^{54}Fe(n,γ) E=res 1980Ra08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Huo Junde	NDS 109, 787 (2008)	30-Apr-2007

1980Ra08: E=1-18 keV res, enriched target (98%); Ge(Li) spectrometer with tof gates set; γ rays from 7.76-keV s-wave, 9.48-keV, 11.2-keV, and 14.4-keV p-wave resonances were detected. Measured Eγ, Iγ.

1987Ma14: E=res measured Eγ, Iγ, capture yield vs E, relative strengths γ-rays following 7.8-, 9.5-, 11.2-, and 14.5-keV resonances.

See also 1978We09, 1977Al12, 1983BrZZ, and 1968Bi06.

All data are from 1980Ra08, except as noted.

^{55}Fe Levels

E(level)[†]	J$^\pi$[#]	Comments
0.0[‡]	3/2$^-$	
411.42[‡] *21*	1/2$^-$	
931.3[‡] *2*	5/2$^-$	
1918.3[‡] *5*	1/2$^-$	
2051.7[‡] *4*	3/2$^-$	
2470.2[‡] *6*	3/2$^-$	
3028.5[‡] *7*	3/2$^-$	
3552.3[‡] *8*	3/2$^-$	
3599[‡] *10*	1/2$^-$	
3790.3[‡] *8*	1/2$^-$	
3906.7[‡] *8*	3/2$^-$	
4450[‡] *20*	1/2$^+$	
4495.1[‡] *7*	1/2$^-$	
4538[‡] *10*	(1/2$^-$,3/2$^-$)	
4708.3[‡] *7*	5/2$^+$	
5118[‡] *3*	1/2$^-$,3/2$^-$	
5775[‡] *10*	1/2$^-$	
S(n)+7.76 *1*	1/2$^+$	J$^\pi$: s-wave resonance capture.
S(n)+9.48 *1*	3/2$^-$	J$^\pi$: p-wave resonance capture: from strength of 8376γ, it is either M1 transition from a p3/2 resonance or an E2 transition from a $p_{1/2}$ resonance, but E2 is expected to be weak.
S(n)+11.2 *1*	1/2$^-$,3/2$^-$	J$^\pi$: p-wave resonance capture.
S(n)+14.4 *1*	1/2$^-$,3/2$^-$	J$^\pi$: p-wave resonance capture.

† For the resonance state, S(n)+E(n)(lab), S(n)=9298.23 keV *20* from 2003Au03.
‡ From Adopted Levels.
# From Adopted Levels, except as noted.

γ(^{55}Fe)

Eγ[†]	Iγ[‡]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$
3529[#] *10*	<7	S(n)+7.76	1/2$^+$	5775	1/2$^-$
3531[#] *10*	<35	S(n)+9.48	3/2$^-$	5775	1/2$^-$
3533[#] *10*	<20	S(n)+11.2	1/2$^-$,3/2$^-$	5775	1/2$^-$
3536[#] *10*	<35	S(n)+14.4	1/2$^-$,3/2$^-$	5775	1/2$^-$
4183[#] *4*	<7	S(n)+7.76	1/2$^+$	5118	1/2$^-$,3/2$^-$

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^{54}Fe(n,γ) E=res 1980Ra08 (continued)

γ(^{55}Fe) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J^π_i	E_f	J^π_f
4185[#] *4*	<33	S(n)+9.48	3/2−	5118	1/2−,3/2−
4186[#] *4*	<19	S(n)+11.2	1/2−,3/2−	5118	1/2−,3/2−
4189 *4*	84 *42*	S(n)+14.4	1/2−,3/2−	5118	1/2−,3/2−
4596.1[#] *14*	<7	S(n)+7.76	1/2+	4708.3	5/2+
4597.8[#] *14*	<30	S(n)+9.48	3/2−	4708.3	5/2+
4599.5[#] *14*	<18	S(n)+11.2	1/2−,3/2−	4708.3	5/2+
4602.6[#] *14*	<30	S(n)+14.4	1/2−,3/2−	4708.3	5/2+
4766[#] *10*	<7	S(n)+7.76	1/2+	4538	(1/2−,3/2−)
4768[#] *10*	<30	S(n)+9.48	3/2−	4538	(1/2−,3/2−)
4.77×10^3[#] *1*	<18	S(n)+11.2	1/2−,3/2−	4538	(1/2−,3/2−)
4773[#] *10*	<30	S(n)+14.4	1/2−,3/2−	4538	(1/2−,3/2−)
4812[#] *4*	<6	S(n)+7.76	1/2+	4495.1	1/2−
4813[#] *4*	<29	S(n)+9.48	3/2−	4495.1	1/2−
4815[#] *4*	<13	S(n)+11.2	1/2−,3/2−	4495.1	1/2−
4818 *4*	100 *48*	S(n)+14.4	1/2−,3/2−	4495.1	1/2−
4854[#] *20*	<6	S(n)+7.76	1/2+	4450	1/2+
4856[#] *20*	<29	S(n)+9.48	3/2−	4450	1/2+
4858[#] *20*	<14	S(n)+11.2	1/2−,3/2−	4450	1/2+
4861 *20*	79 *40*	S(n)+14.4	1/2−,3/2−	4450	1/2+
5395[#] *4*	<5	S(n)+7.76	1/2+	3906.7	3/2−
5397[#] *4*	<21	S(n)+9.48	3/2−	3906.7	3/2−
5398 *4*	18 *15*	S(n)+11.2	1/2−,3/2−	3906.7	3/2−
5401[#] *4*	<29	S(n)+14.4	1/2−,3/2−	3906.7	3/2−
5514.1[#] *14*	<5	S(n)+7.76	1/2+	3790.3	1/2−
5515.8[#] *14*	<24	S(n)+9.48	3/2−	3790.3	1/2−
5517.5[#] *14*	<20	S(n)+11.2	1/2−,3/2−	3790.3	1/2−
5520.6[#] *14*	<29	S(n)+14.4	1/2−,3/2−	3790.3	1/2−
5705[#] *10*	<4	S(n)+7.76	1/2+	3599	1/2−
5707[#] *10*	<21	S(n)+9.48	3/2−	3599	1/2−
5709[#] *10*	<11	S(n)+11.2	1/2−,3/2−	3599	1/2−
5712[#] *10*	<23	S(n)+14.4	1/2−,3/2−	3599	1/2−
5752.1[#] *14*	<4	S(n)+7.76	1/2+	3552.3	3/2−
5753.8[#] *14*	<19	S(n)+9.48	3/2−	3552.3	3/2−
5755.5[#] *14*	<10	S(n)+11.2	1/2−,3/2−	3552.3	3/2−
5758.6[#] *14*	<24	S(n)+14.4	1/2−,3/2−	3552.3	3/2−
6274[#] *4*	<4	S(n)+7.76	1/2+	3028.5	3/2−
6276 *4*	30 *19*	S(n)+9.48	3/2−	3028.5	3/2−
6278 *4*	16 *11*	S(n)+11.2	1/2−,3/2−	3028.5	3/2−
6281[#] *4*	<22	S(n)+14.4	1/2−,3/2−	3028.5	3/2−
6834 *4*	13 *4*	S(n)+7.76	1/2+	2470.2	3/2−
6835[#] *4*	<16	S(n)+9.48	3/2−	2470.2	3/2−
6837 *4*	16 *9*	S(n)+11.2	1/2−,3/2−	2470.2	3/2−
6840 *4*	34 *20*	S(n)+14.4	1/2−,3/2−	2470.2	3/2−
7251.1[#] *11*	<3	S(n)+7.76	1/2+	2051.7	3/2−
7252.8 *11*	46 *19*	S(n)+9.48	3/2−	2051.7	3/2−
7254.5 *11*	21 *8*	S(n)+11.2	1/2−,3/2−	2051.7	3/2−
7257.6[#] *11*	<15	S(n)+14.4	1/2−,3/2−	2051.7	3/2−

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^{54}Fe(n,γ) E=res 1980Ra08 (continued)

γ(^{55}Fe) (continued)

E_γ †	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f
7386.2 *11*	8 *4*	S(n)+7.76	$1/2^+$	1918.3	$1/2^-$
7387.9 *11*	58 *19*	S(n)+9.48	$3/2^-$	1918.3	$1/2^-$
7389.6# *11*	<5	S(n)+11.2	$1/2^-,3/2^-$	1918.3	$1/2^-$
7392.7 *11*	104 *25*	S(n)+14.4	$1/2^-,3/2^-$	1918.3	$1/2^-$
8373.7# *10*	<2	S(n)+7.76	$1/2^+$	931.3	$5/2^-$
8375.4 *10*	36 *16*	S(n)+9.48	$3/2^-$	931.3	$5/2^-$
8377.1# *10*	<5	S(n)+11.2	$1/2^-,3/2^-$	931.3	$5/2^-$
8380.2# *10*	<10	S(n)+14.4	$1/2^-,3/2^-$	931.3	$5/2^-$
8892.1 *8*	36 *4*	S(n)+7.76	$1/2^+$	411.42	$1/2^-$
8893.8 *8*	110 *23*	S(n)+9.48	$3/2^-$	411.42	$1/2^-$
8895.5# *8*	<16	S(n)+11.2	$1/2^-,3/2^-$	411.42	$1/2^-$
8898.6 *8*	78 *20*	S(n)+14.4	$1/2^-,3/2^-$	411.42	$1/2^-$
9305	100 *26*	S(n)+7.76	$1/2^+$	0.0	$3/2^-$
9306	100 *26*	S(n)+9.48	$3/2^-$	0.0	$3/2^-$
9308	100 *14*	S(n)+11.2	$1/2^-,3/2^-$	0.0	$3/2^-$
9311	100 *22*	S(n)+14.4	$1/2^-,3/2^-$	0.0	$3/2^-$

† Energies of primary γ's correspond to thermal neutron capture.

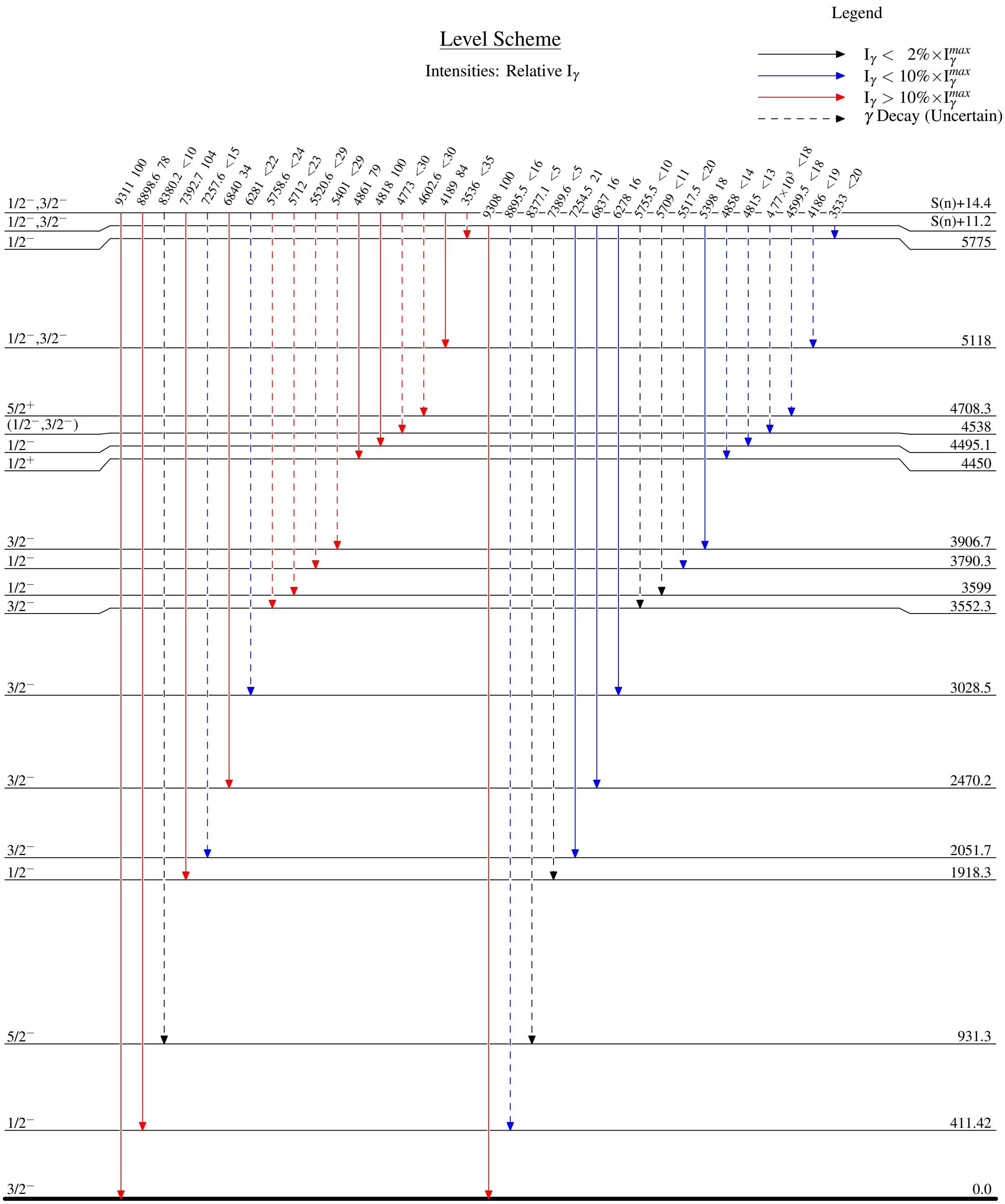
‡ Relative intensity. Where an upper limit is indicated, the γ ray was not observed.

Placement of transition in the level scheme is uncertain.

$^{54}Fe(n,\gamma)$ E=res 1980Ra08

Level Scheme

Intensities: Relative I_γ

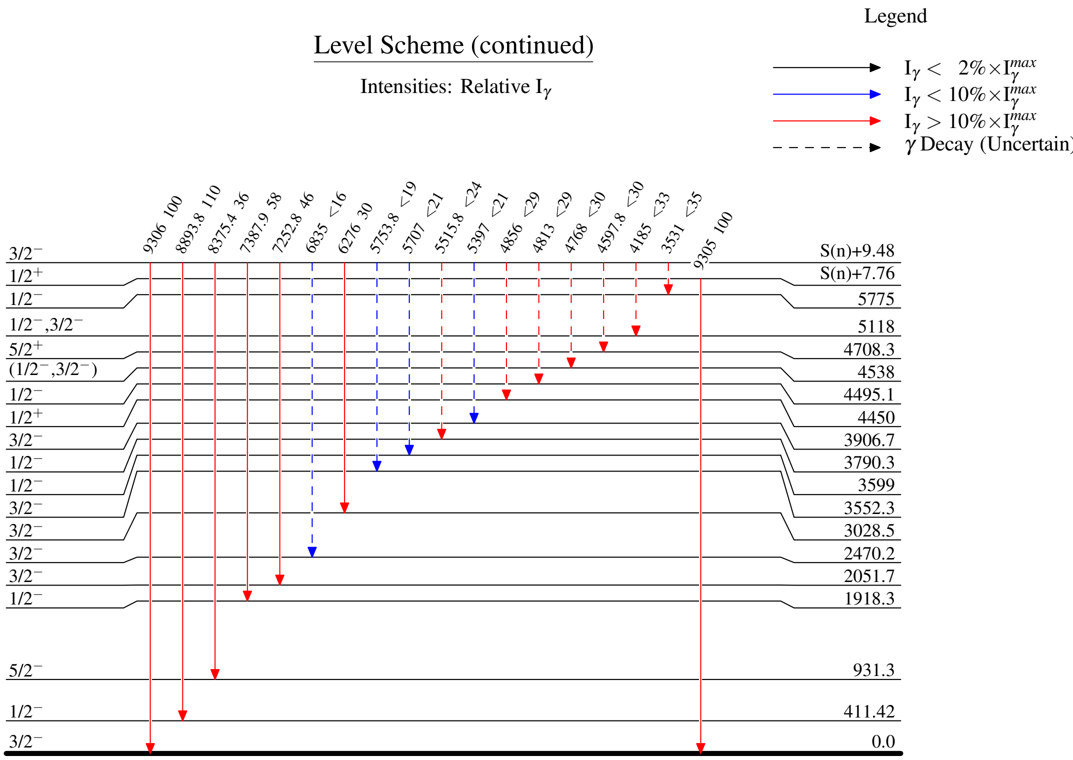


$^{55}_{26}Fe_{29}$

$^{54}Fe(n,\gamma)$ E=res 1980Ra08

Level Scheme (continued)

Intensities: Relative I_γ



$^{55}_{26}Fe_{29}$

^{54}Fe(n,γ) E=res 1980Ra08

Level Scheme (continued)

Intensities: Relative I_γ