^{54}Fe(p,p′) 2012Ad03,1985Fu10,1963As03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde	NDS 121, 1 (2014)	20-Jun-2014

Additional information 1.

2012Ad03: E(p)=160 MeV. target=3.8 mg/cm^2 enriched ^{54}Fe. Momentum analysis with K600 magnetic spectrometer at IUCF, Indiana. Multiwire drift chambers (MWDCs) were used to determine scattered proton position. Measured energy loss, Ep spectrum from 0.0° to 1.0°. FWHM=35 keV, deduced BM1 distribution.

1989Fu07, 1985Fu10: E=65 MeV, measured $\sigma(\theta)$, DWBA analysis.

1983Dj05: E=201 MeV, measured $\sigma(\theta)$ at θ from 2° to 7°, in 1° steps. ΔL=0 shape, DWIA analysis.

1970Ma46: E=49.35 MeV. Magnetic spectrometer, spark chamber. Measured σ(E(p)′,θ), DWBA analysis.

1963As03: E=11.97 MeV. Magnetic spectrometer.

1979Bl10: E=39, 62 MeV. Measured $\sigma(\theta$,E(p)), DWBA, RPA, deduced β_L.

1979Ar09, 1977Fl12: E=3.25-4.53 MeV. Measured σ(E,θ), deduced IAR.

1972Le39 observed GQR (16.0 MeV *10*) at E(p)=38.8, 61.7 MeV.

Other references: see 1978Ve02.

All data are from 1985Fu10, except as noted.

^{54}Fe Levels

E(level)	L	Comments
0		
1408† *7*	2[a]	β_L=0.130 (1970Ma42).
2538 *5*	4	β_LR(fm)=0.31 (1985Fu10).
2561 *5*	0	β_LR(fm)=0.31 (1985Fu10).
2959 *5*	2	β_LR(fm)=0.49 (1985Fu10).
3166 *5*	2	β_LR(fm)=0.24 (1985Fu10).
3295 *5*	4	β_LR(fm)=0.22 (1985Fu10).
3345 *5*	2+3	
3834 *5*	4	β_LR(fm)=0.37 (1985Fu10).
4029† *7*		
4048 *5*	4	β_LR(fm)=0.14 (1985Fu10).
4070† *7*	(5)	
4265 *5*	4	β_LR(fm)=0.31 (1985Fu10).
4292 *5*	0	β_LR(fm)=0.15 (1985Fu10).
4579 *5*	2	β_LR(fm)=0.17 (1985Fu10).
4656 *5*	(0)	
4700 *5*		
4781 *5*	3	β_LR(fm)=0.46 (1985Fu10).
4949 *5*	4	β_LR(fm)=0.16 (1985Fu10).
5041 *5*	5,6	
5086† *10*		
5148 *5*	3	β_LR(fm)=0.079 (1985Fu10).
5232 *5*	4	β_LR(fm)=0.14 (1985Fu10).
5253† *10*		
5277 *5*	5,6	
5313 *5*		
5325† *10*		
5391† *10*		
5404† *10*		
5455† *10*		
5483 *5*	2+(5,6)	
5506† *10*		
5523† *10*		

Continued on next page (footnotes at end of table)

^{54}Fe(p,p′) 2012Ad03,1985Fu10,1963As03 (continued)

^{54}Fe Levels (continued)

E(level)	L	Comments
5534 *5*	3	β_LR(fm)=0.13 (1985Fu10).
5592† *10*		
5618† *10*		
5657 *5*	4	β_LR(fm)=0.12 (1985Fu10).
5666† *10*		
5703 *5*	4	β_LR(fm)=0.14 (1985Fu10).
5787† *10*		
5806 *5*	2	β_LR(fm)=0.083 (1985Fu10).
5837 *5*	5,6	
5875† *10*		
5907 *5*	3	β_LR(fm)=0.052 (1985Fu10).
5918† *10*		
5934† *10*		
5956 *5*	2	β_LR(fm)=0.030 (1985Fu10).
6023† *10*		
6043† *10*		
6057 *5*	5,6	
6100† *10*		
6125† *10*		
6156† *10*		
6192 *5*	2	β_LR(fm)=0.057 (1985Fu10).
6212† *10*		
6238† *10*		
6259 *5*		
6285† *10*		
6341 *5*	3	β_LR(fm)=0.45 (1985Fu10).
6401† *10*	(3)	β_L=0.16 (1966Ec03).
6429 *5*	2	β_LR(fm)=0.20 (1985Fu10).
6442† *10*		
6484 *5*	4	β_LR(fm)=0.15 (1985Fu10).
6529 *5*	5,6	
6563 *5*	(1)	
6594† *10*		
6607 *5*	4	β_LR(fm)=0.11 (1985Fu10).
6648† *10*		
6663† *10*		
6670 *5*	4	β_LR(fm)=0.11 (1985Fu10).
6710† *10*		
6749 *5*	3	β_LR(fm)=0.052 (1985Fu10).
6774 *5*	1	
6804† *10*		
6821 *5*	5,6	
6836† *10*		
6881 *5*	4[b]	β_LR(fm)=0.11 (1989Fu07).
6951 *5*	3	β_LR(fm)=0.079 (1985Fu10).
7011 *10*	3	β_LR(fm)=0.17 (1985Fu10).
7050 *10*	5,6	
7128 *10*		
7155 *10*	5,6	
7270 *10*	3	β_LR(fm)=0.31 (1985Fu10).

Continued on next page (footnotes at end of table)

^{54}Fe(p,p′) 2012Ad03,1985Fu10,1963As03 (continued)

^{54}Fe Levels (continued)

E(level)	J$^{\pi}$[&]	L	Comments
7377 *10*		2	β_LR(fm)=0.083 (1985Fu10).
7442 *10*			
7486 *10*		3	β_LR(fm)=0.081 (1985Fu10).
7603 *10*		3	β_LR(fm)=0.13 (1985Fu10).
7644 *10*		3	β_LR(fm)=0.11 (1985Fu10).
7674 *10*		4	β_LR(fm)=0.092 (1985Fu10).
7791 *10*		3	β_LR(fm)=0.11 (1985Fu10).
7868 *10*		3	β_LR(fm)=0.088 (1985Fu10).
7905 *10*			
7938 *10*	1$^+$	0	
8005 *10*		3	β_LR(fm)=0.21 (1985Fu10).
8117 *10*	1$^+$	0	
8179 *10*		0	
8225 *10*			
8298 *10*	1$^+$		
8330 *10*			B(M1)↑=0.096 *16* (2012Ad03) yield=2308 *76* (2012Ad03).
8440 *10*		3	β_LR(fm)=0.17 (1985Fu10).
8450[‡] *20*	1$^+$		
8465 *10*		3	β_LR(fm)=0.19 (1985Fu10).
8521 *10*		5,6	
8633 *10*		1	
8666 *10*		4	β_LR(fm)=0.13 (1985Fu10).
8850 *10*	1$^+$	0	B(M1)↑=0.156 *26* (2012Ad03) yield=3716 *108* (2012Ad03).
8882 *10*		3	β_LR(fm)=0.092 (1985Fu10).
8952 *10*		3	β_LR(fm)=0.13 (1985Fu10).
8982 *10*	1$^+$	0	B(M1)↑=0.130 *22* (2012Ad03) yield=3088 *93* (2012Ad03).
9064 *10*	1$^+$	0	B(M1)↑=0.132 *22* (2012Ad03) yield=3147 *94* (2012Ad03).
9110[#]			B(M1)↑=0.061 *10* (2012Ad03) yield=1459 *53* (2012Ad03).
9114 *10*		3	β_LR(fm)=0.13 (1985Fu10).
9140[‡] *20*	1$^+$		B(M1)↑=0.118 *20* (2012Ad03) yield=2811 *85* (2012Ad03).
9150 *10*		3	β_LR(fm)=0.10 (1985Fu10).
9246 *10*		0	
9290[‡] *20*	1$^+$		
9302[#]			yield=1046 *42* (2012Ad03).
9353 *10*		3	β_LR(fm)=0.079 (1985Fu10).
9402 *10*		3	β_LR(fm)=0.10 (1985Fu10).
9410[‡] *20*	1$^+$		B(M1)↑=0.19 *3* (2012Ad03) yield=4470 *120* (2012Ad03).
9513 *10*		3	β_LR(fm)=0.10 (1985Fu10).
9530[‡] *20*	1$^+$		B(M1)↑=0.064 *11* (2012Ad03) yield=1501 *55* (2012Ad03).
9565 *10*			
9662 *10*		3	β_LR(fm)=0.11 (1985Fu10).
9716 *10*			
9747 *10*		3	β_LR(fm)=0.131 (1985Fu10).
9789[#@]			yield=793 *35* (2012Ad03).
9909[#]			B(M1)↑=0.046 *8* (2012Ad03) yield=1082 *43* (2012Ad03).

Continued on next page (footnotes at end of table)

^{54}Fe(p,p′) 2012Ad03,1985Fu10,1963As03 (continued)

^{54}Fe Levels (continued)

E(level)	J^{π}[&]	L	Comments
9940[‡] *20*	1^+		
9989 *10*		3	β_LR(fm)=0.92 (1985Fu10).
10033 *10*		3	β_LR(fm)=0.074 (1985Fu10).
10045[#]			B(M1)↑=0.26 *4* (2012Ad03) yield=6030 *150* (2012Ad03).
10060[‡] *20*	1^+		
10076 *10*		3	β_LR(fm)=0.092 (1985Fu10).
10144 *10*		2	β_LR(fm)=0.079 (1985Fu10).
10160[‡] *20*	1^+		
10205 *10*			
10230 *10*			
10256[#]			B(M1)↑=0.041 *7* (2012Ad03) yield=949 *39* (2012Ad03).
10300[#]			B(M1)↑=0.023 *4* (2012Ad03) yield=525 *26* (2012Ad03).
10342 *10*		4	β_LR(fm)=0.092 (1985Fu10).
10455[#]			B(M1)↑=0.027 *5* (2012Ad03) yield=612 *30* (2012Ad03).
10541 *10*	1^+[c]		B(M1)↑=0.36 *6* (2012Ad03) yield=8210 *190* (2012Ad03).
10586 *10*			
10608[#]			B(M1)↑=0.030 *5* (2012Ad03) yield=693 *32* (2012Ad03).
11020[‡] *20*	1^+		
11110[‡] *20*	1^+		
11262[#]			B(M1)↑=0.032 *5* (2012Ad03) yield=713 *32* (2012Ad03).
11310[‡] *20*	1^+		B(M1)↑=0.033 *6* (2012Ad03) yield=750 *33* (2012Ad03).
11447[#]			B(M1)↑=0.025 *4* (2012Ad03) yield=556 *28* (2012Ad03).
11540[‡] *20*	1^+		
11604[#@]			yield=628 *30* (2012Ad03).
11760[‡] *20*	1^+		B(M1)↑=0.102 *17* (2012Ad03) yield=2275 *74* (2012Ad03).
11920[‡] *20*	1^+		B(M1)↑=0.062 *11* (2012Ad03) yield=1387 *51* (2012Ad03).
11950[‡] *20*	1^+		
13900[‡] *20*	1^+		

[†] From 1963As03.
[‡] From 1983Dj05.
[#] From 2012Ad03.
[@] No corresponding Gamow-Teller state is identified (2012Ad03).
[&] ΔL=0 spin-flip transitions, characteristic very forward peaked angular distribution, DWIA. From 1983Dj05.
[a] From 1970Ma46.
[b] From 1989Fu07.
[c] ΔT=1, from (t,^{3}He) data of E. R. Flynn as quoted in 1982Eu01.