					
6194	2 @	S(p)+2559	3/2 ⁻					
6197	5 @	S(p)+2695	9/2 ⁺					
6199	1 @	S(p)+2789	3/2 ⁻					
6201	4 @	S(p)+2087	(3/2 ⁻ ,5/2 ⁻)	2447.9				
6202	5 @	S(p)+2604	3/2 ⁻ ,5/2,7/2 ⁻	2967.4				
6204.6	11	S(p)+952.6				D+Q	-0.35 5	δ : $\gamma(\theta)$ is also consistent with $\delta > -10.6$ (1975Sc08).
6205	4 @	S(p)+2091	(3/2 ⁻ ,5/2,7/2 ⁻)	2447.9				
6208	4 @	S(p)+2610	3/2 ⁻ ,5/2 ⁻	2967.4				
6209	5 @	S(p)+1960	3/2 ⁽⁻⁾					
6211	3 @	S(p)+2267	(3/2 ⁻ ,5/2,7/2 ⁻)					
6212	3 @	S(p)+2404	(3/2 ⁻ ,5/2 ⁺)	2760.7				
6215	4 @	S(p)+2386	(3/2 ⁻ ,5/2,7/2 ⁻)					
6216	4 @	S(p)+2837	3/2 ⁻	3182.0	(3/2 ⁻ ,5/2 ⁻)			
6220	3 @	S(p)+2585	3/2 ⁻ ,5/2 ⁻					
6227	7 @	S(p)+1978	(3/2 ⁻ ,5/2)					
6232	39 @	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)					
6233	27 @	S(p)+2404	(3/2 ⁻ ,5/2 ⁺)					
6234	5 @	S(p)+2733	3/2 ⁻ ,5/2,7/2 ⁻					
6235	13 @	S(p)+2291	(3/2 ⁻ ,5/2,7/2 ⁻)					
6235	19 @	S(p)+2407	(3/2 ⁻ ,5/2,7/2 ⁻)					

$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^c	δ^d	Comments
6237	7 @	S(p)+2409	7/2 ⁻					Additional information 80.
6238	3 @	S(p)+2410	5/2 ⁻ , 7/2 ⁻					
6238	3 @	S(p)+2604	3/2 ⁻ , 5/2, 7/2 ⁻					
6238.4	9	S(p)+986.9				D+(Q)	-0.07 3	δ : $\gamma(\theta)$ is also consistent with $\delta=-5.6$ -5+8 (1978Sc08).
6240	2 @	S(p)+1991	3/2 ⁻ , 5/2 ⁻					
6242	2 @	S(p)+1993	7/2 ⁻					
6243	2 @	S(p)+2300	5/2					
6243	6 @	S(p)+2742	5/2					
6245	8 @	S(p)+2610	3/2 ⁻ , 5/2 ⁻					
6246	5 @	S(p)+2133	(3/2 ⁻)	2447.9				
6246	5 @	S(p)+2837	3/2 ⁻					
6249	7 @	S(p)+2840	3/2 ⁻ , 5/2, 7/2 ⁻					
6250	9 @	S(p)+2422	5/2 ⁻					Additional information 86.
6256.8	4	S(p)+1005.8	1/2 ⁻					
6259	2 @	S(p)+2431	5/2 ⁻					
6264	3 @	S(p)+2855	3/2 ⁻ , 5/2, 7/2 ⁻					
6265	2 @	S(p)+2422	5/2 ⁻	2706.7	1/2 ⁺			
6266	4 @	S(p)+2154	(3/2 ⁻)	2447.9				
6266	3 @	S(p)+2670	5/2 ⁻	2967.4				
6271	3 @	S(p)+2770	5/2 ⁻					
6272	4 @	S(p)+2329	(3/2 ⁻ , 5/2 ⁺)					
6275	1 @	S(p)+2775	3/2 ⁻					
6285	4 @	S(p)+2037	(3/2 ⁻ , 5/2 ⁻)					
6286	3 @	S(p)+2459	(3/2 ⁻ , 5/2, 7/2 ⁻)					
6289	3 @	S(p)+2911	(3/2 ⁻)	3182.0	(3/2 ⁻ , 5/2 ⁻)			
6291	1 @	S(p)+2348	5/2					
6291	10 @	S(p)+2468	(3/2 ⁻ , 5/2, 7/2)					
6306	8 @	S(p)+2710	3/2 ⁻ , 5/2 ⁻ , 7/2 ⁻	2967.4				
6317	7 @	S(p)+2684	9/2 ⁺					
6324	14 @	S(p)+2213	5/2 ⁻	2447.9				Additional information 70.
6332	5 @	S(p)+2699	5/2 ⁻					
6334	6 @	S(p)+2087	(3/2 ⁻ , 5/2 ⁻)					
6336	21 @	S(p)+2837	3/2 ⁻					
6337	3 @	S(p)+2226	(3/2 ⁻ , 5/2, 7/2 ⁻)	2447.9				
6337	2 @	S(p)+2742	5/2	2967.4				

$^{52}\text{Cr}(\text{p},\gamma)$ E=res [1975Sc08,1979Fo19,1970Ma25](#) (continued)

$\gamma(^{53}\text{Mn})$ (continued)

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Comments
6338	6 @	S(p)+2091	$(3/2^-, 5/2, 7/2^-)$			
6343	17 @	S(p)+2710	$3/2^-, 5/2^-, 7/2^-$			
6349	3 @	S(p)+2716	$3/2^-, 5/2, 7/2^-$			
6363	2 @	S(p)+2422	$5/2^-$			
6363	3 @	S(p)+2559	$3/2^-$	2760.7		
6369	5 @	S(p)+2737	$3/2^-, 5/2^-$			
6370		S(p)+2775	$3/2^-$	2967.4		
6374	2 @	S(p)+2742	$5/2$			
6379	13 @	S(p)+2133	$(3/2^-)$			
6380	1 @	S(p)+2439	$5/2^-$			
6384	2 @	S(p)+2559	$3/2^-$			
6394	16 @	S(p)+2800	$7/2^-$	2967.4		
6399	4 @	S(p)+2154	$(3/2^-)$			
6399	3 @	S(p)+2459	$(3/2^-, 5/2, 7/2^-)$			
6399	4 @	S(p)+2559	$3/2^-$			
6401	3 @	S(p)+2291	$(3/2^-, 5/2, 7/2^-)$	2447.9		
6402	2 @	S(p)+2770	$5/2^-$			
6406	3	S(p)+2775	$3/2^-$	2912.6	$3/2^-$	
6409	3 @	S(p)+2911	$(3/2^-)$			
6410	8 @	S(p)+2585	$3/2^-, 5/2^-$			
6429	7 @	S(p)+2604	$3/2^-, 5/2, 7/2^-$			
6431	9 @	S(p)+2800	$7/2^-$			
6432	2 @	S(p)+2629	$3/2^-, 5/2^+$	2760.7		
6435	16 @	S(p)+2610	$3/2^-, 5/2^-$			
6438	39 @	S(p)+2329	$(3/2^-, 5/2^+)$	2447.9		
6446	13 @	S(p)+2643	$3/2^-, 5/2^+$	2760.7		
6450	5 @	S(p)+2610	$3/2^-, 5/2^-$			
6452	9 @	S(p)+2344	$(3/2^-, 5/2^+)$	2447.9		
6453	4 @	S(p)+2629	$3/2^-, 5/2^+$			
6457	4 @	S(p)+2348	$5/2$	2447.9		
6467	23 @	S(p)+2837	$3/2^-$			
6473	1 @	S(p)+2364	$5/2$	2447.9		
6494	5 @	S(p)+2386	$(3/2^-, 5/2, 7/2^-)$	2447.9		
6503	3 @	S(p)+2911	$(3/2^-)$	2967.4		
6507	4 @	S(p)+2684	$9/2^+$			Additional information 100.

$\gamma(^{53}\text{Mn})$ (continued)

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
6510	8 @	S(p)+2267	$(3/2^-, 5/2, 7/2^-)$			
6512	3 @	S(p)+2404	$(3/2^-, 5/2^+)$	2447.9		
6514	3 @	S(p)+2407	$(3/2^-, 5/2, 7/2^-)$	2447.9		
6516	8 @	S(p)+2409	$7/2^-$	2447.9		
6517	7 @	S(p)+2410	$5/2^-, 7/2^-$	2447.9		
6529	3 @	S(p)+2422	$5/2^-$	2447.9		Additional information 87.
6534	7 @	S(p)+2291	$(3/2^-, 5/2, 7/2^-)$			
6537	9 @	S(p)+2699	$5/2^-$			
6538	2 @	S(p)+2431	$5/2^-$	2447.9		
6539	4 @	S(p)+2716	$3/2^-, 5/2, 7/2^-$			
6540	5 @	S(p)+2911	$(3/2^-)$			
6541	4 @	S(p)+2604	$3/2^-, 5/2, 7/2^-$			
6544	5 @	S(p)+2721	$5/2^-$			Additional information 110.
6546	7 @	S(p)+2439	$5/2^-$	2447.9		
6548	4 @	S(p)+2610	$3/2^-, 5/2^-$			
6554	3 @	S(p)+2716	$3/2^-, 5/2, 7/2^-$			
6565	7 @	S(p)+2459	$(3/2^-, 5/2, 7/2^-)$	2447.9		
6571	2 @	S(p)+2329	$(3/2^-, 5/2^+)$			
6575	2 @	S(p)+2775	$3/2^-$	2760.7		
6579	1 @	S(p)+2742	$5/2$			
6585	9 @	S(p)+2344	$(3/2^-, 5/2^+)$			
6592	1 @	S(p)+2770	$5/2^-$			
6596	17 @	S(p)+2775	$3/2^-$			
6606	1 @	S(p)+2364	$5/2$			
6606	3 @	S(p)+2670	$5/2^-$			
6607	2 @	S(p)+2770	$5/2^-$			
6611	8 @	S(p)+2775	$3/2^-$	2706.7	$1/2^+$	
6617	7 @	S(p)+2681	$5/2$			
6621	8 @	S(p)+2800	$7/2^-$			
6627	2 @	S(p)+2691	$3/2^-, 5/2, 7/2^-$			
6631.2	9 ^a	S(p)+1387.5	$5/2^-$			Additional information 8.
6636	4 @	S(p)+2837	$3/2^-$	2760.7		
6638.6	8 ^a	S(p)+1394.8	$5/2^-$			Additional information 12.
6645	4 @	S(p)+2404	$(3/2^-, 5/2^+)$			
6647	6 @	S(p)+2407	$(3/2^-, 5/2, 7/2^-)$			

$\gamma(^{53}\text{Mn})$ (continued)

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	Comments
6649	7@	S(p)+2409	7/2 ⁻		
6652	3@	S(p)+2716	3/2 ⁻ , 5/2, 7/2 ⁻		
6657	2@	S(p)+2721	5/2 ⁻		
6657	6@	S(p)+2837	3/2 ⁻		
6660	2@	S(p)+2840	3/2 ⁻ , 5/2, 7/2 ⁻		
6663	3@	S(p)+2559	3/2 ⁻	2447.9	
6671	2@	S(p)+2431	5/2 ⁻		
6679	1@	S(p)+2439	5/2 ⁻		
6687	7 ^a	S(p)+1444	3/2 ⁻ , 5/2 ⁻		Additional information 16.
6689	10@	S(p)+2585	3/2 ⁻ , 5/2 ⁻	2447.9	
6703	1@	S(p)+2468	(3/2 ⁻ , 5/2, 7/2)		
6705	4@	S(p)+2770	5/2 ⁻		
6707	8@	S(p)+2604	3/2 ⁻ , 5/2, 7/2 ⁻	2447.9	
6709	1@	S(p)+2911	(3/2 ⁻)	2760.7	
6717	2 ^a	S(p)+1475	5/2 ⁻		
6729	19@	S(p)+2490	(3/2 ⁻ , 5/2, 7/2 ⁻)		
6730	2@	S(p)+2911	(3/2 ⁻)		
6732	10@	S(p)+2629	3/2 ⁻ , 5/2 ⁺	2447.9	
6736	1 ^a	S(p)+1494	5/2		
6738.6	4.9 ^a	S(p)+1496.8	5/2 ⁻		
6745	6@	S(p)+2911	(3/2 ⁻)		
6746	15@	S(p)+2643	3/2 ⁻ , 5/2 ⁺	2447.9	
6749	7 ^a	S(p)+1507	5/2 ⁻ , 3/2 ⁻		
6762	12@	S(p)+2659	3/2 ⁻ , 5/2, 7/2 ⁻	2447.9	
6763	3 ^a	S(p)+1522	5/2 ⁻		
6767	25 ^a	S(p)+1526	5/2 ⁻		Additional information 41.
6788	4@	S(p)+2855	3/2 ⁻ , 5/2, 7/2 ⁻		
6790	9@	S(p)+2688	3/2 ⁻ , 5/2, 7/2 ⁻	2447.9	
6793	11 ^a	S(p)+1552	5/2 ⁻		
6796	2@	S(p)+2559	3/2 ⁻		
6797	4@	S(p)+2695	9/2 ⁺	2447.9	
6798	6 ^a	S(p)+1557	5/2 ⁻		
6812	9@	S(p)+2710	3/2 ⁻ , 5/2 ⁻ , 7/2 ⁻	2447.9	
6822	3@	S(p)+2585	3/2 ⁻ , 5/2 ⁻		
6823	9@	S(p)+2721	5/2 ⁻	2447.9	Additional information 111.
6840	4@	S(p)+2604	3/2 ⁻ , 5/2, 7/2 ⁻		

⁵²Cr(p,γ) E=res 1975Sc08,1979Fo19,1970Ma25 (continued)

γ(⁵³Mn) (continued)

E _γ [†]	I _γ [‡]	E _i (level)	J _i ^π	E _f	Mult. ^c	δ ^d	Comments
6843	2@	S(p)+2742	5/2	2447.9			
6843	2@	S(p)+2911	(3/2 ⁻)				
6845	26 ^a	S(p)+1605	3/2 ⁻				
6847	4@	S(p)+2610	3/2 ⁻ ,5/2 ⁻				
6848.3	1 ^a	S(p)+1608.5	3/2 ⁻		D+Q	-0.23 ^f	
6865	8@	S(p)+2629	3/2 ⁻ ,5/2 ⁺				
6867	5 ^a	S(p)+1628	5/2 ⁺				
6871	11@	S(p)+2770	5/2 ⁻	2447.9			Additional information 117.
6875	11	S(p)+2775	3/2 ⁻	2447.9			
6888	46 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻				Additional information 46.
6900	5@	S(p)+2800	7/2 ⁻				
6930	6@	S(p)+2695	9/2 ⁺				
6934	7@	S(p)+2699	5/2 ⁻				
6936	11@	S(p)+2837	3/2 ⁻				
6939	18@	S(p)+2840	3/2 ⁻ ,5/2,7/2 ⁻				
6945	7@	S(p)+2710	3/2 ⁻ ,5/2 ⁻ ,7/2 ⁻				
6954	8@	S(p)+2855	3/2 ⁻ ,5/2,7/2 ⁻				
6955	5@	S(p)+2721	5/2 ⁻				
6957	2@	S(p)+1720	3/2 ⁻ ,5/2 ⁻				
6967	11@	S(p)+2733	3/2 ⁻ ,5/2,7/2 ⁻				
6971	12@	S(p)+2737	3/2 ⁻ ,5/2 ⁻				
6973.1	5	S(p)+1735.7	5/2 ⁻		D+(Q)	+0.20 ^e 7	
6985.0	1.0 [#]	S(p)+1901.1	7/2 ⁻				
7001	18@	S(p)+1764	(3/2 ⁻ ,5/2 ⁻)				
7004.0	51@	S(p)+1767.2	(3/2 ⁻ ,5/2 ⁻)		D+(Q)	+0.32 ^e 7	δ: γ(θ) is also consistent with δ=-1.6 2.
7004	3@	S(p)+2770	5/2 ⁻				
7008	4@	S(p)+2775	3/2 ⁻				
7009	5@	S(p)+2911	(3/2 ⁻)				
7013	2@	S(p)+1776	5/2 ⁻				
7022	3@	S(p)+2789	3/2 ⁻				
7036	4@	S(p)+1800	7/2 ⁻				
7039.1	5	S(p)+1803.1	5/2		D+(Q)	-0.13 ^e 10	δ: γ(θ) is also consistent with δ=+1.5 4.
7045	17@	S(p)+1810	3/2 ⁻				
7072	5@	S(p)+2840	3/2 ⁻ ,5/2,7/2 ⁻				
7082.8	2	S(p)+918.4					
7087	9@	S(p)+2855	3/2 ⁻ ,5/2,7/2 ⁻				

⁵²Cr(p,γ) E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued)

γ(⁵³Mn) (continued)

E _γ [†]	I _γ [‡]	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. ^c	δ ^d	Comments
7104	7@	S(p)+2023						
7109	13@	S(p)+1875	(3/2 ⁻ ,5/2 ⁻)					
7113	32@	S(p)+1878	3/2 ⁻					Additional information 58.
7116.3	1	S(p)+952.6						
7130	6@	S(p)+1896	3/2 ⁻					
7135.3	1.3 [#]	S(p)+1901.1	7/2 ⁻					
7142	4@	S(p)+2911	(3/2 ⁻)					
7150.1	31	S(p)+986.9				D+(Q)	+0.07 3	δ: γ(θ) is also consistent with δ=-6.3 -5+3 (1978Sc08).
7168.6	0.5	S(p)+1005.8	1/2 ⁻					
7193	6@	S(p)+1960	3/2 ⁽⁻⁾					
7211	5@	S(p)+1978	(3/2 ⁻ ,5/2 ⁻)					
7224	8@	S(p)+1991	3/2 ⁻ ,5/2 ⁻					Additional information 67.
7226	8@	S(p)+1993	7/2 ⁻					
7247		S(p)+3154	5/2 ⁻ ,7/2 ⁻	2447.9				
7255	4@	S(p)+2023						
7269	11@	S(p)+2037	(3/2 ⁻ ,5/2 ⁻)					
7274	10@	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)					
7303	4@	S(p)+2409	7/2 ⁻					Additional information 81.
7318	7@	S(p)+2087	(3/2 ⁻ ,5/2 ⁻)					
7322	38@	S(p)+2091	(3/2 ⁻ ,5/2,7/2 ⁻)					
7332	7@	S(p)+2439	5/2 ⁻					
7375	11@	S(p)+2483	(5/2 ⁻ ,7/2)					
7383	13@	S(p)+2154	(3/2 ⁻)					
7425	6&	S(p)+4069.2		3200.8	5/2			
7441	25@	S(p)+2213	5/2 ⁻					Additional information 71.
7454	8@	S(p)+2226	(3/2 ⁻ ,5/2,7/2 ⁻)					
7456	37&	S(p)+4100.3		3200.8	5/2			
7482	4@	S(p)+2409	7/2 ⁻					
7494.0	4	S(p)+952.6				D+(Q)	+0.02 6	δ: γ(θ) is also consistent with δ=-1.5 2 (1975Sc08).
7518	8@	S(p)+2291	(3/2 ⁻ ,5/2,7/2 ⁻)					
7528.1	1	S(p)+986.9						
7542.3	9 ^a	S(p)+1387.5	5/2 ⁻					
7547	4@	S(p)+2321	5/2					
7550.3		S(p)+1394.8	5/2 ⁻			M1+E2	+0.2 ^f	I _γ : I(7551):I(7929)=5.8:56.6, see 1986Ra19 .
7555	8@	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)					
7570		S(p)+2681	5/2					I _γ : I(7570):I(7749):I(9190)=1:21:78, see 1985Di09 .

⁵²Cr(p,γ) E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued)

γ(⁵³Mn) (continued)

E _γ [†]	I _γ [‡]	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. ^c	δ ^d	Comments
7574	5@	S(p)+2348	5/2					
7574		S(p)+2684	9/2 ⁺					I _γ : I(7575):I(7754):I(9195)=1:5:94, see 1985Di09 .
7590	15@	S(p)+2364	5/2					Additional information 77 .
7599	1 ^a	S(p)+1444	3/2 ⁻ ,5/2 ⁻					
7611	10@	S(p)+2386	(3/2 ⁻ ,5/2,7/2 ⁻)					
7629	50 ^a	S(p)+1475	5/2 ⁻					Additional information 19 .
7629	12@	S(p)+2404	(3/2 ⁻ ,5/2 ⁺)					
7634	7@	S(p)+2410	5/2 ⁻ ,7/2 ⁻					
7648	7 ^a	S(p)+1494	5/2					Additional information 22 .
7650.6	1 ^a	S(p)+1496.8	5/2 ⁻					
7661	4 ^a	S(p)+1507	5/2 ⁻ ,3/2 ⁻					
7663	3@	S(p)+2439	5/2 ⁻					
7675	7 ^a	S(p)+1522	5/2 ⁻					Additional information 35 .
7679	3 ^a	S(p)+1526	5/2 ⁻					Additional information 42 .
7705	5 ^a	S(p)+1552	5/2 ⁻					
7710	23 ^a	S(p)+1557	5/2 ⁻					
7713	5@	S(p)+2490	(3/2 ⁻ ,5/2,7/2 ⁻)					
7713	2&	S(p)+4163.5	9/2 ⁺	3007.4	(5/2) ⁺			
7737	5@	S(p)+2515	(3/2 ⁻ ,5/2,7/2 ⁻)					
7749		S(p)+2681	5/2					I _γ : I(7570):I(7749):I(9190)=1:21:78, see 1985Di09 .
7752	12@	S(p)+2684	9/2 ⁺					Additional information 101 .
7757	4 ^a	S(p)+1605	3/2 ⁻					
7760.0	1 ^a	S(p)+1608.5	3/2 ⁻					
7763	3@	S(p)+2695	9/2 ⁺					Additional information 103 .
7780	4 ^a	S(p)+1628	5/2 ⁺					
7780	9@	S(p)+2559	3/2 ⁻					Additional information 94 .
7800	5 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻					
7806	19@	S(p)+2585	3/2 ⁻ ,5/2 ⁻					
7824	22@	S(p)+2604	3/2 ⁻ ,5/2,7/2 ⁻					
7831	4@	S(p)+2610	3/2 ⁻ ,5/2 ⁻					
7849	14@	S(p)+2629	3/2 ⁻ ,5/2 ⁺					
7863	31@	S(p)+2643	3/2 ⁻ ,5/2 ⁺					
7866	7@	S(p)+2800	7/2 ⁻					
7869	75@	S(p)+1720	3/2 ⁻ ,5/2 ⁻					Additional information 48 .
7872.9	75	S(p)+1723.6	5/2,3/2			D+(Q)	+0.02 ^e 3	
7879	43@	S(p)+2659	3/2 ⁻ ,5/2,7/2 ⁻					
7879	14&	S(p)+4069.2		2760.7				

$^{52}\text{Cr}(\text{p},\gamma) \text{E=res}$ **1975Sc08,1979Fo19,1970Ma25** (continued)

$\gamma(^{53}\text{Mn})$ (continued)							
E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	Mult. ^c	δ^d	Comments
7884.8	30	S(p)+1735.7	5/2 ⁻		D+Q	-0.41 ^e 6	
7889	47 @	S(p)+1740	(3/2 ⁻ , 5/2 ⁻)				
7889	14 @	S(p)+2670	5/2 ⁻				Additional information 96.
7903	10 @	S(p)+2684	9/2 ⁺				
7907	17 @	S(p)+2688	3/2 ⁻ , 5/2, 7/2 ⁻				
7909	13 ^b	S(p)+4115	9/2 ⁺	2760.7			
7910	3 @	S(p)+2691	3/2 ⁻ , 5/2, 7/2 ⁻				
7913	3 @	S(p)+1764	(3/2 ⁻ , 5/2 ⁻)				
7914	10 @	S(p)+2695	9/2 ⁺				
7915.0	2 @	S(p)+1767.2	(3/2 ⁻ , 5/2 ⁻)				
7918	4 @	S(p)+2699	5/2 ⁻				Additional information 105.
7921.1	69 ^a	S(p)+1387.5	5/2 ⁻		M1+E2	-3.5 ^f	Additional information 9.
7925	16 @	S(p)+1776	5/2 ⁻				Additional information 50.
7928.3	66 ^a	S(p)+1394.8	5/2 ⁻		M1+E2	-0.16 ^f	Additional information 13.
7929	8 @	S(p)+2710	3/2 ⁻ , 5/2 ⁻ , 7/2 ⁻				
7935	14 @	S(p)+2716	3/2 ⁻ , 5/2, 7/2 ⁻				
7940	4 @	S(p)+2721	5/2 ⁻				
7948	46 @	S(p)+1800	7/2 ⁻				Additional information 54.
7950.8	35	S(p)+1803.1	5/2		D+(Q)	+0.02 ^e 4	
7951	10 @	S(p)+2733	3/2 ⁻ , 5/2, 7/2 ⁻				
7955	13 @	S(p)+2737	3/2 ⁻ , 5/2 ⁻				
7957	19 @	S(p)+1810	3/2 ⁻				
7960	14 @	S(p)+2742	5/2				Additional information 114.
7966	10 &	S(p)+4181.3	9/2 ⁺	2760.7			
7977	1 ^a	S(p)+1444	3/2 ⁻ , 5/2 ⁻				
7988	31 @	S(p)+2770	5/2 ⁻				Additional information 118.
7992	12	S(p)+2775	3/2 ⁻				
8007	22 ^a	S(p)+1475	5/2 ⁻				Additional information 20.
8017	9 @	S(p)+2800	7/2 ⁻				Additional information 123.
8021	67 @	S(p)+1875	(3/2 ⁻ , 5/2 ⁻)				
8025	20 @	S(p)+1878	3/2 ⁻				Additional information 59.
8026	60 ^a	S(p)+1494	5/2				Additional information 23.
8028.3	3.9 ^a	S(p)+1496.8	5/2 ⁻		D+(Q)	-0.20 ^e 12	δ : $\gamma(\theta)$ is also consistent with $\delta=+3.1$ 13.
8039	4 ^a	S(p)+1507	5/2 ⁻ , 3/2 ⁻				
8043	56 @	S(p)+1896	3/2 ⁻				Additional information 61.
8047.0	52.7 #	S(p)+1901.1	7/2 ⁻		M1+E2	+0.34 ^f	

⁵²Cr(p,γ) E=res **1975Sc08,1979Fo19,1970Ma25 (continued)**

γ(⁵³Mn) (continued)

E _γ [†]	I _γ [‡]	E _i (level)	J _i ^π	Mult. ^c	δ ^d	Comments
8053	11 ^a	S(p)+1522	5/2 ⁻			Additional information 36.
8053	6 [@]	S(p)+2837	3/2 ⁻			
8056	39 [@]	S(p)+2840	3/2 ⁻ ,5/2,7/2 ⁻			
8057	9 ^a	S(p)+1526	5/2 ⁻			Additional information 43.
8075	15 [@]	S(p)+1930	5/2 ⁽⁺⁾			
8078	15 ^{&}	S(p)+4170.1	9/2 ⁺			
8081	9 ^{&}	S(p)+4163.5	9/2 ⁺			
8083	1 ^a	S(p)+1552	5/2 ⁻			
8088	2 ^a	S(p)+1557	5/2 ⁻			
8090	15 ^{&}	S(p)+4181.3	9/2 ⁺			
8100	22 ^{&}	S(p)+4192.4				
8105	16 [@]	S(p)+1960	3/2 ⁽⁻⁾			Additional information 65.
8123	7 [@]	S(p)+1978	(3/2 ⁻ ,5/2)			
8126	33 [@]	S(p)+2911	(3/2 ⁻)			
8136	10 [@]	S(p)+1991	3/2 ⁻ ,5/2 ⁻			
8138	10 [@]	S(p)+1993	7/2 ⁻			Additional information 68.
8148	37 ^{&}	S(p)+4241.3				
8149	19 ^{&}	S(p)+4241.9				
8158	55 ^a	S(p)+1628	5/2 ⁺			
8158	2 ^a	S(p)+1648	3/2 ⁻ ,5/2 ⁻			
8163		S(p)+4087	1/2 ⁻			
8167	3 [@]	S(p)+2023				
8181	27 [@]	S(p)+2037	(3/2 ⁻ ,5/2 ⁻)			
8186	20 [@]	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)			
8230	63 [@]	S(p)+2087	(3/2 ⁻ ,5/2 ⁻)			
8234	40 [@]	S(p)+2091	(3/2 ⁻ ,5/2,7/2 ⁻)			
8247	5 [@]	S(p)+1720	3/2 ⁻ ,5/2 ⁻			Additional information 49.
8295	7 [@]	S(p)+2154	(3/2 ⁻)			
8303	71 [@]	S(p)+1776	5/2 ⁻			Additional information 51.
8313	19 [@]	S(p)+2172	(3/2 ⁻ ,5/2,7/2 ⁻)			
8326	9 [@]	S(p)+1800	7/2 ⁻			Additional information 55.
8328.8	<5	S(p)+1803.1	5/2	D+(Q)	-0.06 ^e 11	δ: γ(θ) is also consistent with δ=+6 4.
8334	16 [@]	S(p)+2194	(3/2 ⁻ ,5/2,7/2 ⁻)			
8353	5 [@]	S(p)+2213	5/2 ⁻			
8366	64 [@]	S(p)+2226	(3/2 ⁻ ,5/2,7/2 ⁻)			
8399	8 [@]	S(p)+1875	(3/2 ⁻ ,5/2 ⁻)			

⁵²Cr(p,γ) E=res **1975Sc08,1979Fo19,1970Ma25** (continued)

γ(⁵³Mn) (continued)

<u>E_γ[†]</u>	<u>I_γ[‡]</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>Comments</u>
8403	4@	S(p)+1878	3/2 ⁻	
8406	58@	S(p)+2267	(3/2 ⁻ ,5/2,7/2 ⁻)	
8421	1@	S(p)+1896	3/2 ⁻	
8430	49@	S(p)+2291	(3/2 ⁻ ,5/2,7/2 ⁻)	
8438	13@	S(p)+2300	5/2	
8453	16@	S(p)+1930	5/2 ⁽⁺⁾	
8459	47@	S(p)+2321	5/2	Additional information 74.
8467	8@	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)	
8481	43@	S(p)+2344	(3/2 ⁻ ,5/2 ⁺)	
8486	3@	S(p)+2348	5/2	
8494	79@	S(p)+1971	7/2 ⁻	Additional information 66.
8502	20@	S(p)+2364	5/2	Additional information 78.
8506	20@	S(p)+1983	(3/2 ⁻ ,5/2,7/2 ⁻)	
8514	58@	S(p)+1991	3/2 ⁻ ,5/2 ⁻	
8516	58@	S(p)+1993	7/2 ⁻	Additional information 69.
8523	51@	S(p)+2386	(3/2 ⁻ ,5/2,7/2 ⁻)	
8541	13@	S(p)+2404	(3/2 ⁻ ,5/2 ⁺)	
8543	6@	S(p)+2407	(3/2 ⁻ ,5/2,7/2 ⁻)	
8545	76@	S(p)+2023		
8545	27@	S(p)+2409	7/2 ⁻	Additional information 82.
8546	26@	S(p)+2410	5/2 ⁻ ,7/2 ⁻	Additional information 84.
8558	29@	S(p)+2422	5/2 ⁻	Additional information 88.
8559	35@	S(p)+2037	(3/2 ⁻ ,5/2 ⁻)	
8564	16@	S(p)+2042	(3/2 ⁻ ,5/2,7/2 ⁻)	
8567	85@	S(p)+2431	5/2 ⁻	Additional information 90.
8575	37@	S(p)+2439	5/2 ⁻	
8594	42@	S(p)+2459	(3/2 ⁻ ,5/2,7/2 ⁻)	
8599	70@	S(p)+2464	(3/2 ⁻ ,5/2,7/2 ⁻)	
8599	74@	S(p)+2468	(3/2 ⁻ ,5/2,7/2)	
8608	5@	S(p)+2087	(3/2 ⁻ ,5/2 ⁻)	
8615	73@	S(p)+2480	3/2 ⁻ ,5/2	Additional information 92.
8618	15@	S(p)+2483	(5/2 ⁻ ,7/2)	
8625	17@	S(p)+2490	(3/2 ⁻ ,5/2,7/2 ⁻)	
8649	68@	S(p)+2515	(3/2 ⁻ ,5/2,7/2 ⁻)	
8653	67@	S(p)+2133	(3/2 ⁻)	

⁵²Cr(p,γ) E=res **1975Sc08,1979Fo19,1970Ma25** (continued)

γ(⁵³Mn) (continued)

E _γ [†]	I _γ [‡]	E _i (level)	J _i ^π	Comments
8673	62@	S(p)+2154	(3/2 ⁻)	
8691	73@	S(p)+2172	(3/2 ⁻ ,5/2,7/2 ⁻)	
8692	71@	S(p)+2559	3/2 ⁻	Additional information 95.
8713	84@	S(p)+2194	(3/2 ⁻ ,5/2,7/2 ⁻)	
8718	1@	S(p)+2585	3/2 ⁻ ,5/2 ⁻	
8731	50@	S(p)+2213	5/2 ⁻	Additional information 72.
8736	16@	S(p)+2604	3/2 ⁻ ,5/2,7/2 ⁻	
8743	23@	S(p)+2610	3/2 ⁻ ,5/2 ⁻	
8744	11@	S(p)+2226	(3/2 ⁻ ,5/2,7/2 ⁻)	
8761	17@	S(p)+2629	3/2 ⁻ ,5/2 ⁺	
8775	14@	S(p)+2643	3/2 ⁻ ,5/2 ⁺	
8784	7@	S(p)+2267	(3/2 ⁻ ,5/2,7/2 ⁻)	
8791	9@	S(p)+2659	3/2 ⁻ ,5/2,7/2 ⁻	
8801	51@	S(p)+2670	5/2 ⁻	Additional information 97.
8808	3@	S(p)+2291	(3/2 ⁻ ,5/2,7/2 ⁻)	
8812	10@	S(p)+2681	5/2	
8816	80@	S(p)+2300	5/2	Additional information 73.
8818	6@	S(p)+2684	9/2 ⁺	
8819	43@	S(p)+2688	3/2 ⁻ ,5/2,7/2 ⁻	
8822	60@	S(p)+2691	3/2 ⁻ ,5/2,7/2 ⁻	
8826	3@	S(p)+2695	9/2 ⁺	
8830	39@	S(p)+2699	5/2 ⁻	Additional information 106.
8837	49@	S(p)+2321	5/2	Additional information 75.
8841	19@	S(p)+2710	3/2 ⁻ ,5/2 ⁻ ,7/2 ⁻	Additional information 108.
8845	5@	S(p)+2329	(3/2 ⁻ ,5/2 ⁺)	
8847	48@	S(p)+2716	3/2 ⁻ ,5/2,7/2 ⁻	
8852	37@	S(p)+2721	5/2 ⁻	Additional information 112.
8859	17@	S(p)+2344	(3/2 ⁻ ,5/2 ⁺)	
8863	55@	S(p)+2733	3/2 ⁻ ,5/2,7/2 ⁻	
8864	77@	S(p)+2348	5/2	Additional information 76.
8867	34@	S(p)+2737	3/2 ⁻ ,5/2 ⁻	
8873	10@	S(p)+2742	5/2	Additional information 115.
8880	53@	S(p)+2364	5/2	Additional information 79.
8900	17@	S(p)+2770	5/2 ⁻	Additional information 119.
8901	14@	S(p)+2386	(3/2 ⁻ ,5/2,7/2 ⁻)	

$^{52}\text{Cr}(\text{p},\gamma)$ E=res **1975Sc08,1979Fo19,1970Ma25** (continued)

$\gamma(^{53}\text{Mn})$ (continued)

E_γ †	I_γ ‡	E_i (level)	J_i^π	Comments
8904	30 @	S(p)+2775	3/2 ⁻	Additional information 121.
8918	80 @	S(p)+2789	3/2 ⁻	Additional information 122.
8919	28 @	S(p)+2404	(3/2 ⁻ ,5/2 ⁺)	
8921	48 @	S(p)+2407	(3/2 ⁻ ,5/2,7/2 ⁻)	
8923	9 @	S(p)+2409	7/2 ⁻	Additional information 83.
8924	3 @	S(p)+2410	5/2 ⁻ ,7/2 ⁻	Additional information 85.
8929	10 @	S(p)+2800	7/2 ⁻	Additional information 124.
8936	47 @	S(p)+2422	5/2 ⁻	Additional information 89.
8936	95 @	S(p)+2807	5/2 ⁻	Additional information 126.
8945	8 @	S(p)+2431	5/2 ⁻	Additional information 91.
8953	23 @	S(p)+2439	5/2 ⁻	
8965	10 @	S(p)+2837	3/2 ⁻	
8968	7 @	S(p)+2840	3/2 ⁻ ,5/2,7/2 ⁻	
8972	39 @	S(p)+2459	(3/2 ⁻ ,5/2,7/2 ⁻)	
8977	10 @	S(p)+2464	(3/2 ⁻ ,5/2,7/2 ⁻)	
8977	6 @	S(p)+2468	(3/2 ⁻ ,5/2,7/2)	
8983	40 @	S(p)+2855	3/2 ⁻ ,5/2,7/2 ⁻	
8993	27 @	S(p)+2480	3/2 ⁻ ,5/2	Additional information 93.
8996	59 @	S(p)+2483	(5/2 ⁻ ,7/2)	
9003	22 @	S(p)+2490	(3/2 ⁻ ,5/2,7/2 ⁻)	
9017	41 ^b	S(p)+4157	9/2 ⁺	
9027	2 @	S(p)+2515	(3/2 ⁻ ,5/2,7/2 ⁻)	
9034	10 &	S(p)+4163.5	9/2 ⁺	
9038	7 @	S(p)+2911	(3/2 ⁻)	
9070	1 @	S(p)+2559	3/2 ⁻	
9097	23 @	S(p)+2585	3/2 ⁻ ,5/2 ⁻	
9114	13 @	S(p)+2604	3/2 ⁻ ,5/2,7/2 ⁻	
9121	3 @	S(p)+2610	3/2 ⁻ ,5/2 ⁻	
9139	31 @	S(p)+2629	3/2 ⁻ ,5/2 ⁺	
9153	12 @	S(p)+2643	3/2 ⁻ ,5/2 ⁺	
9166	60 &	S(p)+4125.1		
9169	1 @	S(p)+2659	3/2 ⁻ ,5/2,7/2 ⁻	
9179	8 @	S(p)+2670	5/2 ⁻	Additional information 98.
9190	33 @	S(p)+2681	5/2	Additional information 99.
9194	61 @	S(p)+2684	9/2 ⁺	Additional information 102.

⁵²Cr(p,γ) E=res [1975Sc08,1979Fo19,1970Ma25](#) (continued)

γ(⁵³Mn) (continued)

E _γ [†]	I _γ [‡]	E _i (level)	J _i ^π	Mult. ^c	δ ^d	Comments
9197	21@	S(p)+2688	3/2 ⁻ ,5/2,7/2 ⁻			
9200	27@	S(p)+2691	3/2 ⁻ ,5/2,7/2 ⁻			
9204	59@	S(p)+2695	9/2 ⁺			Additional information 104.
9208	36@	S(p)+2699	5/2 ⁻			Additional information 107.
9210	22&	S(p)+4170.1	9/2 ⁺			
9213	12&	S(p)+4163.5	9/2 ⁺			
9216	9 ^b	S(p)+4176	9/2 ⁺			
9219	22@	S(p)+2710	3/2 ⁻ ,5/2 ⁻ ,7/2 ⁻			Additional information 109.
9222	21&	S(p)+4181.3	9/2 ⁺			
9225	21@	S(p)+2716	3/2 ⁻ ,5/2,7/2 ⁻			
9230	20@	S(p)+2721	5/2 ⁻			Additional information 113.
9241	5@	S(p)+2733	3/2 ⁻ ,5/2,7/2 ⁻			
9245	4@	S(p)+2737	3/2 ⁻ ,5/2 ⁻			
9250	53@	S(p)+2742	5/2			Additional information 116.
9276		S(p)+3154	5/2 ⁻ ,7/2 ⁻			
9278	12@	S(p)+2770	5/2 ⁻			Additional information 120.
9280	26&	S(p)+4241.3				
9282	3@	S(p)+2775	3/2 ⁻			
9296	4@	S(p)+2789	3/2 ⁻			
9306	53&	S(p)+4268.1				
9307	29@	S(p)+2800	7/2 ⁻			Additional information 125.
9314	5@	S(p)+2807	5/2 ⁻			Additional information 127.
9343	5@	S(p)+2837	3/2 ⁻			
9346	5@	S(p)+2840	3/2 ⁻ ,5/2,7/2 ⁻			
9361	32@	S(p)+2855	3/2 ⁻ ,5/2,7/2 ⁻			
9416	2@	S(p)+2911	(3/2 ⁻)			
9654		S(p)+3154	5/2 ⁻ ,7/2 ⁻			
10279	32 ^b	S(p)+4176	9/2 ⁺			
10552	80&	S(p)+4069.2				
10583	63&	S(p)+4100.3				
10597	87 ^b	S(p)+4115	9/2 ⁺	E1(+M2)	-0.05 ^b 5	Additional information 128.
10607	40&	S(p)+4125.1				
10627	100&	S(p)+4145.1				
10638	59 ^b	S(p)+4157	9/2 ⁺	E1(+M2)	-0.02 ^b 5	Additional information 129.
10646	67&	S(p)+4163.5	9/2 ⁺	E1(+M2)	-0.02 ^b 5	Additional information 130.

⁵²Cr(p,γ) E=res [1975Sc08](#),[1979Fo19](#),[1970Ma25](#) (continued)

γ(⁵³Mn) (continued)

E _γ [†]	I _γ [‡]	E _i (level)	J _i ^π	Mult. ^c	δ ^d	Comments
10651	63 ^{&}	S(p)+4170.1	9/2 ⁺			
10657	59 ^b	S(p)+4176	9/2 ⁺	E1(+M2)	-0.02 ^b 5	Additional information 131.
10663	54 ^{&}	S(p)+4181.3	9/2 ⁺	E1(+M2)	-0.02 ^b 5	Additional information 132.
10669	100 ^{&}	S(p)+4186.9	9/2 ⁺			
10673	78 ^{&}	S(p)+4192.4				
10686	100 ^{&}	S(p)+4205.7				
10692	100 ^{&}	S(p)+4211.3				
10697	100 ^{&}	S(p)+4217.2				
10721	37 ^{&}	S(p)+4241.3				
10722	81 ^{&}	S(p)+4241.9				
10736	100 ^{&}	S(p)+4256.9				
10747	47 ^{&}	S(p)+4268.1				
11070		S(p)+4597	3/2 ⁺ ,5/2 ⁺			
11160		S(p)+4688	3/2 ⁺ ,5/2 ⁺			

[†] E_γ for γ from resonances were calculated from given level energies. Secondary γ's are from [1975Sc08](#), except as noted.

[‡] Relative photon branching ratio from each level, see [1975Sc08](#), except as noted.

From [1986Ra19](#).

@ From [1991Di07](#).

& From [1994Sz01](#).

^a From [1990Al22](#).

^b From [1979Fo19](#).

^c From γ(θ) ([1990Al22](#),[1991Di07](#)), and comparison to RUL, except as noted.

^d From [1975Sc08](#), except as noted.

^e From [1970Ma25](#).

^f From [1986Ra19](#) at χ² minimum.

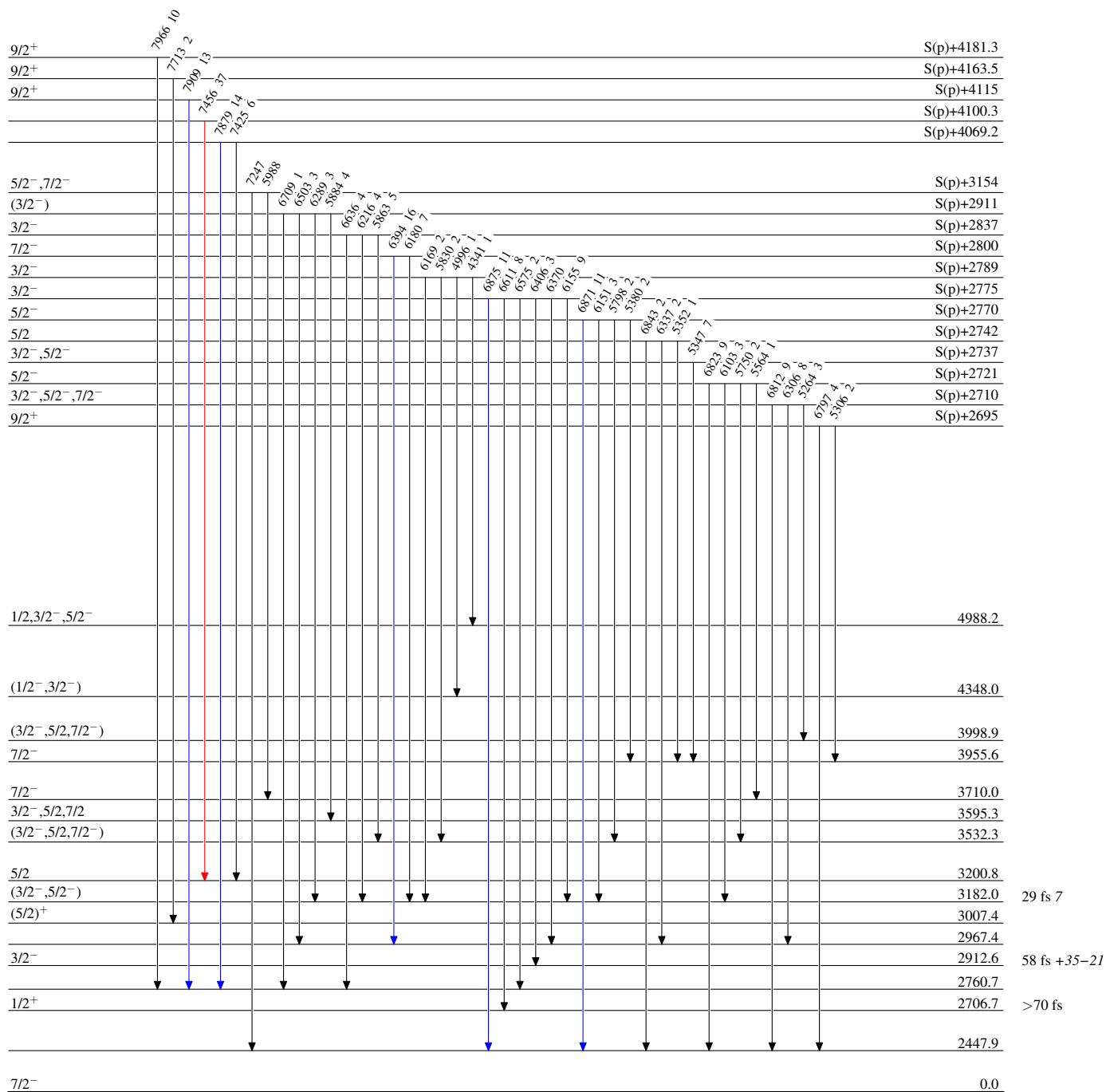
$^{52}\text{Cr}(p,\gamma)$ E=res 1975Sc08,1979Fo19,1970Ma25

Level Scheme

Intensities: Relative I_γ

Legend

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



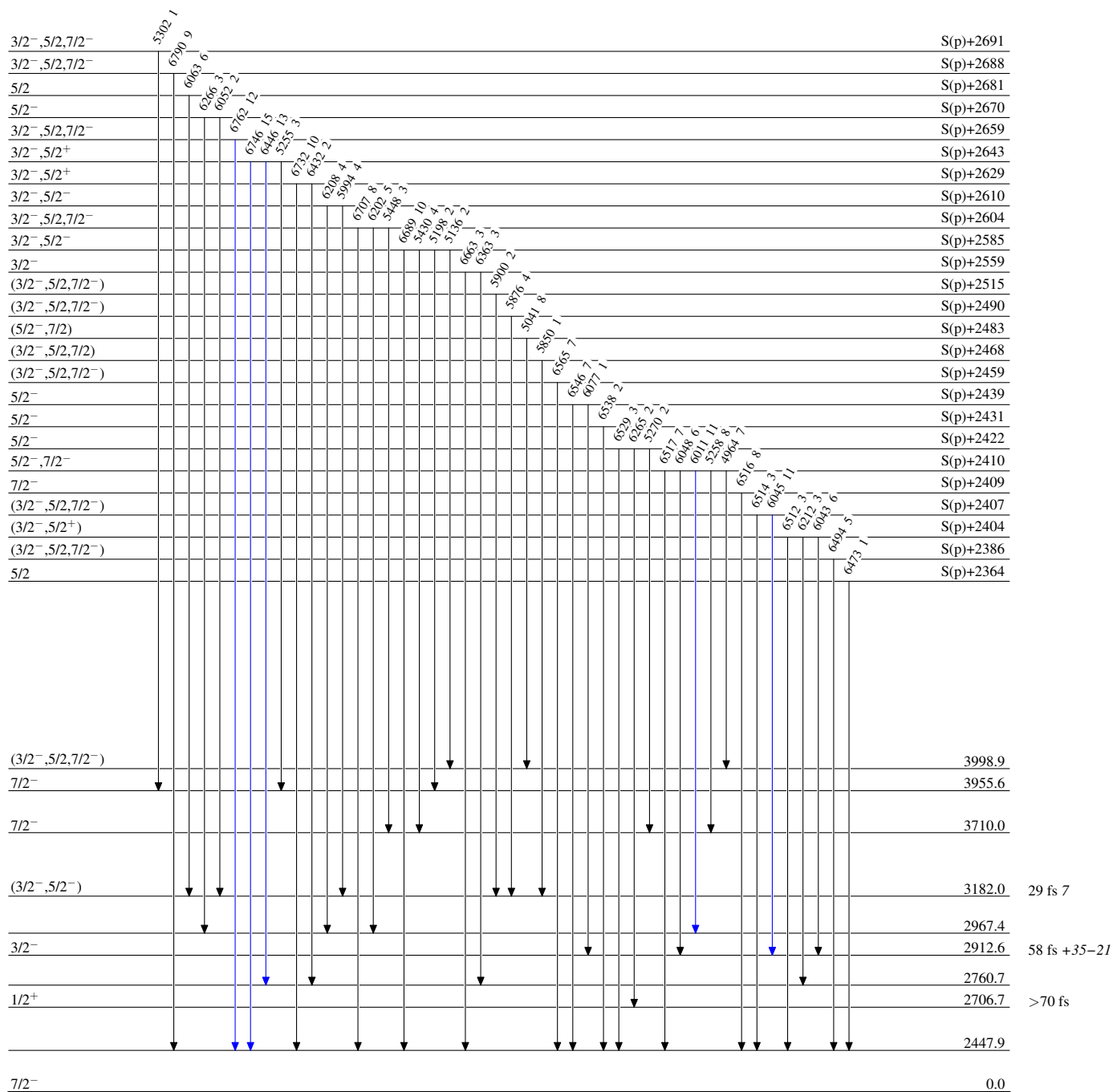
$^{52}\text{Cr}(p,\gamma)$ E=res 1975Sc08,1979Fo19,1970Ma25

Level Scheme (continued)

Intensities: Relative I_γ

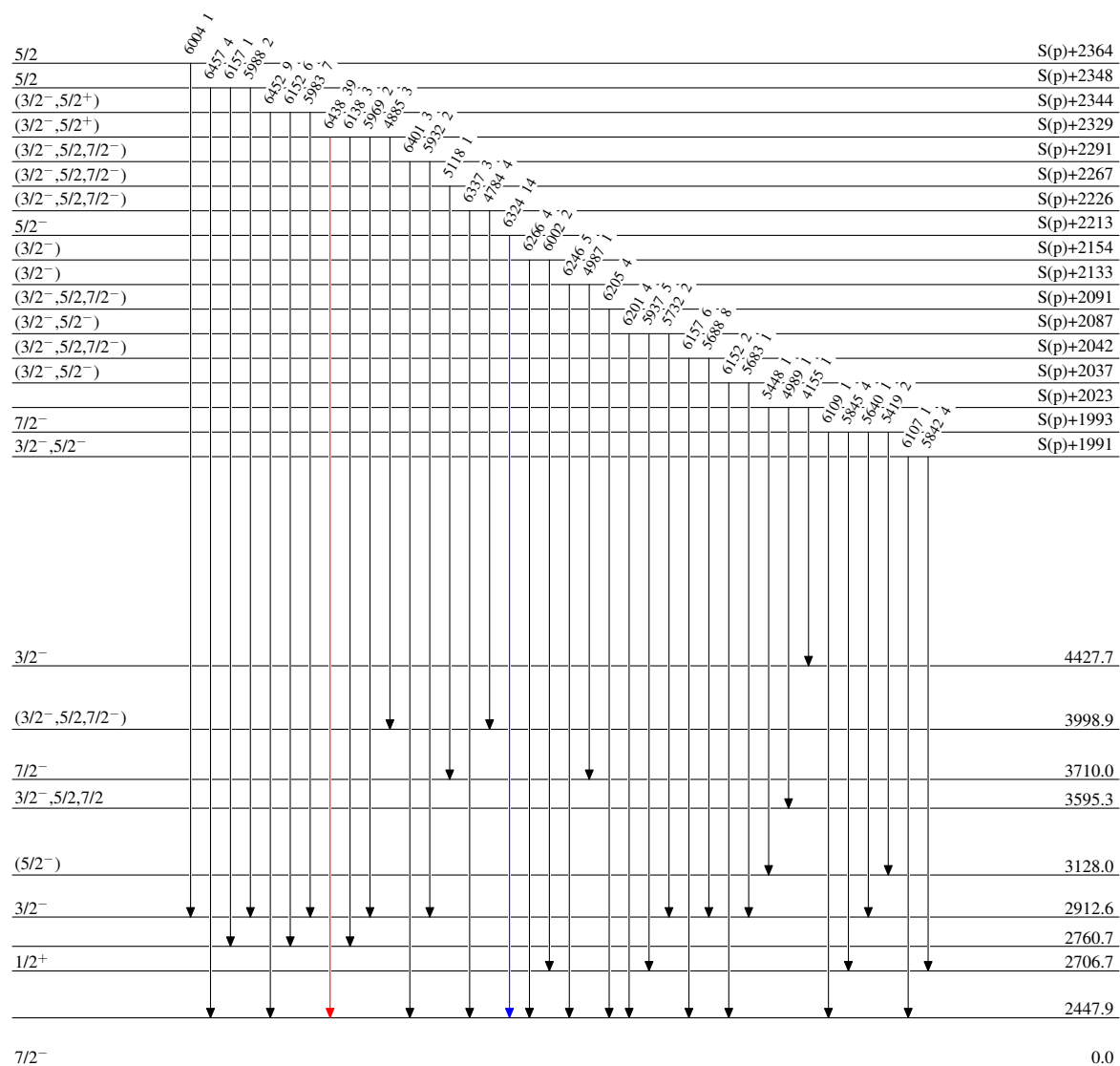
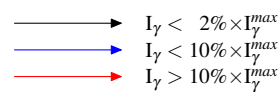
Legend

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



Legend

Intensities: Relative I_γ



58 fs +35-21

>70 fs

 ${}^{53}_{25}\text{Mn}_{28}$

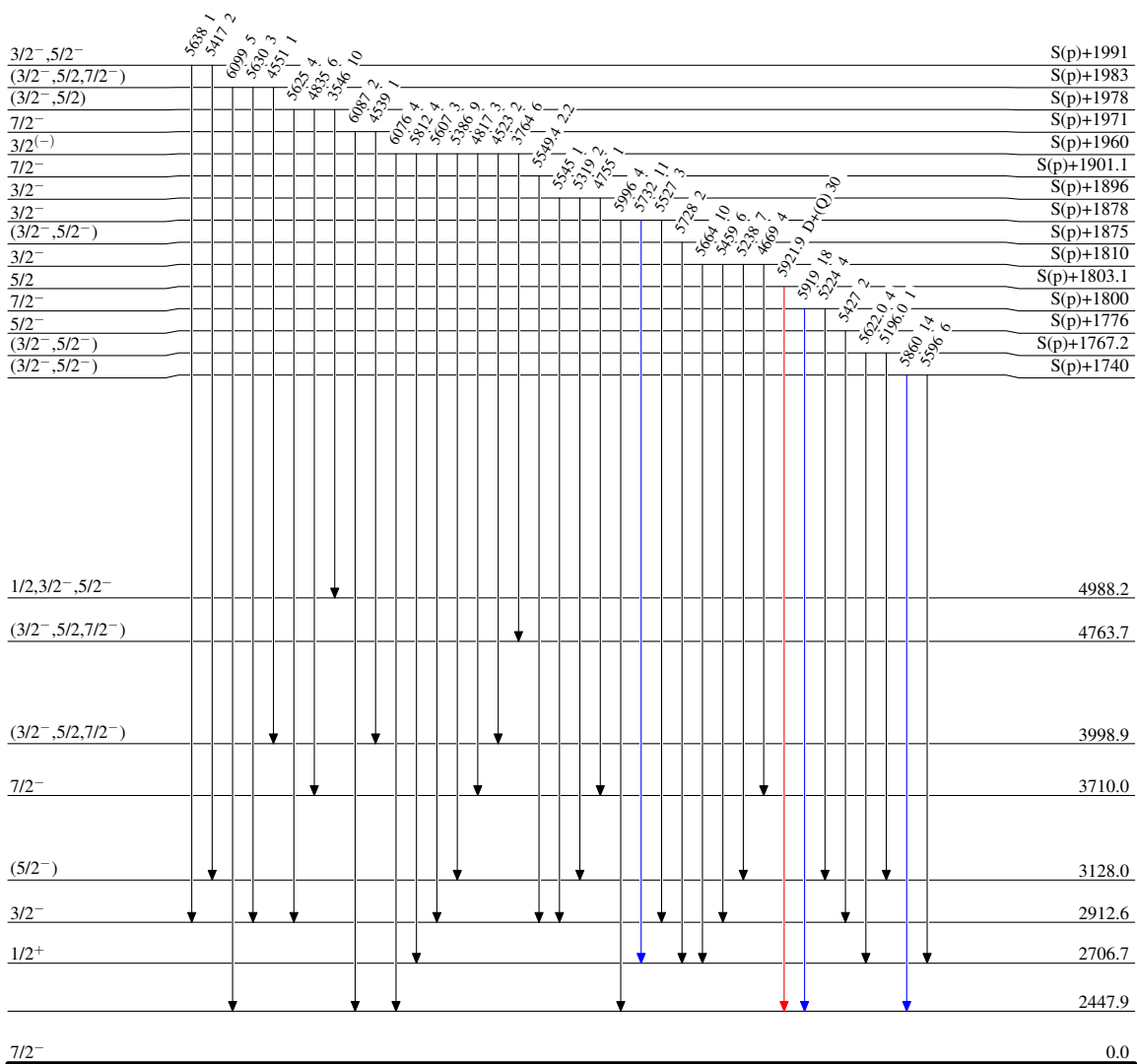
$^{52}\text{Cr}(p,\gamma)$ E=res 1975Sc08,1979Fo19,1970Ma25

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



58 fs +35-21

>70 fs

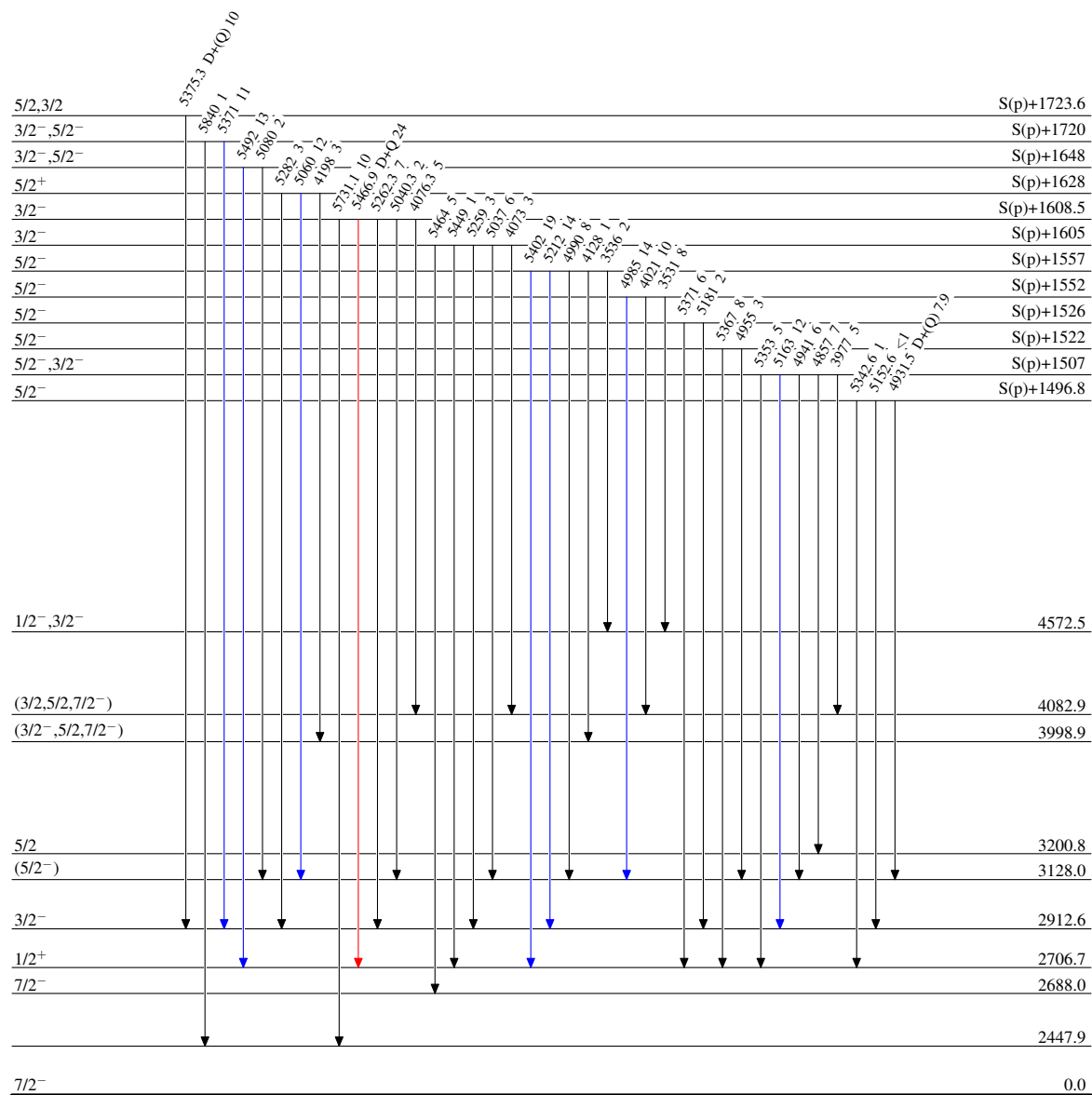
$^{52}\text{Cr}(p,\gamma)$ E=res 1975Sc08,1979Fo19,1970Ma25

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



58 fs +35-21

>70 fs

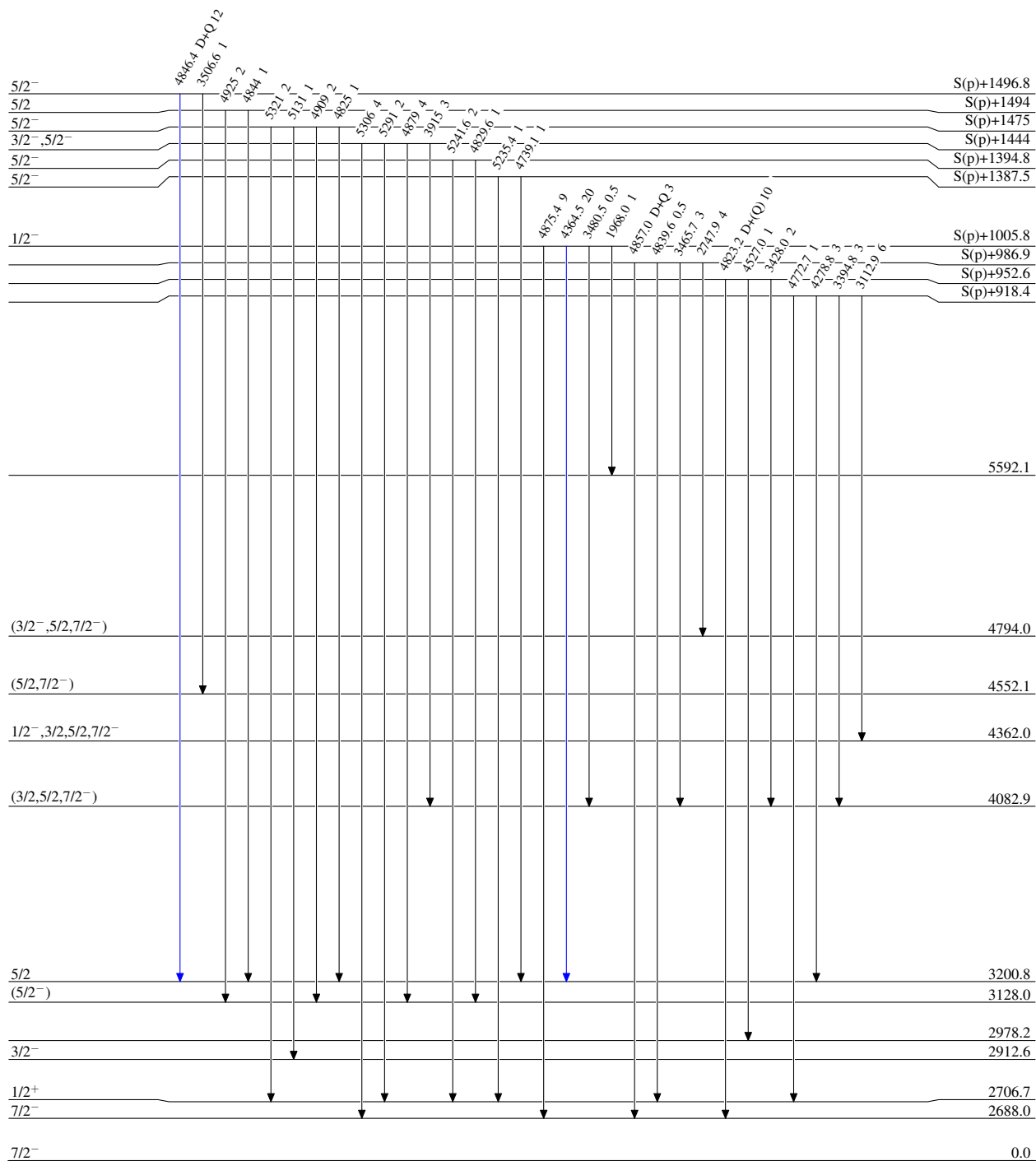
$^{52}\text{Cr}(p,\gamma)$ E=res 1975Sc08,1979Fo19,1970Ma25

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



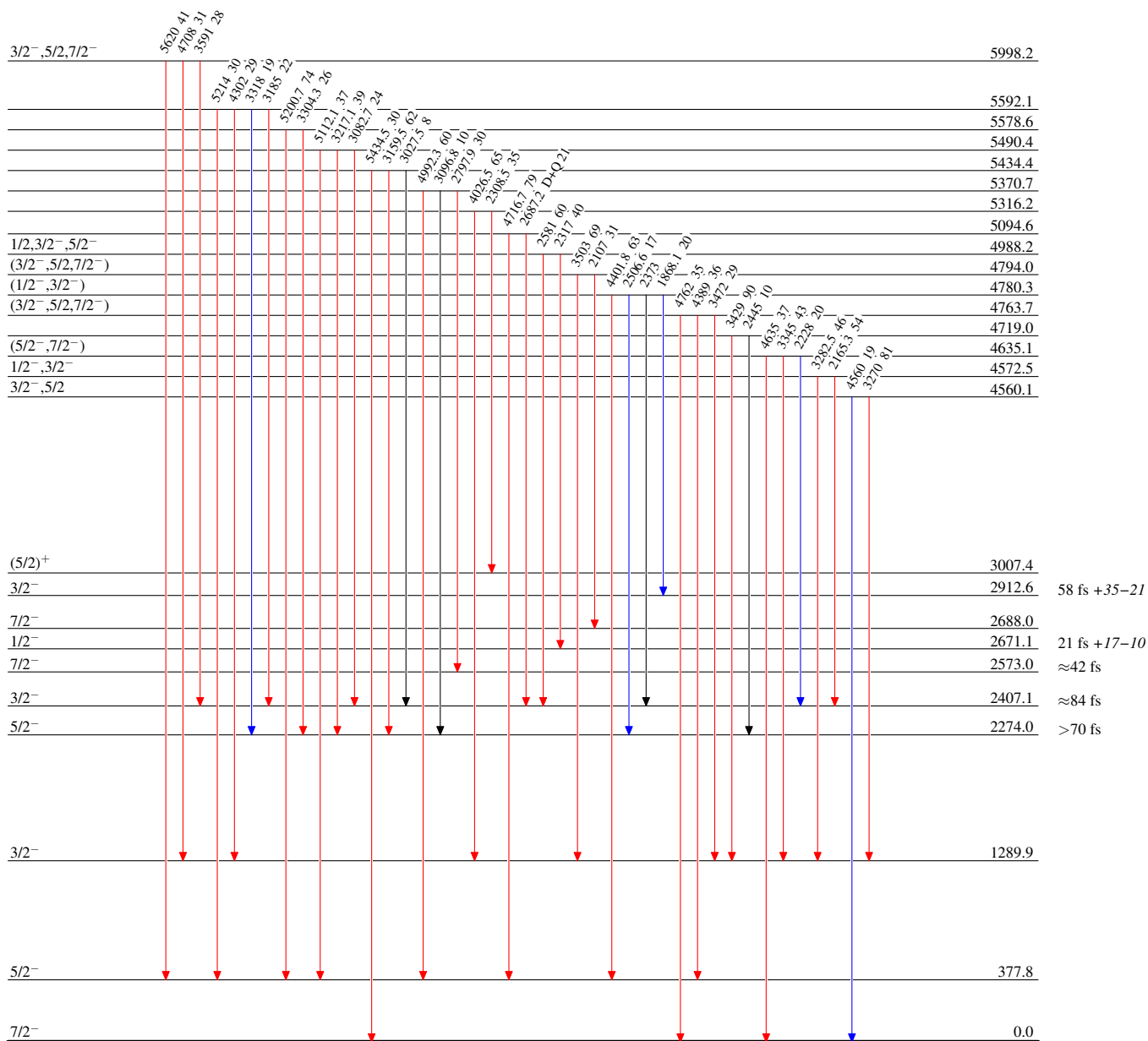
$^{52}\text{Cr}(p,\gamma)$ E=res 1975Sc08,1979Fo19,1970Ma25

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



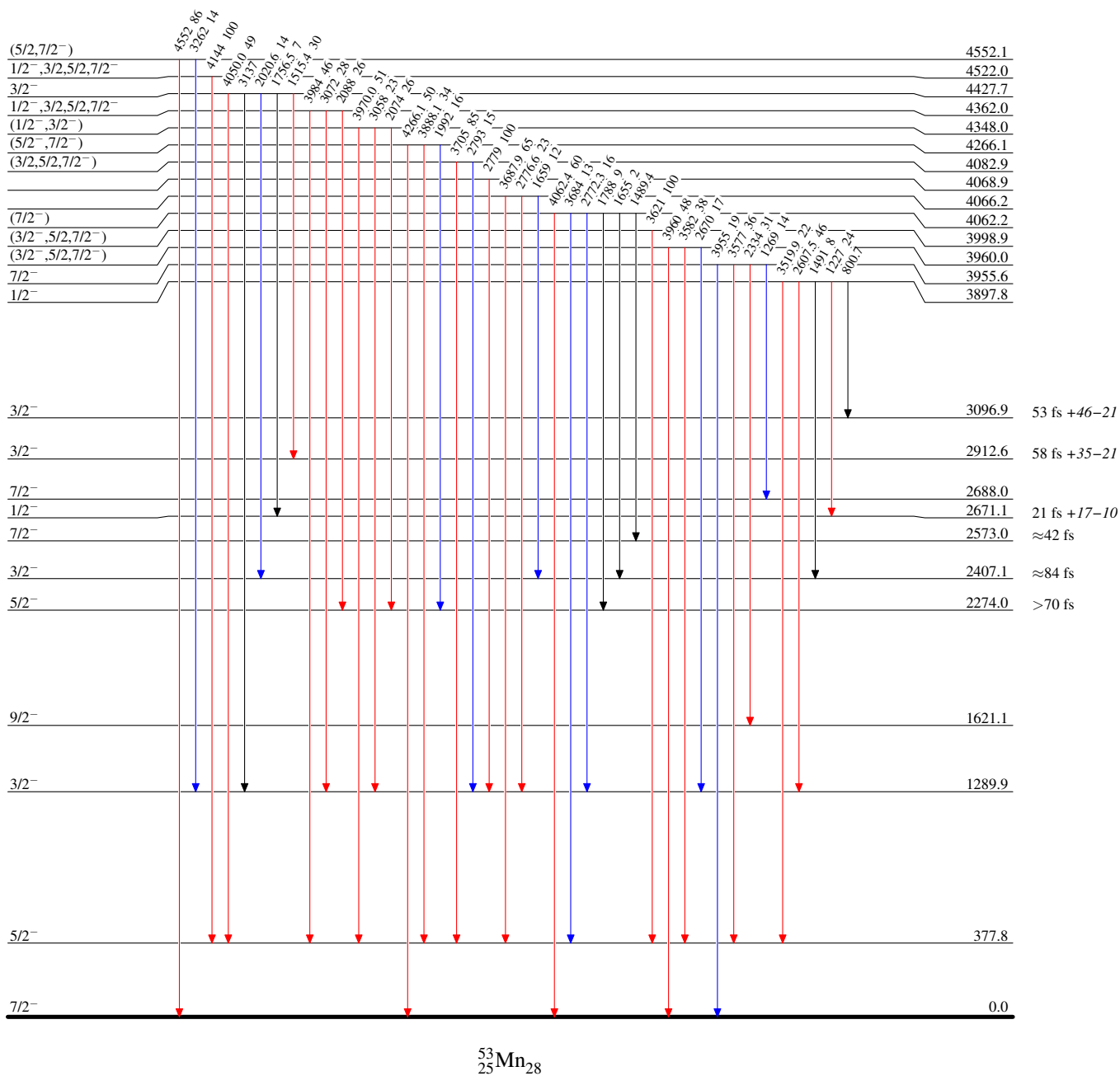
$^{52}\text{Cr}(p,\gamma)$ E=res 1975Sc08,1979Fo19,1970Ma25

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



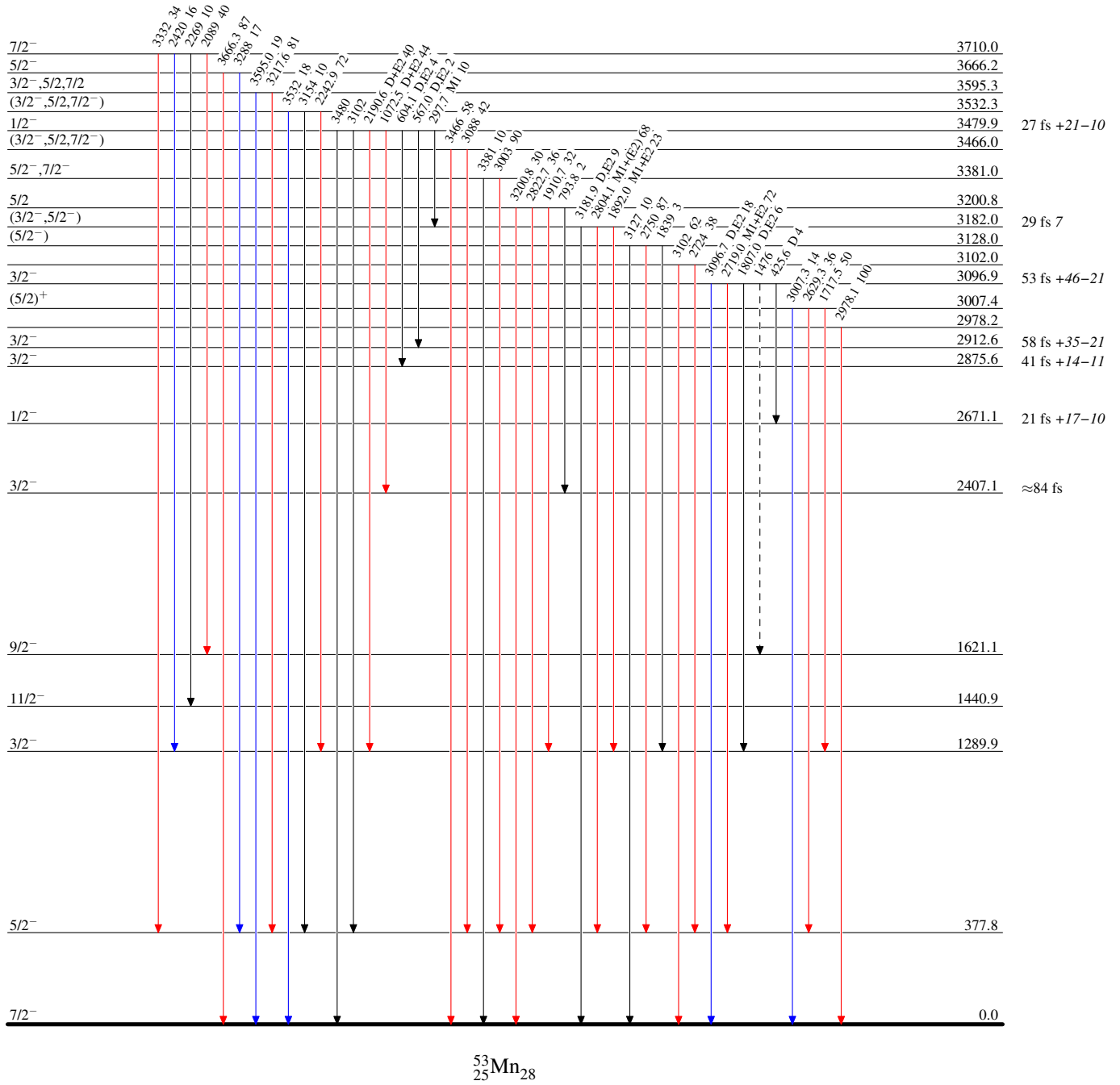
$^{52}\text{Cr}(p,\gamma)$ E=res 1975Sc08,1979Fo19,1970Ma25

Legend

Level Scheme (continued)

Intensities: Relative I_γ

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ γ Decay (Uncertain)



$^{52}\text{Cr}(p,\gamma)$ E=res 1975Sc08,1979Fo19,1970Ma25

Legend

Level Scheme (continued)

Intensities: Relative I_γ

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$
 $\dashrightarrow$ γ Decay (Uncertain)

