

^{92}Sr β^- decay 1972OI03,1971Pa31

Type	Author	History Citation	Literature Cutoff Date
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Parent: ^{92}Sr : $E=0.0$; $J^\pi=0^+$; $T_{1/2}=2.611$ h 17; $Q(\beta^-)=1951$ 9; $\% \beta^-$ decay=100.0
 Others: 1956He77, 1957He39, 1979Bo26, 1990Ru05.

 ^{92}Y Levels

The decay scheme is based on γ -ray singles and coincidence measurements by 1972OI03 and 1971Pa31.

E(level) [†]	J^π [‡]	$T_{1/2}$ [‡]
0.0	2^-	3.54 h 1
241.56 5	$(0^-, 2, 3^+)$	
430.51 [#] 3	$(2)^-$	
892.56 12	(≤ 3)	
1383.90 4	1^+	

[†] From least-squares fit to $E\gamma$.

[‡] From Adopted Levels.

[#] The order of the 430 γ , 953 γ cascade is not established in ^{92}Sr β^- decay data. Consequently, a level exists at either 430.56 5 or 953.31 7, and the authors chose the latter. 1956He77 reported $E\beta=1500$ 100, which would support the 430-level option; however, 1957He39 observed no $\beta\gamma$ coincidences for $E\beta>600$ keV. The decay scheme implies negligible β^- feeding of either state since I(430 γ) and I(953 γ) are similar. (d, α) excites a $(2,3,4)^-$ level at 440 keV 30. The evaluator presumes that this confirms the 430-level option, and has ordered the 430 γ and 953 γ accordingly.

 β^- radiations

1957He39 observed no $\beta\gamma$ coin for $E\beta>600$ keV.

E(decay)	E(level)	$I\beta^-$ [‡]	Log ft	Comments
539 [†] 17	1383.90	97 6	4.35 4	av $E\beta=181.9$ 34
(1058 9)	892.56	0.17 5	8.09 13	av $E\beta=379.5$ 39
(1951 [#] 9)	0.0	<8	>8.5 ^{1u}	av $E\beta=786.4$ 41

[†] Weighted average of 536 20 (1983Ia02) and 546 30 (1978Wo15, from β -1384 γ coincidence spectrum). $Q(\beta^-)=1951$ 9 (2011AuZZ) implies $E\beta=567$ 9. Others: 545 keV 50 (1957He39), 550 keV 50 (1956He77).

[‡] Absolute intensity per 100 decays.

[#] Existence of this branch is questionable.

 $\gamma(^{92}\text{Y})$

I_γ normalization: from $\Sigma(I(\gamma+ce)$ to g.s.)=96% 4, derived assuming $\log f^{1u}_t > 8.5$ to g.s. (which implies $I\beta(\text{g.s.}) < 8\%$). This is consistent with I_γ normalization=0.90 10 based on measured I(1384 γ)=90% 10 (1957He39) obtained from comparison of β -decay rate (4π flow proportional counter) with emission rate of $^{92}\text{Y}(1384\gamma)$. If no β^- branch existed to g.s., $\Sigma(I(\gamma+ce)$ to g.s.)=100% would imply I_γ normalization=0.93 3, with no significant change in deduced log ft values. I_γ normalization does not depend on the order of the 430 γ -953 γ cascade.

Measured: γ -ray singles with Ge(Li) (1972OI03,1971Pa31), coincidences with Ge(Li)-Ge(Li) (1972OI03), Ge(Li)-NaI (1971Pa31).

^{92}Sr β^- decay 1972OI03,1971Pa31 (continued) $\gamma(^{92}\text{Y})$ (continued)

E_γ and I_γ from both sources are in excellent agreement.

Measured average $E_\gamma=1130.80$ (1990Ru05) cf. 1337.19 calculated for the adopted decay scheme using the code RADLST.

E_γ^\dagger	$I_\gamma^{\dagger@}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
241.56 [‡] 5	3.25 13	241.56	(0 ⁻ ,2,3 ⁺)	0.0	2 ⁻	
^x 352.5 2	0.06 1					
430.49 ^{‡#} 3	3.64 17	430.51	(2) ⁻	0.0	2 ⁻	
491.27 17	0.305 28	1383.90	1 ⁺	892.56	(≤ 3)	
650.8 2	0.41 3	892.56	(≤ 3)	241.56	(0 ⁻ ,2,3 ⁺)	
892.68 24	0.089 17	892.56	(≤ 3)	0.0	2 ⁻	
953.31 [#] 7	3.91 16	1383.90	1 ⁺	430.51	(2) ⁻	
1142.35 7	3.10 15	1383.90	1 ⁺	241.56	(0 ⁻ ,2,3 ⁺)	
1383.93 5	100 3	1383.90	1 ⁺	0.0	2 ⁻	% $I_\gamma=90.4$ assuming adopted I_γ normalization.

[†] Weighted average of data from 1972OI03 and 1971Pa31. An additional, weak line ($E_\gamma=463.4.2$, $I_\gamma=0.04.1$) reported in 1971Pa31 was not confirmed by 1972OI03 ($I_\gamma \leq 0.015$); evaluator does not adopt this G.

[‡] Weighted average of data from 1972OI03, 1971Pa31, 1979Bo26.

[#] Note comment on 430 level regarding order of 430 γ -953 γ cascade.

[@] For absolute intensity per 100 decays, multiply by 0.90.5.

^x γ ray not placed in level scheme.

${}^{92}\text{Sr}$ β^- decay 1972OI03,1971Pa31

Decay Scheme

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

Legend

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

