^{57}Fe(d,p),(pol d,p) 1972Ra17,1975Ko19

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Caroline D. Nesaraja, Scott D. Geraedts and Balraj Singh	NDS 111, 897 (2010)	12-Jan-2010

J^π(^{57}Fe target)=1/2$^-$.
1975Ko19: (pol d,p) E=10 MeV, measured analyzing powers.
1972Ra17: (d,p) E=7.0 MeV. FWHM=12 keV, measured $\sigma(\theta)$.
Additional information 1.
1964Sp03: (d,p) E=6.5 MeV, FWHM≈14 keV (estimated by evaluators from authors′ spectrum); measured σ(E).
1964Bo08: (d,p) E=6.6 MeV, measured $\sigma(\theta)$ using multi-angle magnetic analyzer method. Energy resolution 0.9-1.2%.
1963Fu04: (d,p) E=15 MeV, measured $\sigma(\theta)$, θ(lab)=9-50°, DWBA analysis.

^{58}Fe Levels

E(level)†	L‡	S‡&	Comments
0.0	1	0.03	L: (1) (1964Bo08), 1 (1963Fu04). J^π: $0^+,1^+$ from L-1/2 transfer in Ay(θ) (1975Ko19).
810.6	1+3	0.14+0.25	E(level): adopted by authors. Others: 750 *30* (1964Bo08), 806 (1963Fu04). L: 1 (1964Bo08,1963Fu04).
1676 *10*	1+(3)	0.43+0.016	E(level): 1660 *30* (1964Bo08), 1682 (1963Fu04). L: 1 (1964Bo08,1963Fu04). J^π: $1^+,2^+$ from L+1/2 for L=1 transfer in Ay(θ) (1975Ko19).
2132 *10*	3	0.51	J^π: $2^+,3^+$ from L-1/2 transfer in Ay(θ) (1975Ko19); but L+1/2 transfer cannot be definitely ruled out, thus 4^+ is also possible. E(level): 2090 *30* (1964Bo08), 2143 (1963Fu04). L: 1 (1964Bo08), 3 (1963Fu04).
2254 *10*	1	0.015	
2597 *10*	(3)	0.02	
2776 *10*	1	0.62	E(level): 2780 *30* (1964Bo08), 2787 (1963Fu04). L: 1 (1964Bo08,1963Fu04) J$ $1^+,2^+$ from L+1/2 transfer in Ay(θ) (1975Ko19).
2874 *10*	1+3	0.03+0.4	E(level): 2892 (1963Fu04).
3080 *10*	1	0.33	E(level): 3090 *30* (1964Bo08), 3098 (1963Fu04). L: 1 (1964Bo08,1963Fu04). J^π: $1^+,2^+$ from L+1/2 transfer in Ay(θ) (1975Ko19).
3230 *10*	1+3	0.02+0.12	E(level): 3255 (1963Fu04).
3451 *10*			
3533 *10*	1	0.20	E(level): 3522 (L=1) (1963Fu04). J^π: $1^+,2^+$ from L+1/2 transfer in Ay(θ) (1975Ko19).
3625 *10*	1	0.25	E(level): 3610 *30* (1964Bo08), 3652 (1963Fu04). L: 1 (1964Bo08,1963Fu04). J^π: $1^+,2^+$ from L+1/2 transfer in Ay(θ) (1975Ko19).
3749 *10*			
3785 *10*			
3854 *10*	1+3	0.014+0.076	
3875 *10*	1	0.051	
3894 *10*	3	0.63	E(level): 3900 *30* possible impurity from ^{56}Fe(d,p) (1964Bo08), 3908 (1963Fu04).
4013 *10*	1+3	0.091+0.16	E(level): 4034 (1963Fu04).
4131 *10*	1	0.06	
4158 *10*	1	0.19	E(level): 4190 *30* (1964Bo08), 4175 (1963Fu04). L: 1 (1964Bo08,1963Fu04). J^π: $0^+,1^+$ from L-1/2 transfer in Ay(θ) (1975Ko19).
4212 *10*	(3)	0.09	
4237 *10*	(1+3)	0.085+0.39	
4288 *10*			
4314 *10*	1+3	0.09+0.40	
4348 *10*	1+3	0.06+0.19	E(level): 4350 *30* (1964Bo08), 4342 (1963Fu04). L: 1 (1964Bo08).

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^{57}Fe(d,p),(pol d,p) 1972Ra17,1975Ko19 (continued)

^{58}Fe Levels (continued)

E(level)†	L‡	S‡&	Comments
4398 *10*			
4438 *10*	2	0.07	L,S: from 1975Ko19. 1972Ra17 obtain L=1+3 and $J^\pi=2^+$ which is discrepant in view of $\sigma(\theta)$ and analyzing power data of 1975Ko19 which gives $2^-,3^-$ from L+1/2 transfer. Additional information 2.
4468 *10*			
4499 *10*			
4514 *10*	(3)	0.09	
4546 *10*	1	0.28	E(level): 4540 *30* (1964Bo08), 4552 (1963Fu04). L: 1 (1964Bo08). J^π: $0^+,1^+$ from L-1/2 transfer in Ay(θ) (1975Ko19).
4589 *10*			
4620 *10*	1+3	0.04+0.52	
4661 *10*			
4711 *10*	(1+3)	0.01+0.12	
4809 *10*			
4832 *10*			E(level): 4860 *30* (1964Bo08), 4853 (1963Fu04).
4937 *10*			E(level): 4912 (L=(2)) (1963Fu04).
4992 *10*	1	0.24	E(level): 4990 *30* (1964Bo08), 5008 (1963Fu04). L: (1) (1964Bo08), 1 (1963Fu04). J^π: $0^+,1^+$ from L-1/2 transfer in Ay(θ) (1975Ko19).
5138 *10*			E(level): 5113 (L=1) (1963Fu04).
5164 *10*			E(level): 5160 *30* (1964Bo08).
5213 *10*			
5236 *10*			
5254 *10*			
5286 *10*			
5315 *10*			E(level): 5332 *9* (1963Fu04).
5370 *10*			
5406 *10*			E(level): 5410 *30* (1964Bo08), 5428 (1963Fu04). L: (2) (1964Bo08).
5462 *10*			
5506 *10*			
5517@ *10*			
5612@ *10*			
5655 *10*			
5716 *10*			
5734 *10*			
5763 *10*			
5788 *10*			
5817 *10*	(2)	0.04	E(level): 5830 *30* (L=(2)) (1964Bo08).
5857 *10*	(2)	0.08	
5887 *10*	(0)	0.02	
5914 *10*			
5952 *10*			
5989 *10*			
6030 *10*			
6054 *10*			
6146# *10*			
6168# *10*			
6202 *10*			
6238 *10*			E(level): 6220 *30* (L=0) (1964Bo08).
6279 *10*			
6295 *10*			
6328 *10*			
6348# *10*			

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^{57}Fe(d,p),(pol d,p) 1972Ra17,1975Ko19 (continued)

^{58}Fe Levels (continued)

E(level)†	L‡	S‡&	Comments
6370 *10*			
6400 *10*			
6436 *10*			
6450 *10*			
6476# *10*			
6532 *10*			E(level): 6540 *30* (L=0) (1964Bo08).
6558 *10*			
6593 *10*			
6615[a] *10*			
6636# *10*			
6679 *10*	(2)	0.17	
6741 *10*			
6771 *10*			
6789# *10*			E(level): 6790 *30* (L=2,3) (1964Bo08).
6842 *10*			
6909# *10*			
6953# *10*			
7023# *10*			
7028# *10*			
7048# *10*			
7060# *10*			
7094# *10*			
7124# *10*			
7166# *10*			
7199# *10*			E(level): 7220 *30* (L=0) (1964Bo08).
7230# *10*			
7272# *10*			
7289# *10*			
7351# *10*			
7429 *10*	(0)	0.05	
7457 *10*			E(level): 7450 *30* (L=(0)) (1964Bo08).
7473 *10*			
7492 *10*			
7507 *10*			
7534 *10*			
7567 *10*			
7578 *10*			
7585 *10*			
7605 *10*			
7628 *10*			
7653 *10*			
7680? *10*			
7690? *10*			
7734 *10*			
7775 *10*			E(level): 7780 *30* (1964Bo08).
7797 *10*			
7824 *10*			
7846 *10*			
7883 *10*			
7901 *10*			
7918 *10*			
7946 *10*			

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^{57}Fe(d,p),(pol d,p) 1972Ra17,1975Ko19 (continued)

^{58}Fe Levels (continued)

E(level)†	E(level)†	E(level)†	E(level)†
7974 *10*	8045 *10*	8100 *10*	8157 *10*
7997 *10*	8065 *10*	8121 *10*	8182 *10*
8018 *10*	8084 *10*	8137 *10*	

† From 1972Ra17 up to 7429, unless indicated otherwise; higher energies are from 1964Sp03. In the energy region above 6000 keV, there is good agreement between 1972Ra17 and 1964Sp03. However, revised values from 1964Sp03 taking into account certain kinematic factors omitted from their published values and given in an earlier evaluation 1970Ra49, do not show such agreement.

‡ From 1972Ra17.

From 1964Sp03.

@ From 1964Sp03 with level energies decreased by 8 keV to match the energy scale of 1972Ra17.

& (2J+1)S/2.

a Authors′ value of 6515 seems a misprint.