Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 202,59 (2025)	25-Feb-2025

Q(β^-)=7967 *6*; S(n)=4320 *7*; S(p)=15518 *6*; Q(α)=−11146 *5* 2021Wa16
S(2n)=11725 *7*, S(2p)=29620 *70*, Q(β^-n)=503 *21* (2021Wa16).
Mass measurements: 2022Po02 (mass excess=−51218.7 *84*), 2010Fe01 (M.E.=−51211.3 *68*), 1994Se12 (M.E.=−51290 *280*), 1990Tu01 (M.E.=−50740 *250*).
2019Ol02: ^{65}Fe was produced from decay of ^{65}Mn which was produced via U(p,X) with 1.4 GeV proton beam at CERN. Measured $\beta\gamma$(t). Deduced ^{65}Fe $T_{1/2}$.
2005NiZZ,2004NiZY: ^{9}Be(^{76}Ge,X) E=63 MeV at RIKEN. Measured yield.
1994Se12: ^{65}Fe was produced via ^{nat}Th(p,X) with 800 MeV proton beam from the Los Alamos Meson Physics Facility (LAMPF). Measured time-of-flight with the TOFI spectrometer. Deduced mass excess. See also 1990Tu01.
1994Cz02: ^{65}Fe produced from fragmentation of 500-MeV/u ^{86}Kr beam at GSI. Measured ion-β^- time correlation. Deduced half-life.
Additional information 1.
1985Gu14: ^{65}Fe was produced ia Ta(^{86}Kr,X) with 33 MeV/nucleon ^{86}Kr beam at GANIL. Deduced evidence of ^{65}Fe.
Theoretical calculations:
2010Sr02,2007Lu13: calculated levels, J, π.
1995Ri05: calculated binding energy.

^{65}Fe Levels

Cross Reference (XREF) Flags

A	^{65}Mn β^- decay (91.9 ms)	D	^{58}Ni(^{86}Kr,Xγ)
B	^{66}Mn β^-n decay	E	^{238}U(p,X)
C	^{9}Be(^{76}Ge,X)	F	^{238}U(^{64}Ni,Xγ)

E(level)[†‡]	J$^\pi$	$T_{1/2}$[#]	XREF	Comments
0.0	(1/2$^-$)[@]	0.805 s *10*	ABCDE	%β^-=100 J$^\pi$: others: 5/2$^-$ from shell-model calculations with GXPF1A interaction (2010Sr02); 3/2$^-$ from shell-model calculations with fpg interaction (2007Lu13). $T_{1/2}$: from $\beta\gamma$(t) in 2019Ol02. Others: 0.81 s *5* (2009Pa16, $\beta\gamma$(t)); 0.45 s *15* (1994Cz02, implant-β(t)); 1.32 s *28* (1999So20, implant-β(t); assigned to g.s. but most likely for a mixed g.s. and 402-keV isomer); 0.4 s quoted in 2005GaZR.
363.62 *5*	(3/2$^-$)	93 ps *3*	AB D	J$^\pi$: allowed β^- feeding (log *ft*=4.7) from (5/2$^-$) parent; 363.7γ to (1/2$^-$); (3/2$^-$) is favored because (5/2$^-$) would result a large B(E2)(W.u)=62 for 363.7γ, compared to those of neighboring even-even Fe isotopes (2013Ol06). Others: (3/2$^+$). $T_{1/2}$: 1998Gr14 in (^{86}Kr,Xγ) assign a $T_{1/2}$=0.43 μs *13* from γ(t) to this level, but 33.5γ-363.3γ-coin seen in 2006DaZX also in (^{86}Kr,Xγ) indicates that it should be for 397 level. This is also confirmed in ^{65}Mn β^- decay (2013Ol06) and ^{66}Mn β^-n decay (2018St18).
393.64[&] *18*	(9/2$^+$)[@]	1.12 s *15*	A C EF	%β^-=100 XREF: C(402)E(397) E(level): others: 397 *12* from difference between measured mass excesses of g.s. and isomer in ^{238}(p,X) by 2022Po02; 402 *11* from measured mass difference in ^{9}Be(^{76}Ge,X) by 2010Fe01. $T_{1/2}$: from $\beta\gamma$(t) in ^{238}U(p,X) (2009Pa16).
397.56 *7*	(5/2$^+$)	420 ns *13*	AB D	J$^\pi$: 33.9γ to (3/2$^-$) is most likely a dipole; π=+ may be expected to explain the very weak β feeding from (5/2$^-$) parent and the unobserved 397.6γ is

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Adopted Levels, Gammas (continued)

^{65}Fe Levels (continued)

E(level)[†‡]	J^π	$T_{1/2}$[#]	XREF	Comments
				most likely to be M2 (2013Ol06). $T_{1/2}$: from (^{86}Kr,Xγ). Others: 437 ns *55* from ^{65}Mn β^- decay and 409 ns *+29−27* from ^{66}Mn β^-n decay.
455.59 *5*	(5/2$^-$)	350 ps *10*	AB	J^π: allowed β^- feeding (log *ft*=5.4) from (5/2$^-$) parent; 455.6γ to (1/2$^-$) is most likely to be E2 since it allows for a B(E2) value consistent with a core coupled state (2013Ol06).
560.74 *6*	(3/2,5/2$^-$)	390 ps *30*	AB	J^π: β^- feeding (log *ft*=6.2 *1*) from (5/2$^-$) parent; 560.8γ to (1/2$^-$).
569.05 *6*	(3/2,5/2$^-$)[b]	<12 ps	A	J^π: additional arguments: 560.8γ to (1/2$^-$); 796.9γ from (5/2$^-$).
609.45 *14*	(7/2$^+$)		A	J^π: β^- feeding (log *ft*=6.3 *1*) from (5/2$^-$) parent; 215.8γ to (9/2$^+$); J<5/2 and π=− may be disfavored by the fact that no transitions to (1/2$^-$) g.s., (3/2$^-$) 364 level, and (5/2$^-$) 456, while the transition of 215.8γ to (9/2$^+$) is relatively strong in ^{65}Mn β^- decay.
683.26 *5*	(3/2,5/2$^-$)	24 ps *12*	A	J^π: β^- feeding (log *ft*=6.0 *1*) from (5/2$^-$) parent; 683.3γ to (1/2$^-$).
894.72 *7*	(7/2$^-$)	<27 ps	A	J^π: β^- feeding (log *ft*=6.1 *1*) from (5/2$^-$) parent; 531.1γ to (3/2$^-$); J≤5/2 may disfavored by the fact that no transition to (1/2$^-$) g.s. while there are transitions to (3/2$^-$) 364 and (5/2$^-$) 456 levels.
1057.29 *6*	(3/2$^-$,5/2$^-$)	<8 ps	A	J^π: allowed β^- feeding (log *ft*=5.74 *4*) from (5/2$^-$) parent; 1057.2γ to (1/2$^-$).
1088.80 *5*	(3/2$^-$,5/2$^-$)	<8 ps	A	J^π: allowed β^- feeding (log *ft*=4.88 *3*) from (5/2$^-$) parent; 1088.6γ to (1/2$^-$).
1165.3[&] *7*	(13/2$^+$)[a]		F	
1228.19 *21*	(3/2,5/2,7/2)[b]		A	J^π: additional argument: 772.6γ to (5/2$^-$). Additional information 2.
1366.62 *6*	(5/2$^-$)	<8 ps	A	J^π: allowed β^- feeding (log *ft*=5.34 *4*) from (5/2$^-$) parent; 1366.2γ to (1/2$^-$), 757.2γ to (7/2$^+$).
1372.35 *11*	(3/2$^+$,5/2,7/2)[b]		A	J^π: additional arguments: 763.0γ to (7/2$^+$); 811.6γ-560.8γ cascade to (1/2$^-$).
1449.1 *4*	(1/2$^+$,3/2,5/2$^-$)[b]		A	J^π: additional argument: 1449.1γ to (1/2$^-$).
1457.2 *5*	(3/2,5/2,7/2)[b]		A	J^π: additional argument: 1001.6γ to (5/2$^-$).
1472.0 *6*	(1/2,3/2,5/2$^-$)		A	J^π: 1472.0γ to (1/2$^-$).
1530.0 *5*			A	
1558.86 *7*	(3/2$^-$,5/2$^-$)		A	J^π: allowed β^- feeding (log *ft*=5.71 *4*) from (5/2$^-$); 1559.4γ to (1/2$^-$).
1674.2 *7*	(1/2,3/2,5/2$^-$)		A	J^π: 1472.0γ to (1/2$^-$).
1693.67 *10*	(3/2$^-$,5/2$^-$)		A	J^π: possibly allowed β^- feeding (log *ft*=5.93 *5*) from (5/2$^-$); 1693.7γ to (1/2$^-$).
1732.51 *15*	(5/2$^-$)		A	J^π: possibly allowed β^- feeding (log *ft*=5.92 *5*) from (5/2$^-$); 1732.5γ to (1/2$^-$), 837.8γ to (7/2$^-$), 1123.0γ to (7/2$^+$).
1853.34 *16*	(3/2$^-$,5/2,7/2)		A	J^π: β^- feeding (log *ft*=6.0 *1*) from (5/2$^-$); 958.5γ to (7/2$^-$).
2001.93 *16*	(3/2$^+$,5/2,7/2)		A	J^π: β^- feeding (log *ft*=6.2 *1*) from (5/2$^-$); 1392.4γ to (7/2$^+$).
2283.5[&] *12*	(17/2$^+$)[a]		F	
2301.3 *8*	(1/2,3/2,5/2$^-$)		A	J^π: 2301.3γ to (1/2$^-$).
2341.5 *7*	(1/2,3/2,5/2$^-$)		A	J^π: 2341.4γ to (1/2$^-$).
2520.18 *41*	(1/2$^+$ to 7/2)[b]		A	J^π: additional argument: 1951.1γ to (3/2,5/2$^-$).
2639.0 *8*	(1/2,3/2,5/2$^-$)		A	J^π: 2638.9γ to (1/2$^-$).
2690.5 *8*	(1/2$^+$,3/2,5/2$^-$)[b]		A	J^π: additional argument: 2690.4γ to (1/2$^-$).
2780.3 *8*	(1/2$^+$,3/2,5/2$^-$)[b]		A	J^π: additional argument: 2780.2γ to (1/2$^-$).
2839.9 *8*	(1/2$^+$,3/2,5/2$^-$)[b]		A	J^π: additional argument: 2839.8γ to (1/2$^-$).
2898.5 *8*	(1/2$^+$ to 7/2$^-$)[b]		A	J^π: additional argument: 2534.8γ to (3/2$^-$).
2932.48 *41*	(3/2,5/2,7/2)		A	J^π: β^- feeding (log *ft*=6.2 *1*) from (5/2$^-$) parent.
3013.5 *5*	(3/2,5/2$^-$)		A	J^π: β^- feeding (log *ft*=6.1 *1*) from (5/2$^-$) parent; 3013.1γ to (1/2$^-$).
3245.1 *7*	(3/2,5/2,7/2)		A	J^π: β^- feeding (log *ft*=6.3 *+2−1*) from (5/2$^-$) parent.
3306.1 *9*	(1/2$^+$,3/2,5/2$^-$)[b]		A	J^π: additional argument: 3306.0γ to (1/2$^-$).

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Adopted Levels, Gammas (continued)

^{65}Fe Levels (continued)

E(level)[†‡]	J$^{\pi}$	XREF	Comments
3374.0 *8*	$(1/2^+,3/2,5/2^-)$[b]	A	J$^{\pi}$: additional argument: 3373.9γ to $(1/2^-)$.
3399.3 *5*	$(1/2^+$ to $7/2^-)$[b]	A	J$^{\pi}$: additional argument: 3335.6γ to $(3/2^-)$.
3421.0 *9*	$(1/2^+,3/2,5/2^-)$[b]	A	J$^{\pi}$: additional argument: 3420.9γ to $(1/2^-)$.
4095.84 *41*	$(3/2^-,5/2^-,7/2^-)$	A	J$^{\pi}$: possibly allowed β^- feeding (log *ft*=5.9 *1*) from $(5/2^-)$.
4438.4 *9*	$(3/2,5/2^-)$	A	J$^{\pi}$: β^- feeding (log *ft*=6.0 *2*) from $(5/2^-)$ parent; 4438.2γ to $(1/2^-)$.

† Additional information 3.

‡ From a least-squares fit to γ-ray energies. 796.9γ from 1367 level was not included in the fit due to its poor energy agreement.

From $\beta\gamma$(t) and $\beta\gamma\gamma$(t) in ^{65}Mn β^- decay, unless otherwise noted.

@ Assignments from systematics in other odd-A iron isotopes and shell-model predictions in (^{76}Fe,X) (2008Bl05).

& Band(A): Band based on $(9/2^+)$ state.

a Proposed in 2007Lu13 in (^{64}Ni,Xγ) based on shell-model predictions and band assignment.

b Weak β^- feeding from $(5/2^-)$ parent (up to 1st forbidden-unique is possible based on calculated log *ft* values) allows $J^{\pi}=(1/2^+,3/2,5/2,7/2,9/2^+)$; additional arguments to futher constrain the J^{π} assignments are given under comments at each level.

$\gamma(^{65}Fe)$

Additional information 4.

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f	Mult.	α†	Comments
363.62	(3/2⁻)	363.7 *1*	100	0.0	(1/2⁻)	[M1,E2]	0.0027 *13*	α(K)=0.0024 *11*; α(L)=2.3×10⁻⁴ *11*; α(M)=3.2×10⁻⁵ *15* α(N)=1.4×10⁻⁶ *7* E_γ: also from ^{66}Mn β^-n decay. Other: 363.3 *5* from (^{86}Kr,Xγ). B(M1)(W.u.)=0.00492 *16* if M1, B(E2)(W.u.)=61.4 *+21−19* if E2.
393.64	(9/2⁺)	(393.7)		0.0	(1/2⁻)	[M4]	0.0521 *7*	α(K)=0.0463 *6*; α(L)=0.00505 *7*; α(M)=0.000697 *10* α(N)=2.98×10⁻⁵ *4* E_γ,I_γ: 393.7γ with implied M4 multipolarity is not seen in 2013Ol06 in ^{65}Mn β^- decay; an upper limit of intensity established by 2013Ol06 as <0.15 relative to 100 for 363.7γ. The unrealistically large B(M4)(W.u)=1.87×10⁵ *+30−22* (RUL=30) indicates the non-existence of this transition.
397.56	(5/2⁺)	33.9 *2*	100 *26*	363.62	(3/2⁻)	[E1]	1.127 *25*	α(K)=1.014 *23*; α(L)=0.0994 *23*; α(M)=0.01343 *30* α(N)=0.000542 *12* B(E1)(W.u.)=1.180×10⁻⁵ *+66−26* E_γ: other: 33.5 *5* from (^{86}Kr,Xγ). I_γ: γ intensity deduced by the evaluator based on measured total intensity=4 *1* from time-delayed component of the 363.7γ relative to I(363.7γ)=100 in ^{65}Mn β^- decay (2013Ol06) and total conversion coefficient.
		(397.6)	<8	0.0	(1/2⁻)	[M2]	0.00417 *6*	α(K)=0.00374 *5*; α(L)=0.000370 *5*; α(M)=5.10×10⁻⁵ *7* α(N)=2.325×10⁻⁶ *33* B(M2)(W.u.)<0.023 E_γ,I_γ: 397.6γ with implied M2 multipolarity is not seen in 2013Ol06 in ^{65}Mn β^- decay; an upper limit of intensity established by 2013Ol06 as <0.15 relative to 100 for 363.7γ.
455.59	(5/2⁻)	92.0 *1*	3.3 *4*	363.62	(3/2⁻)	[M1]	0.0439 *6*	α(K)=0.0394 *6*; α(L)=0.00391 *6*; α(M)=0.000539 *8* α(N)=2.428×10⁻⁵ *35* B(M1)(W.u.)=0.00257 *+39−36*
		455.6 *1*	100 *8*	0.0	(1/2⁻)	[E2]	1.84×10⁻³ *3*	α(K)=0.001652 *23*; α(L)=0.0001600 *22*; α(M)=2.199×10⁻⁵ *31* α(N)=9.93×10⁻⁷ *14* B(E2)(W.u.)=5.13 *15* E_γ: other: 455.8 *2* from ^{66}Mn β^-n decay.
560.74	(3/2,5/2⁻)	163.1 *1*	26 *4*	397.56	(5/2⁺)	[D]		E_γ,I_γ: other: 162.7 *3* with Iγ=27 *6* from ^{66}Mn β^-n decay.
		197.6 *3*	52 *4*	363.62	(3/2⁻)	[D]		
		560.8 *1*	100 *8*	0.0	(1/2⁻)	[D,E2]		E_γ,I_γ: other: 560.7 *2* with Iγ=100 *14* from ^{66}Mn β^-n decay. B(E2)(W.u.)=0.947 *+87−82* if E2.

$^{65}_{26}Fe_{39}$-4

$\gamma(^{65}Fe)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.	α[†]	Comments
569.05	(3/2,5/2⁻)	205.3 *2*	3.6 *12*	363.62	(3/2⁻)	[D,E2]		B(E2)(W.u.)>182 if E2.
		569.1 *1*	100 *7*	0.0	(1/2⁻)	[D,E2]		B(E2)(W.u.)>48 if E2.
609.45	(7/2⁺)	215.8 *1*	100	393.64	(9/2⁺)			
683.26	(3/2,5/2⁻)	114.5 *3*	4.6 *23*	569.05	(3/2,5/2⁻)	[M1,E1]		B(M1)(W.u.)=0.012 *+13−6* if M1, B(E1)(W.u.)=2.2×10^{-4} *+24−12* if E1.
		227.7 *1*	57 *5*	455.59	(5/2⁻)	[M1,E1]		B(M1)(W.u.)=0.018 *+16−7* if M1, B(E1)(W.u.)=3.5×10^{-4} *+30−12* if E1.
		319.7 *1*	100 *7*	363.62	(3/2⁻)	[M1,E1]		B(M1)(W.u.)=0.0115 *+97−39* if M1, B(E1)(W.u.)=2.2×10^{-4} *+19−8* if E1.
		683.3[@] *1*	82[@] *7*	0.0	(1/2⁻)	[D,E2]		B(E2)(W.u.)=3.4 *+29−12* if E2.
894.72	(7/2⁻)	439.2 *1*	100 *9*	455.59	(5/2⁻)	[M1,E2]	0.0015 *6*	α(K)=0.0013 *5*; α(L)=1.3×10^{-4} *5*; α(M)=1.8×10^{-5} *7* α(N)=8.1×10^{-7} *31* B(M1)(W.u.)>0.007 if M1, B(E2)(W.u.)>60 if E2.
		531.1 *1*	31.4 *29*	363.62	(3/2⁻)	[E2]	1.12×10^{-3} *2*	α(K)=0.001013 *14*; α(L)=9.77×10^{-5} *14*; α(M)=1.344×10^{-5} *19* α(N)=6.10×10^{-7} *9* B(E2)(W.u.)>6.6
1057.29	(3/2⁻,5/2⁻)	374.1 *1*	46 *5*	683.26	(3/2,5/2⁻)	[D,E2]		B(E2)(W.u.)>88 if E2.
		488.3 *2*	9 *5*	569.05	(3/2,5/2⁻)	[D,E2]		B(E2)(W.u.)>2.3 if E2.
		601.7 *1*	41 *5*	455.59	(5/2⁻)	[M1,E2]	6.1×10^{-4} *16*	α(K)=5.5×10^{-4} *14*; α(L)=5.3×10^{-5} *14*; α(M)=7.3×10^{-6} *19* α(N)=3.3×10^{-7} *9* B(M1)(W.u.)>0.0016 if M1, B(E2)(W.u.)>7.2 if E2.
		659.7 *1*	36 *5*	397.56	(5/2⁺)	[E1]	0.0002038 *29*	α(K)=0.0001838 *26*; α(L)=1.747×10^{-5} *24*; α(M)=2.404×10^{-6} *34* α(N)=1.111×10^{-7} *16* B(E1)(W.u.)>2.0×10^{-5}
		693.7 *1*	100 *9*	363.62	(3/2⁻)	[M1,E2]	0.00042 *9*	α(K)=0.00038 *8*; α(L)=3.6×10^{-5} *8*; α(M)=5.0×10^{-6} *11* α(N)=2.3×10^{-7} *5* B(M1)(W.u.)>0.0027 if M1, B(E2)(W.u.)>9.2 if E2.
		1057.2 *1*	32 *5*	0.0	(1/2⁻)	[M1,E2]	0.000156 *16*	α(K)=0.000140 *14*; α(L)=1.34×10^{-5} *14*; α(M)=1.84×10^{-6} *19* α(N)=8.5×10^{-8} *8* B(M1)(W.u.)>2.2×10^{-4} if M1, B(E2)(W.u.)>0.32 if E2.
1088.80	(3/2⁻,5/2⁻)	405.6 *1*	10.7 *6*	683.26	(3/2,5/2⁻)	[D,E2]		B(E2)(W.u.)>19 if E2.
		519.8 *1*	25.4 *18*	569.05	(3/2,5/2⁻)	[D,E2]		B(E2)(W.u.)>13 if E2.
		528.1 *1*	5.3 *6*	560.74	(3/2,5/2⁻)	[D,E2]		B(E2)(W.u.)>2.3 if E2.
		633.2 *1*	13.0 *12*	455.59	(5/2⁻)	[M1,E2]	0.00053 *13*	α(K)=0.00048 *12*; α(L)=4.6×10^{-5} *11*; α(M)=6.3×10^{-6} *16* α(N)=2.9×10^{-7} *7* B(M1)(W.u.)>5.7×10^{-4} if M1, B(E2)(W.u.)>2.4 if E2.
		691.5 *5*	<2.4	397.56	(5/2⁺)	[E1]	0.0001831 *26*	α(K)=0.0001652 *23*; α(L)=1.570×10^{-5} *22*;

Adopted Levels, Gammas (continued)

γ(^{65}Fe) (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.	α[†]	Comments
								α(M)=2.160×10^{-6} *30* α(N)=9.99×10^{-8} *14*
1088.80	(3/2$^-$,5/2$^-$)	725.2 *1*	52 *4*	363.62	(3/2$^-$)	[M1,E2]	0.00038 *7*	α(K)=0.00034 *7*; α(L)=3.2×10^{-5} *6*; α(M)=4.5×10^{-6} *9* α(N)=2.1×10^{-7} *4* B(M1)(W.u.)>0.0016 if M1, B(E2)(W.u.)>5.0 if E2.
		1088.6 *1*	100 *8*	0.0	(1/2$^-$)	[M1,E2]	0.000146 *14*	α(K)=0.000132 *12*; α(L)=1.25×10^{-5} *12*; α(M)=1.73×10^{-6} *17* α(N)=8.0×10^{-8} *7* B(M1)(W.u.)>9.4×10^{-4} if M1, B(E2)(W.u.)>1.3 if E2.
1165.3	(13/2$^+$)	771.6[#] *7*	100	393.64	(9/2$^+$)			
1228.19	(3/2,5/2,7/2)	772.6 *2*	100	455.59	(5/2$^-$)			
1366.62	(5/2$^-$)	472.0 *1*	18.8 *21*	894.72	(7/2$^-$)	[M1,E2]	0.0012 *4*	α(K)=0.0011 *4*; α(L)=1.0×10^{-4} *4*; α(M)=1.4×10^{-5} *5* α(N)=6.5×10^{-7} *23* B(M1)(W.u.)>0.0018 if M1, B(E2)(W.u.)>13 if E2.
		683.3[@] *1*	54[@] *4*	683.26	(3/2,5/2$^-$)	[D,E2]		B(E2)(W.u.)>6.3 if E2.
		757.2 *2*	4.2 *21*	609.45	(7/2$^+$)	[E1]	0.0001499 *21*	α(K)=0.0001352 *19*; α(L)=1.284×10^{-5} *18*; α(M)=1.768×10^{-6} *25* α(N)=8.19×10^{-8} *11* B(E1)(W.u.)>1.0×10^{-6}
		796.9 *1*	10.4 *21*	569.05	(3/2,5/2$^-$)	[D,E2]		E_γ: poor fit, level-energy difference=797.57. B(E2)(W.u.)>0.48 if E2.
		805.9 *2*	6.3 *21*	560.74	(3/2,5/2$^-$)	[D,E2]		B(E2)(W.u.)>0.23 if E2.
		911.1 *2*	6.3 *21*	455.59	(5/2$^-$)	[M1,E2]	0.000217 *29*	α(K)=0.000196 *26*; α(L)=1.87×10^{-5} *25*; α(M)=2.57×10^{-6} *34* α(N)=1.19×10^{-7} *15* B(M1)(W.u.)>6.2×10^{-5} if M1, B(E2)(W.u.)>0.12 if E2.
		969.1 *1*	16.7 *21*	397.56	(5/2$^+$)	[E1]	9.02×10^{-5} *13*	α(K)=8.14×10^{-5} *11*; α(L)=7.72×10^{-6} *11*; α(M)=1.063×10^{-6} *15* α(N)=4.93×10^{-8} *7* B(E1)(W.u.)>3.4×10^{-6}
		1002.9 *1*	100 *8*	363.62	(3/2$^-$)	[M1,E2]	0.000175 *19*	α(K)=0.000158 *17*; α(L)=1.50×10^{-5} *17*; α(M)=2.07×10^{-6} *23* α(N)=9.6×10^{-8} *10* B(M1)(W.u.)>0.0011 if M1, B(E2)(W.u.)>1.8 if E2.
		1366.2 *4*	6.3 *21*	0.0	(1/2$^-$)	[E2]	0.0001415 *20*	α(K)=8.72×10^{-5} *12*; α(L)=8.28×10^{-6} *12*; α(M)=1.141×10^{-6} *16* α(N)=5.30×10^{-8} *7*; α(IPF)=4.49×10^{-5} *6* B(E2)(W.u.)>0.016

$^{65}_{26}Fe_{39}$-6

Adopted Levels, Gammas (continued)

$\gamma(^{65}Fe)$ (continued)

E_i(level)	J_i^π	E_γ [‡]	I_γ [‡]	E_f	J_f^π
1372.35	(3/2+,5/2,7/2)	763.0 *3*	67 *33*	609.45	(7/2+)
		811.6 *1*	100 *33*	560.74	(3/2,5/2−)
1449.1	(1/2+,3/2,5/2−)	1449.1 *4*	100	0.0	(1/2−)
1457.2	(3/2,5/2,7/2)	1001.6 *5*	100	455.59	(5/2−)
1472.0	(1/2,3/2,5/2−)	1472.0 *6*	100	0.0	(1/2−)
1530.0		1132.4 *5*	100	397.56	(5/2+)
1558.86	(3/2−,5/2−)	875.7 *1*	57 *7*	683.26	(3/2,5/2−)
		989.7 *1*	50 *7*	569.05	(3/2,5/2−)
		1103.2 *1*	100 *7*	455.59	(5/2−)
		1161.5 *3*	36 *7*	397.56	(5/2+)
		1195.2 *2*	43 *7*	363.62	(3/2−)
		1559.4 *4*	7 *7*	0.0	(1/2−)
1674.2	(1/2,3/2,5/2−)	1674.2 *7*	100	0.0	(1/2−)
1693.67	(3/2−,5/2−)	1124.6 *5*	17 *8*	569.05	(3/2,5/2−)
		1296.2 *2*	50 *8*	397.56	(5/2+)
		1330.0 *1*	100 *8*	363.62	(3/2−)
		1693.7 *4*	25 *8*	0.0	(1/2−)
1732.51	(5/2−)	837.6 *5*	100 *17*	894.72	(7/2−)
		1123.0 *2*	100 *17*	609.45	(7/2+)
		1163.6 *3*	33 *17*	569.05	(3/2,5/2−)
		1368.9 *3*	100 *17*	363.62	(3/2−)
		1732.5 *4*	50 *17*	0.0	(1/2−)
1853.34	(3/2−,5/2,7/2)	796.4 *4*	100 *22*	1057.29	(3/2−,5/2−)
		958.5 *2*	100 *11*	894.72	(7/2−)
		1397.8 *3*	22 *11*	455.59	(5/2−)
2001.93	(3/2+,5/2,7/2)	1318.7 *2*	100 *17*	683.26	(3/2,5/2−)
		1392.4 *4*	33 *17*	609.45	(7/2+)
		1432.8 *3*	50 *17*	569.05	(3/2,5/2−)
2283.5	(17/2+)	1118.2[#] *10*	100	1165.3	(13/2+)
2301.3	(1/2,3/2,5/2−)	2301.3 *8*	100	0.0	(1/2−)
2341.5	(1/2,3/2,5/2−)	2341.4 *7*	100	0.0	(1/2−)
2520.18	(1/2+ to 7/2)	1951.1 *4*	100	569.05	(3/2,5/2−)
2639.0	(1/2,3/2,5/2−)	2638.9 *8*	100	0.0	(1/2−)
2690.5	(1/2+,3/2,5/2−)	2690.4 *8*	100	0.0	(1/2−)
2780.3	(1/2+,3/2,5/2−)	2780.2 *8*	100	0.0	(1/2−)
2839.9	(1/2+,3/2,5/2−)	2839.8 *8*	100	0.0	(1/2−)
2898.5	(1/2+ to 7/2−)	2534.8 *8*	100	363.62	(3/2−)
2932.48	(3/2,5/2,7/2)	2371.7 *4*	100	560.74	(3/2,5/2−)
3013.5	(3/2,5/2−)	2444.8 *7*	60 *20*	569.05	(3/2,5/2−)
		3013.1 *6*	100 *20*	0.0	(1/2−)
3245.1	(3/2,5/2,7/2)	2561.8 *7*	100	683.26	(3/2,5/2−)

Adopted Levels, Gammas (continued)

$\gamma(^{65}Fe)$ (continued)

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f
3306.1	$(1/2^+,3/2,5/2^-)$	3306.0 *9*	100	0.0	$(1/2^-)$
3374.0	$(1/2^+,3/2,5/2^-)$	3373.9 *8*	100	0.0	$(1/2^-)$
3399.3	$(1/2^+$ to $7/2^-)$	3035.6 *5*	100	363.62	$(3/2^-)$
3421.0	$(1/2^+,3/2,5/2^-)$	3420.9 *9*	100	0.0	$(1/2^-)$
4095.84	$(3/2^-,5/2^-,7/2^-)$	3535.0 *4*	100	560.74	$(3/2,5/2^-)$
4438.4	$(3/2,5/2^-)$	4438.2 *9*	100	0.0	$(1/2^-)$

† Additional information 5.

‡ From ^{65}Mn β^- decay (2013Ol06), unless otherwise noted.

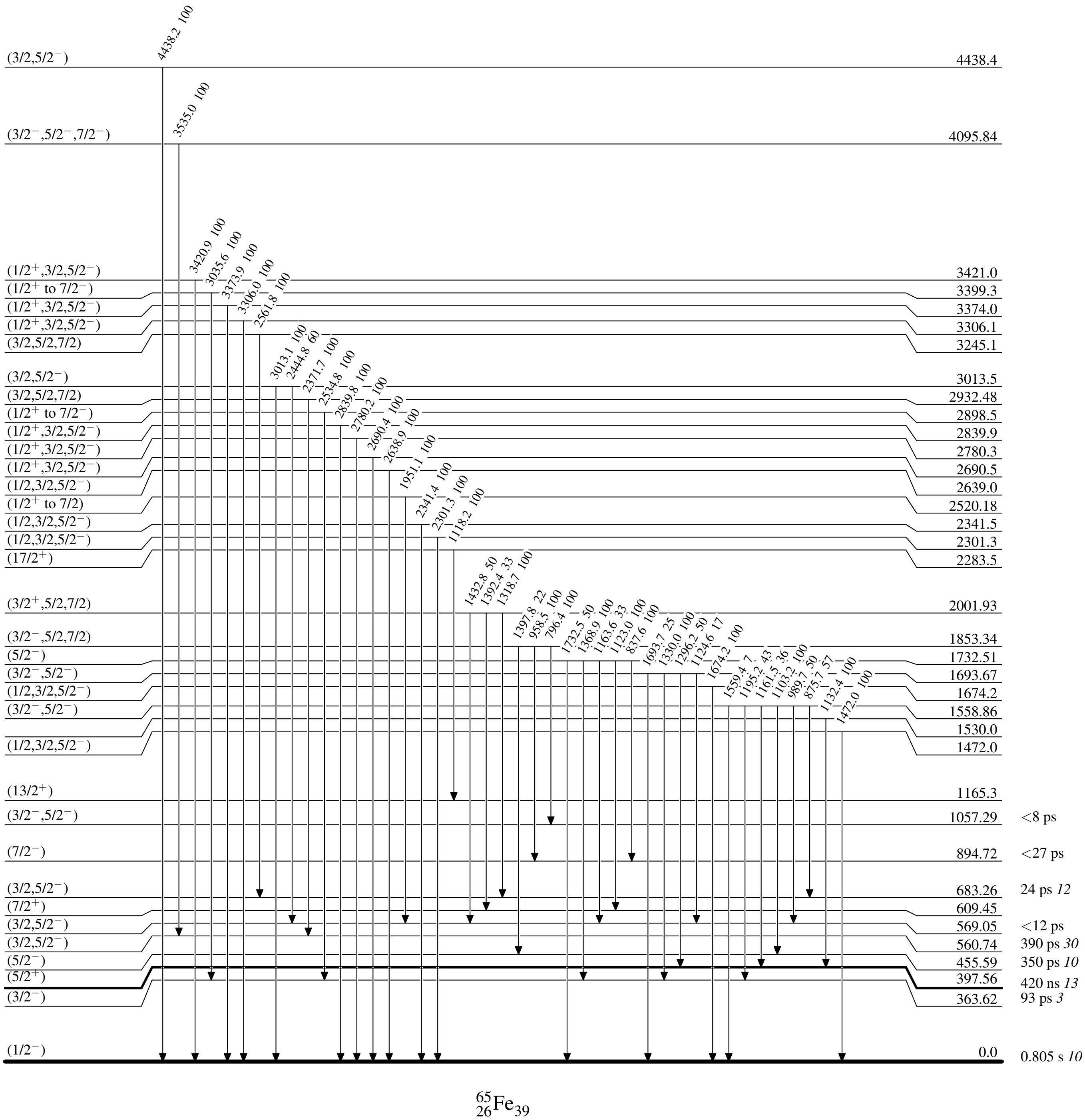
From $^{238}U(^{64}Ni,X\gamma)$ (2007Lu13).

@ Multiply placed with intensity suitably divided.

Adopted Levels, Gammas

Level Scheme

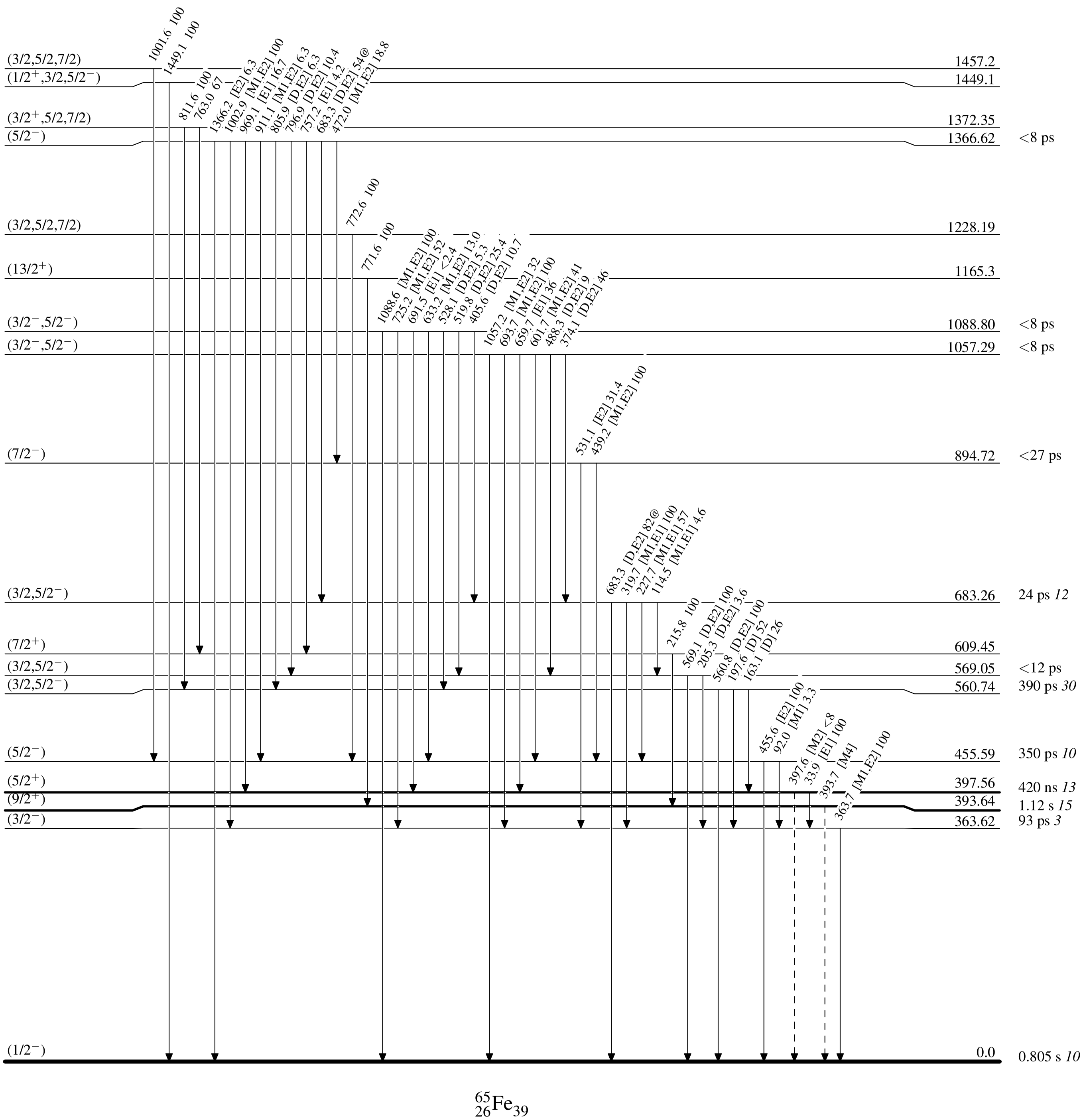
Intensities: Relative photon branching from each level



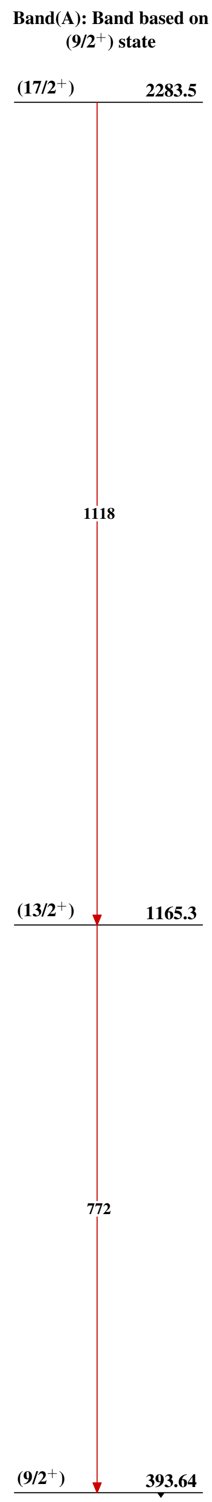
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas



$^{65}_{26}Fe_{39}$