

^{52}Mn ε decay (21.1 min) 1977Ya08

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde		NDS 128, 185 (2015)	10-Jul-2015

Parent: ^{52}Mn : $E=377.749$ 5; $J^\pi=2^+$; $T_{1/2}=21.1$ min 2; $Q(\varepsilon)=4711.5$ 19; $\% \varepsilon + \% \beta^+ \text{ decay}=98.22$ 5

1977Ya08: chemically separated sources from ^{52}Fe ε decay, measured $E\gamma$, $I\gamma$, a Compton suppression spectrometer system, several large volume Ge(Li).

$\%IT=1.78$ 5 (1977Ya08), so $\% \varepsilon + \% \beta^+ = 98.22$ 5.

 ^{52}Cr Levels

E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$
0.0	0^+	2767.5 3	4^+	3472.10 20	3^+	4563.2 10	3^-
1434.083 10	2^+	2964.777 15	2^+	3771.69 15	2^+	4815.69 9	$1^+, 2^+$
2369.6 10	4^+	3161.73 6	2^+	3951.2 10	2^+		

† From Adopted Levels.

 ε, β^+ radiations

E(decay)	E(level)	$I\beta^+^\dagger$	$I\varepsilon^\dagger$	Log f_t	$I(\varepsilon + \beta^+)^\dagger$	Comments
(273.6 19)	4815.69		0.0049 7	5.56 7	0.0049 7	$\varepsilon K=0.8875$; $\varepsilon L=0.09580$ 3; $\varepsilon M+=0.016672$ 5
(526.0 22)	4563.2		≤ 0.00008	≥ 7.9	≤ 0.00008	$\varepsilon K=0.8894$; $\varepsilon L=0.09421$; $\varepsilon M+=0.01636$
(1138.0 22)	3951.2	8×10^{-7} 3	0.0007 3	7.65 19	0.0007 3	av $E\beta=51.84$ 89; $\varepsilon K=0.8895$; $\varepsilon L=0.09320$ 1; $\varepsilon M+=0.016162$ 2
(1317.6 19)	3771.69	0.00036 5	0.0082 11	6.71 6	0.0086 11	av $E\beta=125.42$ 79; $\varepsilon K=0.8532$ 9; $\varepsilon L=0.08928$ 10; $\varepsilon M+=0.015480$ 16
(1617.1 19)	3472.10	0.013 3	0.023 6	6.44 11	0.036 9	av $E\beta=249.95$ 81; $\varepsilon K=0.5787$ 23; $\varepsilon L=0.06046$ 24; $\varepsilon M+=0.01048$ 4
(1927.5 19)	3161.73	0.164 8	0.074 3	6.087 21	0.238 11	av $E\beta=383.12$ 83; $\varepsilon K=0.2778$ 14; $\varepsilon L=0.02900$ 14; $\varepsilon M+=0.005026$ 24
(2124.5 19)	2964.777	0.038 2	0.0091 4	7.085 20	0.047 2	av $E\beta=469.59$ 84; $\varepsilon K=0.1720$ 8; $\varepsilon L=0.01794$ 8; $\varepsilon M+=0.003110$ 14
(3655.2 19)	1434.083	98.1 5	1.57 2	5.317 5	99.7 5	av $E\beta=1174.01$ 90; $\varepsilon K=0.01408$ 3; $\varepsilon L=0.001465$ 4; $\varepsilon M+=0.0002539$ 6

† For absolute intensity per 100 decays, multiply by 0.9822 5.

 $\gamma(^{52}\text{Cr})$

$I\gamma$ normalization: from $\Sigma I\gamma(\text{g.s.})=100$.

E_γ	$I_\gamma^\#$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	$\delta^\ddagger$
704.6 2	0.029 9	3472.10	3^+	2767.5	4^+	M1+E2	-0.14 6
935.52	0.02 1	2369.6	4^+	1434.083	2^+	E2	
1332.62	0.03 1	2767.5	4^+	1434.083	2^+	E2	
1434.06 1	100.0 5	1434.083	2^+	0.0	0^+	E2	
1530.67 1	0.047 2	2964.777	2^+	1434.083	2^+	M1+E2	-6.25 15
1727.53 7	0.22 1	3161.73	2^+	1434.083	2^+	M1+E2	-0.18 7
2038.0 2	0.008 1	3472.10	3^+	1434.083	2^+		
2337.4 2	0.007 1	3771.69	2^+	1434.083	2^+	M1+E2	-0.20 8

Continued on next page (footnotes at end of table)

^{52}Mn ε decay (21.1 min) 1977Ya08 (continued) $\gamma(^{52}\text{Cr})$ (continued)

E_γ	$I_\gamma^\#$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡
$^{x2847.7}^\dagger 7$	0.0006 5					
2965 1	0.0004 3	2964.777	2 ⁺	0.0	0 ⁺	E2
3129 1	≤ 0.00015	4563.2	3 ⁻	1434.083	2 ⁺	
3161.8 1	0.022 3	3161.73	2 ⁺	0.0	0 ⁺	E2
3381.5 1	0.0025 5	4815.69	1 ⁺ ,2 ⁺	1434.083	2 ⁺	
3771.7 2	0.0018 4	3771.69	2 ⁺	0.0	0 ⁺	[E2]
3951 1	0.0007 3	3951.2	2 ⁺	0.0	0 ⁺	
4815.4 2	0.0025 4	4815.69	1 ⁺ ,2 ⁺	0.0	0 ⁺	

† Assignment to 21.1-min ^{52}Mn tentative.

‡ From adopted gammas.

$^\#$ For absolute intensity per 100 decays, multiply by 0.9822 5.

x γ ray not placed in level scheme.

^{52}Mn ϵ decay (21.1 min) 1977Ya08

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

- $\longrightarrow$ $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
 $\longrightarrow$ $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
 $\longrightarrow$ $I_{\gamma} > 10\% \times I_{\gamma}^{max}$
 $\bullet$ Coincidence

