^{102}Sr β^- decay 1986Hi02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne	NDS 110, 1745 (2009)	31-Dec-2008

Parent: ^{102}Sr: E=0.0; $J^\pi=0^+$; $T_{1/2}$=69 ms *6*; Q(β^-)=8810 *70*; %β^- decay=100.0

Mass assignment from mass-separated A=102 source from ^{235}U(n,F). Z assignment from yield, systematics, $T_{1/2}$ and level scheme. Measured: Eγ, Iγ, $\gamma\gamma$, $T_{1/2}$. Deduced: ^{102}Y levels, log *ft*, J^π. Structure information in relation with this work can be found in 1986Pe04.

^{102}Y Levels

log *ft* due to the incompleteness of the decay scheme due to the large Q value all log *ft* values should be considered as lower limits.

E(level)	J^π†	$T_{1/2}$
0.0		0.36 s *4*
93.80 *6*		
208.23 *9*		
243.85 *6*	1^+	
311.70 *9*		
497.81 *10*		
645.4? *4*		
898.63 *22*		
1347.92 *14*	1^+	
1689.58 *15*	1^+	

† log *ft*<4.5 suggests J^π-1^+.

β^- radiations

From γ-ray transition intensity balance. M1 multipolarity assumed for all low-energy γ rays, except the 93γ for which E2 was assumed because otherwise negative level feeding. As a consequence of that assumption the logft values are only approximate values and should be treated as such ≈3% of ^{102}Sr decay unobserved.

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(7.12×10^3 *7*)	1689.58	17 *6*	4.4 *3*	av Eβ= 3240 *386*
(7.46×10^3 *7*)	1347.92	21 *7*	4.4 *3*	av Eβ= 3404 *386*
(7.91×10^3 *7*)	898.63	3.9 *14*	5.3 *3*	av Eβ= 3620 *386*
(8.16×10^3 *7*)	645.4?	1.0 *5*	5.9 *3*	av Eβ= 3742 *385*
(8.31×10^3 *7*)	497.81	5.2 *23*	5.3 *3*	av Eβ= 3813 *385*
(8.50×10^3 *7*)	311.70	3.9 *20*	5.4 *3*	av Eβ= 3903 *385*
(8.57×10^3 *7*)	243.85	35 *12*	4.49 *25*	av Eβ= 3935 *385*
(8.60×10^3 *7*)	208.23	6 *4*	5.3 *4*	av Eβ= 3952 *385*
(8.72×10^3 *7*)	93.80	3.3 *24*	5.6 *4*	av Eβ= 4007 *385*
(8.81×10^3 *7*)	0.0	<3	>5.6	av Eβ= 4052 *385*

† Absolute intensity per 100 decays.

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$\gamma(^{102}Y)$

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[‡]
35.58 *18*	1.0 *14*	243.85	1^+	208.23		[M1]	3.53
67.89 *14*	14.9 *9*	311.70		243.85	1^+	[M1]	0.542
93.89 *8*	25.3 *14*	93.80		0.0		[E2]	1.348
103.4 *2*	1.8 *3*	311.70		208.23		[M1]	0.1660
114.46 *15*	4.7 *5*	208.23		93.80		[M1]	0.1256
150.15 *10*	34.0 *18*	243.85	1^+	93.80		[M1]	0.0608
186.15 *15*	7.0 *7*	497.81		311.70		[M1]	0.0344
208.16 *13*	14.9 *11*	208.23		0.0		[M1]	0.0257
217.92 *15*	7.0 *6*	311.70		93.80		[M1]	0.02285
243.80 *8*	100 *5*	243.85	1^+	0.0		[M1]	0.01713
253.95 *15*	23.8 *15*	497.81		243.85	1^+	[M1]	0.01543
311.6 *2*	2.7 *5*	311.70		0.0			
404.2 *2*	1.1 *5*	497.81		93.80			
437.2 *3*	1.9 *7*	645.4?		208.23			
498.4 *6*	1.6 *9*	497.81		0.0			
655.1 *3*	3.6 *8*	898.63		243.85	1^+		
804.5 *3*	3.8 *9*	898.63		93.80			
[x]814.4 *3*	5.3 *10*						
850.4 *2*	6.7 *11*	1347.92	1^+	497.81			
1036.0 *2*	14.0 *18*	1347.92	1^+	311.70			
1104.0 *2*	19 *2*	1347.92	1^+	243.85	1^+		
1191.8 *2*	17 *2*	1689.58	1^+	497.81			
1378.1 *3*	6.5 *17*	1689.58	1^+	311.70			
1445.5 *3*	6.1 *14*	1689.58	1^+	243.85	1^+		
1689.4 *4*	3.0 *11*	1689.58	1^+	0.0			

[†] For absolute intensity per 100 decays, multiply by 0.53 *16*.

[‡] 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.

[x] γ ray not placed in level scheme.

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Decay Scheme

Intensities: Relative I_γ

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

0^+ 0.0 69 ms *6*

Q_{β^-}=8810 *70* $\%\beta^-$=100

$^{102}_{38}Sr_{64}$

Iβ⁻	Log *ft*		
17	4.4	1^+	1689.58
21	4.4	1^+	1347.92
3.9	5.3		898.63
1.0	5.9		645.4
5.2	5.3		497.81
3.9	5.4		311.70
35	4.49	1^+	243.85
6	5.3		208.23
3.3	5.6		93.80
<3	>5.6		0.0

0.36 s *4*

1689.4 3.0; 1445.5 6.1; 1378.1 6.5; 1191.8 17; 1104.0 19; 1036.0 14.0; 850.4 6.7; 804.5 3.8; 655.1 3.6; 437.2 1.9; 498.4 1.6; 404.2 1.1; 253.95 [M1] 23.8; 186.15 [M1] 7.0; 311.6 2.7; 217.92 [M1] 7.0; 103.4 [M1] 1.8; 67.89 [M1] 14.9; 243.80 [M1] 100; 150.15 [M1] 34.0; 35.58 [M1] 1.0; 208.16 [M1] 14.9; 114.46 [M1] 4.7; 93.89 [E2] 25.3

$^{102}_{39}Y_{63}$