

$^{56}\text{Fe}(\gamma,\gamma')$, (pol γ,γ') 1984Ch14,1983Mo24,1979Ku14

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Huo Junde, Huo Su, Yang Dong		NDS 112, 1513 (2011)	29-Oct-2009

Other: 1961Me11.

1984Ch14: E=5-10 MeV bremsstrahlung; measured $E\gamma$, $I\gamma$, $\gamma(\theta)$, and $\sigma(\theta)$.1994IsZZ: E=6.6 MeV bremsstrahlung; measured $\sigma(E\gamma)$.1998Is05: E=6.6 MeV bremsstrahlung; measured $E\gamma$, $I\gamma$.1979Ku14: E=14 MeV bremsstrahlung; measured $E\gamma$, $I\gamma(\theta)$, $\theta=125^\circ$, 150° .1983Sm02: (pol γ,γ') E=9.14 MeV; measured $\sigma(\text{total})$, $\sigma(E,\theta)$.1994Go36: (pol γ,γ') E \approx 6.8-9.6 MeV bremsstrahlung; measured asymmetry.

1961Me11: resonance scattering for 845 level.

 ^{56}Fe Levels

All data are from 1984Ch14, except as noted.

E(level)	J^π	$T_{1/2}$	$I(90^\circ)/I(127^\circ)$	Comments
0	0^+			
845	$2^+{}^b$	6.8 ps 14		$g=+0.64$ 19 (1961Me11) g: From $\gamma(\theta,H)$ for $T_{1/2}=6.07$ ps, the adopted value. The authors' value is 0.57 18 calculated with $T_{1/2}=6.8$ ps. $T_{1/2}$: weighted average of 6 ps 2 (1961Ke06), 7.4 ps 11 (1961Me11), 6.7 ps 13 (1963Be29), and 5.6 ps 28 (1964Bo22). $T_{1/2}$: from $\Gamma=0.118$ eV 10 (1998Is05). $\Gamma_{\gamma_0}^2/\Gamma=0.077$ eV 12 (1984Ch14). $g\Gamma_{\gamma_0}^2/\Gamma=0.251$ eV (1994IsZZ).
3448.8 15	1	3.8 fs 3	0.86 7	$\Gamma_{\gamma_0}^2/\Gamma=0.011$ eV 2 (1984Ch14). The authors point out that their Γ is probably an upper limit since a comparison of yields at 10.3 and 7.6 MeV indicate very strong feeding of this level from above, an observation that could account for the difference in $T_{1/2}$ values.
3602 ^e 3	$2^+{}^b$			$\Gamma_{\gamma_0}^2/\Gamma=0.0071$ eV 30 (1984Ch14). $g\Gamma_{\gamma_0}^2/\Gamma=0.055$ eV (1994IsZZ).
4847 3				$\Gamma_{\gamma_0}^2/\Gamma=0.037$ eV 6 (1984Ch14). $g\Gamma_{\gamma_0}^2/\Gamma=0.176$ eV (1994IsZZ).
5227 2	1		0.98 18	$\Gamma_{\gamma_0}^2/\Gamma=0.023$ eV 4 (1984Ch14). $g\Gamma_{\gamma_0}^2/\Gamma=0.073$ eV (1994IsZZ).
5257 3	2		2.22 31	$\Gamma_{\gamma_0}^2/\Gamma=0.027$ eV 6 (1984Ch14). $g\Gamma_{\gamma_0}^2/\Gamma=0.054$ eV (1994IsZZ).
5404? 3			1.21 29	$\Gamma_{\gamma_0}^2/\Gamma=0.024$ eV 6 (1984Ch14). $g\Gamma_{\gamma_0}^2/\Gamma=0.059$ eV (1994IsZZ).
5853? 2			1.56 31	$\Gamma_{\gamma_0}^2/\Gamma=0.028$ eV 5 (1984Ch14). $g\Gamma_{\gamma_0}^2/\Gamma=0.081$ eV (1994IsZZ).
6078? 3			1.35 33	$\Gamma_{\gamma_0}^2/\Gamma=0.034$ eV 8 (1984Ch14).
6219 3				$\Gamma_{\gamma_0}^2/\Gamma=0.056$ eV 13 (1984Ch14). $g\Gamma_{\gamma_0}^2/\Gamma=0.212$ eV (1994IsZZ).
6250 3	1		0.85 25	$\Gamma_{\gamma_0}^2/\Gamma=0.044$ eV 10 (1984Ch14).
6698 3	1		0.84 29	$\Gamma_{\gamma_0}^2/\Gamma=0.70$ eV 11 (1984Ch14); $\Gamma_{\gamma_0}^2/\Gamma=1.10$ eV 29 (1979Ku14).
6926 2	1^-	1.10 ^d eV 29	0.75 7	$\Gamma_{\gamma_0}^2/\Gamma=0.11$ rv 2 (1984Ch14).
7066 3	1		0.61 11	$\Gamma_{\gamma_0}^2/\Gamma=0.056$ eV 10 (1984Ch14).
7135 3	1		0.56 31	$\Gamma_{\gamma_0}^2/\Gamma=0.089$ eV 15 (1984Ch14).
7167 3	1		0.71 18	

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$^{56}\text{Fe}(\gamma, \gamma')$, (pol γ, γ') **1984Ch14, 1983Mo24, 1979Ku14** (continued) ^{56}Fe Levels (continued)

E(level)	J^π [†]	$T_{1/2}$ [‡]	I(90°)/I(127°)	Comments
7211 2	1 ⁺	0.77 ^d eV 22	0.86 12	$\Gamma_{\gamma 0}^2/\Gamma=0.50$ eV 8 (1984Ch14); $\Gamma_{\gamma 0}^2/\Gamma=0.77$ eV 22 (1979Ku14).
7248 2	1		0.84 11	$\Gamma_{\gamma 0}^2/\Gamma=0.20$ eV 3 (1984Ch14).
7283? 3				$\Gamma_{\gamma 0}^2/\Gamma=0.29$ eV 12 (1984Ch14).
7446 2	1		1.04 23	$\Gamma_{\gamma 0}^2/\Gamma=0.17$ eV 5 (1984Ch14).
7468 2	1		0.93 16	$\Gamma_{\gamma 0}^2/\Gamma=0.18$ eV 3 (1984Ch14).
7886 4				$\Gamma_{\gamma 0}^2/\Gamma=0.28$ eV 5 (1984Ch14).
8128 ^e 2	1 ^{-a}	3.55 ^d eV 74	1.30 ^c 27	$\Gamma_{\gamma 0}^2/\Gamma=1.94$ eV 30 (1984Ch14); $\Gamma_{\gamma 0}^2/\Gamma=3.55$ eV 74 (1979Ku14).
8219 4				$\Gamma_{\gamma 0}^2/\Gamma=0.26$ eV 5 (1984Ch14).
8239 2	1 ^{-a}	5.75 ^d eV 92	1.37 ^c 19	$\Gamma_{\gamma 0}^2/\Gamma=2.63$ eV 42 (1984Ch14); $\Gamma_{\gamma 0}^2/\Gamma=5.75$ eV 92 (1979Ku14).
8307? 4				$\Gamma_{\gamma 0}^2/\Gamma=0.24$ eV 8 (1984Ch14).
8536 2	1 ^{-a}	4.92 ^d eV 95	1.35 ^c 27	$\Gamma_{\gamma 0}^2/\Gamma=2.04$ eV 31 (1984Ch14); $\Gamma_{\gamma 0}^2/\Gamma=4.92$ eV 95 (1979Ku14).
8767 3				$\Gamma_{\gamma 0}^2/\Gamma=0.41$ eV 8 (1984Ch14).
8879 4				$\Gamma_{\gamma 0}^2/\Gamma=0.30$ eV 8 (1984Ch14).
8908 4				$\Gamma_{\gamma 0}^2/\Gamma=0.47$ eV 10 (1984Ch14).
8961 ^e 4				$\Gamma_{\gamma 0}^2/\Gamma=0.38$ eV 7 (1984Ch14).
8989 4				$\Gamma_{\gamma 0}^2/\Gamma=0.31$ eV 7 (1984Ch14).
9107 ^e 4	1 ⁺			J^π : from (nuclear resonance fluorescence) results for dipole transitions (1994Go36).
9139.5 [#] 6	1 ^{-@}	1.28 [#] eV 17	1.00 ^{&} 4	$\Gamma_{\gamma 0}^2/\Gamma=0.86$ eV 18 (1984Ch14); $\Gamma_{\gamma 0}^2/\Gamma=0.57$ eV 12 (1984Ch14); $\Gamma_{\gamma 0}^2/\Gamma=1.28$ eV 17 (1983Sm02).
9154 5	1 ⁻			J^π : from NRF (nuclear resonance fluorescence) results for dipole transitions (1994Go36).
9287 3	1 ⁽⁻⁾			$\Gamma_{\gamma 0}^2/\Gamma=0.95$ eV 31 (1984Ch14); J^π : from NRF (nuclear resonance fluorescence) results for dipole transitions (1994Go36).
9311 4				$\Gamma_{\gamma 0}^2/\Gamma=0.75$ eV 17 (1984Ch14).
9322 4				$\Gamma_{\gamma 0}^2/\Gamma=0.64$ eV 13 (1984Ch14).
9402 3				$\Gamma_{\gamma 0}^2/\Gamma=0.65$ eV 14 (1984Ch14).
9558 4				$\Gamma_{\gamma 0}^2/\Gamma=0.65$ eV 15 (1984Ch14).
9666? 5				$\Gamma_{\gamma 0}^2/\Gamma=0.39$ eV 14 (1984Ch14).
9737 ^e 5				$\Gamma_{\gamma 0}^2/\Gamma=0.67$ eV 22 (1984Ch14).
9768? 4				$\Gamma_{\gamma 0}^2/\Gamma=0.95$ eV 25 (1984Ch14).
9895? 5				$\Gamma_{\gamma 0}^2/\Gamma=0.48$ eV 13 (1984Ch14).
9948 5				$\Gamma_{\gamma 0}^2/\Gamma=0.41$ eV 12 (1984Ch14).
9969? 5				$\Gamma_{\gamma 0}^2/\Gamma=0.75$ eV 20 (1984Ch14).
10060 5				$\Gamma_{\gamma 0}^2/\Gamma=0.31$ eV 10 (1984Ch14).
10497 3	1 ^a	3.44 ^d eV 64	1.32 ^c 27	$\Gamma_{\gamma 0}^2/\Gamma=0.56$ eV 16 (1984Ch14).
11133 3	1 ^a	2.08 ^d eV 52	1.17 ^c 28	

[†] Based on comparison of I(90°)/I(127°) and theory values; from 1984Ch14, except as noted.[‡] Deduced on the assumption of 100% ground-state transition, except as noted.[#] From 1983Sm02.[@] Based on pol γ and comparison between I(70°)/I(90°) and calculated values (1983Sm02).

$^{56}\text{Fe}(\gamma, \gamma')$, (pol γ, γ') **1984Ch14, 1983Mo24, 1979Ku14** (continued) ^{56}Fe Levels (continued)

& $I(70^\circ)/I(90^\circ)$ (1983Sm02).

^a Based on comparison of $I(150^\circ)/I(125^\circ)$ and calculated values (1979Ku14).

^b From Adopted Levels.

^c $I(150^\circ)/I(125^\circ)$ (1979Ku14).

^d From 1979Ku14.

^e May be unresolved multiplet (1984Ch14).

 $\gamma(^{56}\text{Fe})$

All data are from 1984Ch14, except as noted.

$\Gamma(0)/\Gamma$ from 1984Ch14, if only other decay mode is to 2^+ , and $\sigma(\theta)$ corresponds to dipole transitions.

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.#	Comments
845	845	2^+	0	0^+		E_γ : From 1963Be29, no uncertainty.
3448.8 15	3448.8	1	0	0^+	D	$\Gamma(0)/\Gamma=0.79$ 2.
3602 3	3602	2^+	0	0^+		
4847 3	4847		0	0^+		
5227 2	5227	1	0	0^+	D	
5257 3	5257	2	0	0^+	Q	
5404 ^{&a} 3	5404?		0	0^+		
5404 ^{&a} 3	6250	1	845	2^+		
5853 ^{&a} 2	5853?		0	0^+		
5853 ^{&a} 3	6698	1	845	2^+		
6078 3	6078?		0	0^+		
6219 3	6219		0	0^+		
6250 3	6250	1	0	0^+	D	$\Gamma(0)/\Gamma=0.54$ 4.
6698 3	6698	1	0	0^+	D	$\Gamma(0)/\Gamma=0.41$ 10.
6926 2	6926	1^-	0	0^+	E1 [@]	$\Gamma(0)/\Gamma=0.92$ 1.
7066 3	7066	1	0	0^+	D	$\Gamma(0)/\Gamma=0.63$ 4.
7135 3	7135	1	0	0^+	D	
7167 3	7167	1	0	0^+	D	
7211 2	7211	1^+	0	0^+	M1 [@]	
7248 2	7248	1	0	0^+	D	
7283 ^a 3	7283?		0	0^+		
7446 2	7446	1	0	0^+	D	
7468 2	7468	1	0	0^+	D	
7886 4	7886		0	0^+		
8128 2	8128	1^-	0	0^+	E1 [@]	
8219 4	8219		0	0^+		
8239 2	8239	1^-	0	0^+	E1 [@]	
8307 ^{&a} 4	8307?		0	0^+		
8307 ^{&a} 4	9154	1^-	845	2^+		
8536 2	8536	1^-	0	0^+	D	
8767 3	8767		0	0^+		
8879 4	8879		0	0^+		
8908 4	8908		0	0^+		
8961 4	8961		0	0^+		
8989 4	8989		0	0^+		
9107 4	9107	1^+	0	0^+	M1 [@]	
9139.5 [†] 6	9139.5	1^-	0	0^+	E1 [@]	
9154 5	9154	1^-	0	0^+	E1 [@]	$\Gamma(0)/\Gamma=0.71$ 8.

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$^{56}\text{Fe}(\gamma, \gamma')$, (pol γ, γ') 1984Ch14, 1983Mo24, 1979Ku14 (continued) $\gamma(^{56}\text{Fe})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. #	E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π
9287 3	9287	1 ⁽⁻⁾	0	0 ⁺	E1 [@]	9768 ^a 4	9768?		0	0 ⁺
9311 4	9311		0	0 ⁺		9895 ^a 5	9895?		0	0 ⁺
9322 4	9322		0	0 ⁺		9948 5	9948		0	0 ⁺
9402 3	9402		0	0 ⁺		9969 ^a 5	9969?		0	0 ⁺
9558 4	9558		0	0 ⁺		10060 5	10060		0	0 ⁺
9666 ^a 5	9666?		0	0 ⁺		10497 [‡] 3	10497	1	0	0 ⁺
9737 5	9737		0	0 ⁺		11133 [‡] 3	11133	1	0	0 ⁺

† From 1983Sm02.

‡ From 1979Ku14.

Based on $\gamma(\theta)$ (1984Ch14), except as noted.

@ From NRF (1994Go36).

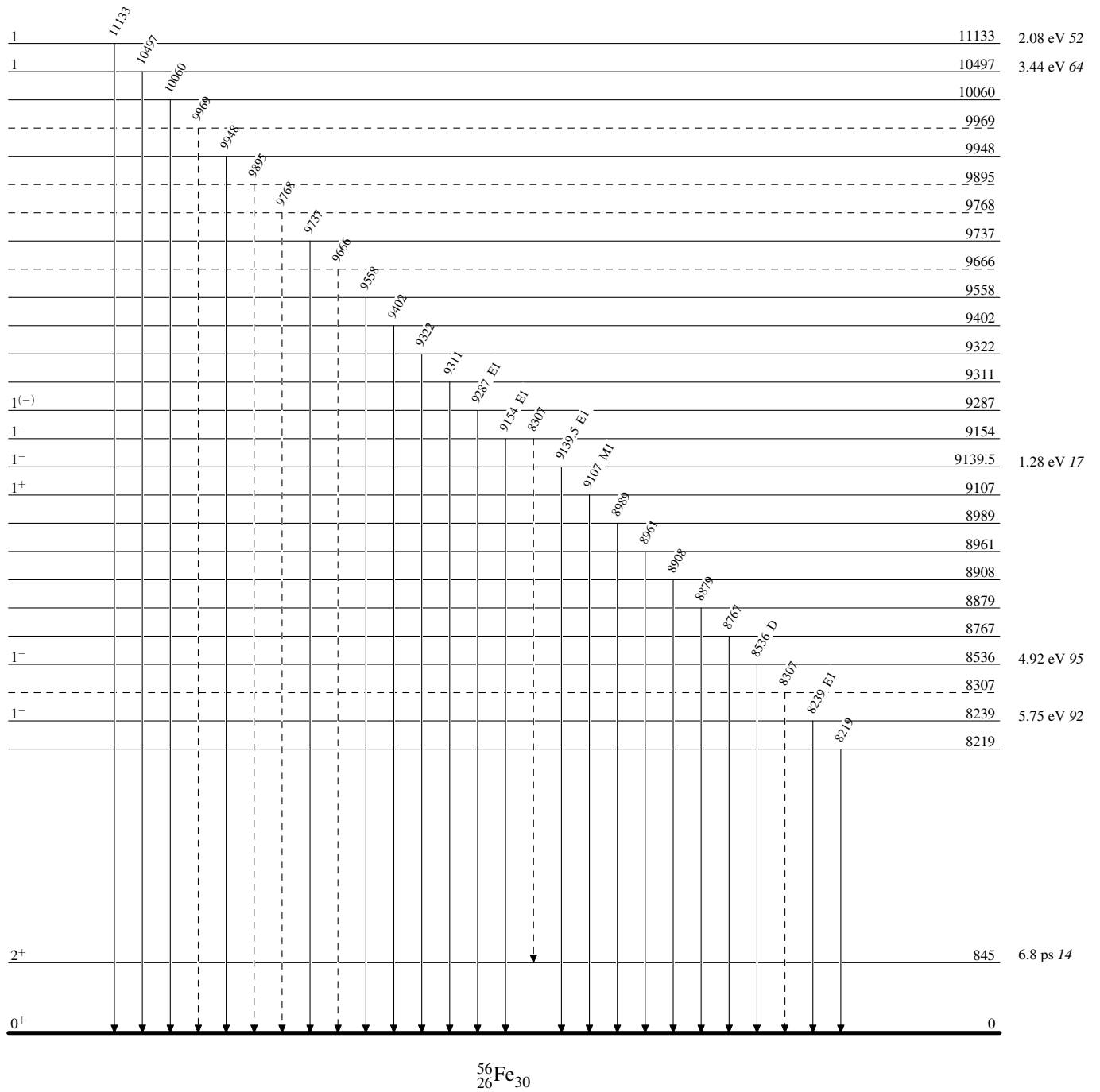
& Multiply placed.

^a Placement of transition in the level scheme is uncertain.

$^{56}\text{Fe}(\gamma, \gamma'), (\text{pol } \gamma, \gamma')$ 1984Ch14, 1983Mo24, 1979Ku14

Legend

Level Scheme

-----► γ Decay (Uncertain) $^{56}_{26}\text{Fe}_{30}$

$^{56}\text{Fe}(\gamma,\gamma')$, (pol γ,γ') 1984Ch14,1983Mo24,1979Ku14

Legend

Level Scheme (continued)

-----► γ Decay (Uncertain)