

^{77}Sr ε decay (9.0 s) 1983Li11

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	30-Sep-2020

Parent: ^{77}Sr : $E=0.0$; $J^\pi=5/2^{(+)}$; $T_{1/2}=9.0$ s 2; $Q(\varepsilon)=7027$ 8; $\% \varepsilon + \% \beta^+$ decay=100.0

^{77}Sr - $J^\pi, T_{1/2}$: From ^{77}Sr Adopted Levels.

^{77}Sr - $Q(\varepsilon)$: From 2017Wa10.

1983Li11: the isotope produced by $^{40}\text{Ca}(^{40}\text{Ca}, 2\text{pn})$ at $E(^{40}\text{Ca})=110$ -130 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$.

Others: 1986Ho22, 1976Ha29, 1974No08, 1976FaZW, 1976AlYV, 1976ScZK.

Analysis of β -strength functions: 1984Ha58.

Total decay energy of 6993 keV 223 deduced (by RADLIST code) from proposed decay scheme is in agreement with the expected value of 7027 keV 8, indicating that decay scheme is apparently complete in spite of large Q value of 7 MeV and highest level of 1541 keV populated in this decay.

 ^{77}Rb Levels

E(level) [†]	J^π [‡]	$T_{1/2}$ [‡]
0.0	$3/2^-$	3.78 min 4
144.83 3	$5/2^-$	
146.937 20	$5/2^{(+)}$	
307.03 4	$(7/2^+)$	
788? 3		
1249? 3		
1541.2 5		

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

[‡] From the Adopted Levels.

 ε, β^+ radiations

E(decay)	E(level)	$I\beta^+$ [‡]	$I\varepsilon$ [‡]	Log ft	$I(\varepsilon + \beta^+)$ ^{†‡}	Comments
(5486 8)	1541.2	2.4 6	0.042 11	5.7	2.4 6	av $E\beta=2054.5$ 39; $\varepsilon K=0.01549$ 9; $\varepsilon L=0.001797$ 10; $\varepsilon M+=0.0003792$ 2
(5778 [#] 9)	1249?	0.6 3	0.009 4	6.5	0.6 3	av $E\beta=2195.6$ 42; $\varepsilon K=0.01287$ 7; $\varepsilon L=0.001493$ 8; $\varepsilon M+=0.0003150$ 1
(6239 [#] 9)	788?	0.7 4	0.008 4	6.6	0.7 4	av $E\beta=2418.9$ 42; $\varepsilon K=0.00982$ 5; $\varepsilon L=0.001139$ 6; $\varepsilon M+=0.0002403$ 1
(6720 8)	307.03	8.3 9	0.073 8	5.7	8.4 9	av $E\beta=2652.7$ 39; $\varepsilon K=0.00759$ 4; $\varepsilon L=0.000880$ 4; $\varepsilon M+=0.0001856$ 8
(6880 8)	146.937	77 4	0.62 3	4.8	78 4	av $E\beta=2730.7$ 39; $\varepsilon K=0.00700$ 3; $\varepsilon L=0.000811$ 4; $\varepsilon M+=0.0001711$ 7
(6882 8)	144.83	6.3 6	0.051 5	5.9	6.4 6	av $E\beta=2731.7$ 39; $\varepsilon K=0.00699$ 3; $\varepsilon L=0.000810$ 4; $\varepsilon M+=0.0001709$ 7
(7027 [#] 8)	0.0	<6	<0.04	>5.9	<6	av $E\beta=2802.3$ 39; $\varepsilon K=0.00651$ 3; $\varepsilon L=0.000754$ 3; $\varepsilon M+=0.0001591$ 7

[†] From γ -ray intensity balance, assuming $\varepsilon + \beta^+$ feeding to the g.s. <6% as expected for a possible first-forbidden non-unique transition.

[‡] Absolute intensity per 100 decays.

[#] Existence of this branch is questionable.

^{77}Sr ε decay (9.0 s) **1983Li11** (continued) $\gamma(^{77}\text{Rb})$

I γ normalization: from I(γ +ce)(gammas to g.s.), assuming $\varepsilon+\beta^+$ feeding to the g.s. <6% as expected for a possible first-forbidden non-unique transition. % ε p=0.08 3 (2000Gi11).

E_γ	$I_\gamma^\ddagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	$\delta^\dagger$	$\alpha^\#$	Comments
144.82 3	7.3 4	144.83	5/2 ⁻	0.0	3/2 ⁻	E2+M1	-1.8 5	0.20 3	$\alpha(\text{K})=0.175$ 23; $\alpha(\text{L})=0.023$ 4; $\alpha(\text{M})=0.0038$ 6 $\alpha(\text{N})=0.00041$ 6; $\alpha(\text{O})=1.38\times 10^{-5}$ 18
146.94 2	92.6 21	146.937	5/2 ⁽⁺⁾	0.0	3/2 ⁻	(E1)		0.0308	$\alpha(\text{K})=0.0273$ 4; $\alpha(\text{L})=0.00296$ 5; $\alpha(\text{M})=0.000485$ 7 $\alpha(\text{N})=5.41\times 10^{-5}$ 8; $\alpha(\text{O})=2.22\times 10^{-6}$ 4
160.10 3	9.9 5	307.03	(7/2 ⁺)	146.937	5/2 ⁽⁺⁾	M1+E2	+0.39 6	0.058 5	$\alpha(\text{K})=0.051$ 5; $\alpha(\text{L})=0.0060$ 6; $\alpha(\text{M})=0.00100$ 10 $\alpha(\text{N})=0.000110$ 10; $\alpha(\text{O})=4.3\times 10^{-6}$ 4
162.11 12	1.8 2	307.03	(7/2 ⁺)	144.83	5/2 ⁻	[E1]		0.0230	$\alpha(\text{K})=0.0204$ 3; $\alpha(\text{L})=0.00221$ 4; $\alpha(\text{M})=0.000363$ 6 $\alpha(\text{N})=4.06\times 10^{-5}$ 6; $\alpha(\text{O})=1.673\times 10^{-6}$ 24
641.2 @ 25	<1.4	788?		146.937	5/2 ⁽⁺⁾				
942.0 @ 30	<1.3	1249?		307.03	(7/2 ⁺)				
1234.2 5	2.6 6	1541.2		307.03	(7/2 ⁺)				

[†] From the Adopted Gammas.

[‡] For absolute intensity per 100 decays, multiply by 0.93 4.

[#] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

@ Placement of transition in the level scheme is uncertain.

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- Legend
- I_γ < 2% × I_γ^{max}
 - I_γ < 10% × I_γ^{max}
 - I_γ > 10% × I_γ^{max}
 - - - - - γ Decay (Uncertain)
 - Coincidence

Decay Scheme

Intensities: I_(γ+ce) per 100 parent decays

