^{54}Fe(e,e′)   **1985So05,1973Ph02**

History

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

Additional information 1.

1971Li21: ^{54}Fe(e,e) measured absolute differential cross sections, studied charge-density distribution parameters.

1985So05: E=30-57 MeV. Scattering angle 165°. High resolution system. Measured $\sigma(\theta)$, $\sigma(E(E'))$. Deduced B(λ), transition radius, M1 total strength; sum of B(M1)=6.49 *34* in 7-12 MeV region. Obtained transition radius.

1982Eu01: E=30-58 MeV. Measured angular distributions at constant momentum transfer q=0.4 fm^{-1}, identified strong transverse M1 transitions, sum of B(M1)=6.3 *6*.

1981Li05: E=133-338 MeV. Magnetic spectrometer and multiwire drift chamber. Determined ratio R=bm8/sum of bm8.

1962Be18: E=150 MeV. Measured angular distribution, determined multipolarity, deduced B(EL).

1973Ph02: E=209 MeV. Measured $\sigma(\theta)$ from 30° to 110° for 2^+, 3^-, 4^+.

1979LiZX: E=130-200 MeV. Studied isovector magnetic excitation of high-spin stretched angular momentum configurations, extracted M8 strength.

2004De25: E=226 MeV. Measured $\sigma(E,\theta)$ from 30° to 90°.

2006Kh14: E=225 MeV. Measured energy and angular distributions from 40° to 75° with a step of 5°, studied multipole giant resonance, found the excitation energies from 9.7 MeV to 38.3 MeV with E1, E2, E3, and E5 giant resonance, respectively, and deduced reduced transition probabilities. The data aren′t included this dataset.

See 1985Mo07 and 1990Sa17 for calculation of inelastic scattering form factor and of some transition strength distributions.

See also 1975HoYS, 1972Li28.

^{54}Fe Levels

E(level)[†]	J$^{\pi}$[@]	L[d]	Comments
0	0^+		
1410	2^+	E2	B(E2)=0.0533 *24* (1962Be18), B(E2)=0.0769 *54* (2004De25).
2540	(4^+)	E4	B(E4)=0.0066 *9* (2004De25).
2900[‡]	2^+	E2	B(E2)=0.0225 *19* (1962Be18).
2950	(6^+)		
2960	(2^+)		
3160	(2^+)		B(E2)=0.0143 *16* (2004De25).
3300	(4^+)		
3340			
3.50×10^3 *20*		E3	E(level): from 2004De25. B(E3)=0.00173 *28* (2004De25).
4100[‡]	4^+	E4	B(E4)=0.00089 *8* (1962Be18), B(E4)=0.00095 *8* (2004De25).
4580	(2^+)		
4790	(3^-)		
4850[‡]	3^-	E3	B(E3)=0.00439 *28* (1962Be18), B(E3)=0.00252 *43* (2004De25).
5090		E2	B(E2)=0.0066 *13* (2004De25), B(E4)=0.00093 *12* (2004De25).
6400[‡]	3^-	E3	B(E3)=0.00611 *34* (1962Be18), B(E3)=0.0118 *16* (2004De25).
6950 *20*		E2	
7030 *10*		M2	B(M2)=0.210 *78* (1985So05).
7110 *20*		E2,E3	B(E2)=0.0056 *22* (2004De25).
7180 *10*		M1,(E1)	B(M1)=0.050 *38* (1985So05).
7200[‡]	4^+	E4	B(E4)=0.00173 *19* (1962Be18), B(E4)=0.00057 *12* (2004De25).
7260 *20*		E3	
7310 *20*		E2,E3	
7360 *20*		E2	
7470 *20*		E3	B(E3)=0.00407 *61* (2004De25).
7550 *20*		E2	
7590 *20*		E3	
7660 *20*		E2,E3	

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^{54}Fe(e,e′)　　**1985So05,1973Ph02 (continued)**

^{54}Fe Levels (continued)

E(level)[†]	J$^{\pi}$[@]	L[d]	Comments
7680 *20*		(M2),E2	B(M2)=0.132 *87* (1985So05).
7760 *20*		E2	
7800 *20*		(M2),E2	B(M2)=0.27 *13* (1985So05).
7850 *10*		M2,E2	B(M2)=0.191 *74* (1985So05).
7930 *20*		E2	
7990 *20*		E2,E3	
8110 *10*		M1	B(M1)=0.495 *38* (1985So05).
8180 *20*		E1	
8210 *20*		E2	
8270 *20*		E2	
8314[#] *10*	8$^-$[&]	M8	
8330 *20*		(M1),M2	B(M1)=0.206 *23* (1985So05), B(M2)=0.957 *80* (1985So05); likely multipolarity E2 also.
8410 *20*		E2	
8440 *20*		E2	
8480 *20*		(M1),(M2)	B(M1)=0.108 *26* (1985So05), B(M2)=0.490 *86* (1985So05); likely multipolarity E1,E2 also.
8560 *10*		M1,M2,E1	B(M1)=0.044 *43* (1985So05), B(M2)=0.19 *11* (1985So05).
8610 *10*		M2	B(M2)=0.289 *59* (1985So05).
8650 *20*		E2	
8680 *10*		M2,E2	B(M2)=0.245 *65* (1985So05).
8740 *10*		M1,M2	B(M1)=0.058 *36* (1985So05), B(M2)=0.243 *98* (1985So05).
8850 *10*		M1	B(M1)=0.371 *38* (1985So05).
8900 *10*		M1,M2,E1	B(M1)=0.029 *30* (1985So05), B(M2)=0.121 *96* (1985So05).
8930 *10*		M2	B(M2)=0.263 *56* (1985So05).
8949[#] *10*	8$^-$[b]	M8	
8980 *10*		M1	B(M1)=0.482 *36* (1985So05).
9060 *10*		M1	B(M1)=0.309 *29* (1985So05).
9110 *10*		M1	B(M1)=0.298 *31* (1985So05).
9140 *10*		M1	B(M1)=0.295 *34* (1985So05).
9240 *10*		M2,E3	B(M2)=0.270 *62* (1985So05).
9300 *20*		E2	
9360 *20*		E3	
9400 *10*		M1	B(M1)=0.451 *40* (1985So05).
9450 *10*		M1,E1	B(M1)=0.056 *28* (1985So05).
9500 *10*		M2,E2	B(M2)=0.336 *62* (1985So05).
9530 *10*		M1,(M2)	B(M1)=0.161 *28* (1985So05), B(M2)=0.755 *98* (1985So05).
9570 *10*		M2	B(M2)=0.241 *64* (1985So05).
9640 *10*		M2,(M3)	B(M2)=0.259 *66* (1985So05), possible multipolarity (E3) also.
9680 *10*		M2,E2	B(M2)=0.215 *84* (1985So05).
9730 *20*		E3	
9810 *10*		M2	B(M2)=0.290 *62* (1985So05).
9860 *10*		M1,M2	B(M1)=0.098 *51* (1985So05), B(M2)=0.33 *11* (1985So05); possible multipolarity (E2) also.
9910 *10*		M1	B(M1)=0.186 *30*(1985So05).
9974[#] *10*	8$^-$[&]	M8	
9980 *10*		M2	B(M2)=0.942 *83* (1985So05).
10020 *10*		M2	B(M2)=0.323 *77* (1985So05).
10050 *10*		M1	B(M2)=0.666 *50* (1985So05).
10090 *10*		M2	B(M2)=0.190 *57* (1985So05).
10130 *10*		M1	B(M1)=0.340 *36* (1985So05).
10180 *10*		M1,M2,E2	B(M1)=0.359 *46* (1985So05), B(M2)=0.148 *13* (1985So05).
10220 *10*		M1	B(M1)=0.116 *38* (1985So05).
10290 *10*		M1,(M2)	B(M1)=0.087 *79* (1985So05), B(M2)=0.41 *20* (1985So05); likely multipolarity E1 also.
10380 *20*		(M2),E2	B(M2)=0.32 *7* (1985So05).
10450 *10*		M1,E1	L: B(M1)=0.089 *31* (1985So05).
10530 *10*	1$^+$[a]	M1	B(M1)=0.126 *7* (1985So05).
10590 *20*		E2,E3	
10630 *10*		(M1),M2	B(M1)=0.076 *38* (1985So05), B(M2)=0.40 *12* (1985So05).

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^{54}Fe(e,e′)　　**1985So05,1973Ph02** (continued)

^{54}Fe Levels (continued)

E(level)[†]	J$^\pi$[@]	L[d]	Comments
10660 *10*		M2	B(M2)=0.198 *54* (1985So05).
10677[#] *10*	8^{-}[&]	M8	
10740 *20*		M3	
10780 *20*		E2	
10820 *10*		M2,E2	B(M2)=0.061 *60* (1985So05).
10870 *20*		E2,E3	
10910 *20*		E3	
11010 *10*		M2,E2	B(M2)=0.42 *12* (1985So05).
11050 *10*		M2	B(M2)=0.173 *59* (1985So05).
11090 *10*		M1	B(M1)=0.272 *35* (1985So05).
11120 *10*		M1,E1	B(M1)=0.081 *38* (1985So05).
11230 *10*		M1,M2	B(M1)=0.079 *22* (1985So05), B(M2)=0.347 *78* (1985So05).
11280 *10*		M1,M2,E2	B(M1)=0.094 *21* (1985So05), B(M2)=0.457 *84* (1985So05).
11320 *10*		M1,M2	B(M1)=0.041 *25* (1985So05), B(M2)=0.182 *88* (1985So05).
11360 *20*		(M1),M2	B(M1)=0.040 *14* (1985So05), B(M2)=0.193 *61* (1985So05).
11440 *20*		E2,E3	
11520 *10*		M1,M2	B(M1)=0.210 *55* (1985So05), B(M2)=1.60 *38* (1985So05).
11710 *20*		E2,E3	
11750 *10*		M1,M2	B(M1)=0.091 *57* (1985So05), B(M2)=0.68 *39* (1985So05).
11790 *10*		M2	B(M2)=0.61 *35* (1985So05).
13263[#] *10*	8^{-}[c]	M8	

[†] From 1985So05, ΔE<10 keV for the stronger transitions, up to 20 keV for some of the weaker ones. E(level)<6500 from 1973Ph02, except as noted.

[‡] From 1962Be18.

[#] From 1981Li05.

[@] From fit of squared inelastic form factor for 2^{+}, 3^{-}, 4^{+}, and 8^{-} to experimental data mainly.

[&] Purely transverse and most probably magnetic transition, total isospin vector T=1, R=9%.

[a] Transverse excitation into state of low multipolarity, total isospin vector T=2.

[b] Purely transverse and most probably magnetic transition, total isospin vector T=1, R=8%.

[c] Purely transverse and most probably magnetic transition, total isospin vector T=2, R=53%.

[d] L=excitation character, if there are multiple assignments at a level, the likely assignments appear without parentheses and the possible assignment inside parentheses, from 1985So05, except as noted.