^{89}Rb β^- decay (15.32 min) 1973He01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 114, 1 (2013)	20-Oct-2012

Parent: ^{89}Rb: E=0; J^π=3/2$^-$; $T_{1/2}$=15.32 min *10*; Q(β^-)=4496.5 *54*; %β^- decay=100.0

^{89}Rb-Q(β^-): From 2011AuZZ. Other: 4497 *5* (2003Au03).

1973He01 (also 1972HeZE): source produced by on-line isotope separation of fragments from ^{235}U(n,F). Measured Eγ, Iγ, $\gamma\gamma$.

Other studies:

β feedings to g.s. and excited states from total absorption γ-ray spectrum (TAGS): 1997Gr09, 1996Gr20. 2008ShZT report ongoing measurement of Q value and total β spectrum, but no results are given.

γ: 1973BlZH, 1972Po13, 1971UkZY, 1971MaXM, 1966Ki06, 1956Ok06. About 20 γ rays reported in these studies.

$\gamma\gamma$: 1972Po13, 1966Ki06, 1956Ok06.

β, $\beta\gamma$: 1993Ka09, 1980De02, 1978Wu04, 1976Wo05, 1971MaXM, 1966Ki06, 1956Ok06.

$T_{1/2}$ and identification of ^{89}Rb: 1972Eh02, 1969Ca03, 1961Wa14, 1956Ok06, 1940Gl05, 1940Ha10, Hahn et al., Naturwissenschaften 31, 249 (1943).

β strength function measurements: 1982Al01, 1973Jo02.

Additional information 1.

Energy balance: total decay energy of 4596 keV *100* deduced (using RADLIST code) from proposed decay scheme is in agreement with the expected value of 4496 keV *5*, indicating that the decay scheme is complete.

^{89}Sr Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0	5/2$^+$	50.563 d *25*	$T_{1/2}$: from Adopted Levels.
1031.98 *5*	1/2$^+$		
1473.41 *12*	(7/2)$^+$		
1940.20 *12*	5/2$^+$		
2007.63 *6*	3/2$^+$		
2057.4 *5*	(1/2$^+$,3/2,5/2$^+$)		
2280.14 *5*	(1/2)$^-$		
2451.62 *9*	3/2$^+$		
2570.08 *6*	(3/2)$^-$		
2707.14 *11*	(5/2$^-$)		
3227.89 *6*	(3/2)$^-$		
3303.13 *24*	(3/2,5/2,7/2$^+$)		
3508.71 *9*	(3/2)$^+$		
3651.71 *19*	1/2$^{(+)}$,3/2,5/2		
3845.7 *4*	5/2$^+$		
3850 *50*			E(level): pseudolevel indicated by TAGS data (1997Gr09). Uncertainty assigned by the evaluator based on 100 keV bin chosen by 1997Gr09 in the spectral analysis.
3987.8 *4*	1/2$^{(+)}$,3/2,5/2$^{(+)}$		
4050.0 *3*	1/2$^+$		
4093.8 *6*	1/2$^{(+)}$,3/2,5/2		

† From least-squares fit to Eγ data.

‡ From Adopted Levels.

^{89}Rb β^- decay (15.32 min) 1973He01 (continued)

β^- radiations

TAGS=total absorption γ-ray spectrum data (1997Gr09,1996Gr20).

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(403 *6*)	4093.8	0.082 *13*	5.9 *1*	av Eβ=122.6 *18* Iβ^-: 0.078 (TAGS 1997Gr09).
(447 *6*)	4050.0	0.063 *16*	6.2 *1*	av Eβ=138.1 *18* Iβ^-: 0.061 (TAGS 1997Gr09).
(509 *6*)	3987.8	0.050 *10*	6.4 *1*	av Eβ=160.7 *19* Iβ^-: 0.048 (TAGS 1997Gr09).
(6.5×10^2 *5*)	3850	0.14	6.4	av Eβ=213 *20* Iβ^-: from TAGS data (1997Gr09).
(651 *6*)	3845.7	0.057 *11*	6.8 *1*	av Eβ=214.4 *20* Iβ^-: 0.054 (TAGS 1997Gr09).
(845 *6*)	3651.71	0.088 *16*	7.0 *1*	av Eβ=291.6 *21* Iβ^-: 0.085 (TAGS 1997Gr09).
(988 *6*)	3508.71	1.65 *9*	5.96 *3*	av Eβ=350.7 *21* Iβ^-: 1.25 (TAGS 1997Gr09).
(1193 *6*)	3303.13	0.019 *10*	8.2 *2*	av Eβ=438.3 *22* Iβ^-: 0.018 (TAGS 1997Gr09).
(1269 *6*)	3227.89	35.7 *14*	5.04 *2*	av Eβ=470.9 *22* Iβ^-: 36.3 (TAGS 1997Gr09).
(1789 *6*)	2707.14	2.38 *14*	6.81 *3*	av Eβ=703.6 *23* Iβ^-: 1.98 (TAGS 1997Gr09).
(1926 *6*)	2570.08	3.3 *9*	6.8 *1*	av Eβ=766.3 *23* Iβ^-: 3.61 (TAGS 1997Gr09).
(2045 *6*)	2451.62	0.04 *3*	8.8 *4*	av Eβ=820.9 *23* Iβ^-: 0.042 (TAGS 1997Gr09).
(2216 *6*)	2280.14	37 *3*	6.00 *4*	av Eβ=900.3 *24* Iβ^-: 37.0 (TAGS 1997Gr09).
(2439 *6*)	2057.4	0.50 *13*	8.0 *1*	av Eβ=1004.2 *24* Iβ^-: 0.48 (TAGS 1997Gr09).
(2489 *6*)	2007.63	0.53 *20*	8.1 *2*	av Eβ=1027.6 *24* Iβ^-: 0.51 (TAGS 1997Gr09).
(2556 *6*)	1940.20	0.24 *4*	8.44 *8*	av Eβ=1059.2 *24* Iβ^-: 0.23 (TAGS 1997Gr09).
(3023 *6*)	1473.41	0.26 *5*	10.1^{1u} *1*	av Eβ=1282.0 *24* Iβ^-: 0.25 (TAGS 1997Gr09).
(3465‡ *6*)	1031.98	<4	>7.8	av Eβ=1489.8 *24* Iβ^-: −1 *5* from intensity balance, 0.0 (TAGS 1997Gr09).
4503 *5*	0	18.8 *13*	7.61 *3*	av Eβ=1984.6 *24* E(decay): from 1978Wu04: intrinsic Ge detector. Iβ^-: from TAGS data (1996Gr20,1997Gr09). Others: 25 *5* (1976Wo05), 18 (1966Ki06).

† Absolute intensity per 100 decays.
‡ Existence of this branch is questionable.

^{89}Rb β^- decay (15.32 min) 1973He01 (continued)

γ(^{89}Sr)

Iγ normalization: from I(γ+ce)(γ rays to g.s.)=81.2 *13*, Iβ(g.s.)=18.8 *13* (1996Gr20).
A 427.5γ (Iγ=0.42) reported only by 1972Po13 is omitted.

E_γ†	I_γ‡&	E_i(level)	J^π_i	E_f	J^π_f
118.3 *5*	0.02 *1*	2570.08	(3/2)$^-$	2451.62	3/2$^+$
205.7 *4*	0.02 *1*	3508.71	(3/2)$^+$	3303.13	(3/2,5/2,7/2$^+$)
272.42# *7*	2.44 *12*	2280.14	(1/2)$^-$	2007.63	3/2$^+$
289.76 *10*	0.93 *5*	2570.08	(3/2)$^-$	2280.14	(1/2)$^-$
466.62 *15*	0.12 *3*	1940.20	5/2$^+$	1473.41	(7/2)$^+$
562.08@ *21*	0.08 *1*	2570.08	(3/2)$^-$	2007.63	3/2$^+$
596.0 *3*	0.04 *1*	3303.13	(3/2,5/2,7/2$^+$)	2707.14	(5/2$^-$)
657.77# *6*	17.2 *9*	3227.89	(3/2)$^-$	2570.08	(3/2)$^-$
699.6 *4*	0.04 *1*	2707.14	(5/2$^-$)	2007.63	3/2$^+$
766.76@ *12*	0.28 *3*	2707.14	(5/2$^-$)	1940.20	5/2$^+$
776.19 *25*	0.12 *3*	3227.89	(3/2)$^-$	2451.62	3/2$^+$
801.1 *5*	0.03 *2*	3508.71	(3/2)$^+$	2707.14	(5/2$^-$)
822.0 *4*	0.05 *2*	4050.0	1/2$^+$	3227.89	(3/2)$^-$
947.73# *7*	15.9 *8*	3227.89	(3/2)$^-$	2280.14	(1/2)$^-$
975.40@ *19*	0.10 *2*	2007.63	3/2$^+$	1031.98	1/2$^+$
1025.3 *5*	0.39 *14*	2057.4	(1/2$^+$,3/2,5/2$^+$)	1031.98	1/2$^+$
1031.92# *6*	100 *5*	1031.98	1/2$^+$	0	5/2$^+$
1057.2 *4*	0.04 *2*	3508.71	(3/2)$^+$	2451.62	3/2$^+$
1081.4 *3*	0.04 *1*	3651.71	1/2$^{(+)}$,3/2,5/2	2570.08	(3/2)$^-$
1138.5 *5*	0.02 *1*	3845.7	5/2$^+$	2707.14	(5/2$^-$)
^{x}1160.47 *25*	0.06 *1*				
^{x}1211.7 *5*	0.02 *1*				
1220.35@ *9*	0.38 *3*	3227.89	(3/2)$^-$	2007.63	3/2$^+$
1228.46@ *13*	0.21 *3*	3508.71	(3/2)$^+$	2280.14	(1/2)$^-$
1234.0 *4*	0.05 *3*	2707.14	(5/2$^-$)	1473.41	(7/2)$^+$
1248.14# *6*	73 *4*	2280.14	(1/2)$^-$	1031.98	1/2$^+$
1419.55@ *9*	0.16 *2*	2451.62	3/2$^+$	1031.98	1/2$^+$
^{x}1429.6 *5*	0.02 *1*				
1473.29@ *14*	0.61 *5*	1473.41	(7/2)$^+$	0	5/2$^+$
1501.00@ *15*	0.34 *3*	3508.71	(3/2)$^+$	2007.63	3/2$^+$
1538.07@ *9*	4.4 *3*	2570.08	(3/2)$^-$	1031.98	1/2$^+$
^{x}1596.2 *5*	0.03 *1*				
1644.2 *3*	0.04 *1*	3651.71	1/2$^{(+)}$,3/2,5/2	2007.63	3/2$^+$
1770.2 *8*	0.02 *1*	4050.0	1/2$^+$	2280.14	(1/2)$^-$
1939.95@ *23*	0.57 *4*	1940.20	5/2$^+$	0	5/2$^+$
1979.7 *5*	0.04 *1*	3987.8	1/2$^{(+)}$,3/2,5/2$^{(+)}$	2007.63	3/2$^+$
2007.50# *9*	4.1 *3*	2007.63	3/2$^+$	0	5/2$^+$
2058.0 *11*	0.40 *15*	2057.4	(1/2$^+$,3/2,5/2$^+$)	0	5/2$^+$
2109.7 *5*	0.03 *1*	4050.0	1/2$^+$	1940.20	5/2$^+$
2195.92# *11*	23.0 *15*	3227.89	(3/2)$^-$	1031.98	1/2$^+$
^{x}2231.3 *4*	0.04 *1*				
2280.00@ *15*	0.31 *3*	2280.14	(1/2)$^-$	0	5/2$^+$
2372.8 *9*	0.02 *1*	3845.7	5/2$^+$	1473.41	(7/2)$^+$
2451.90 *20*	0.09 *1*	2451.62	3/2$^+$	0	5/2$^+$
2570.20# *11*	17.0 *9*	2570.08	(3/2)$^-$	0	5/2$^+$
^{x}2668.0 *5*	0.02 *1*				

Continued on next page (footnotes at end of table)

^{89}Rb β^- decay (15.32 min) 1973He01 (continued)

γ(^{89}Sr) (continued)

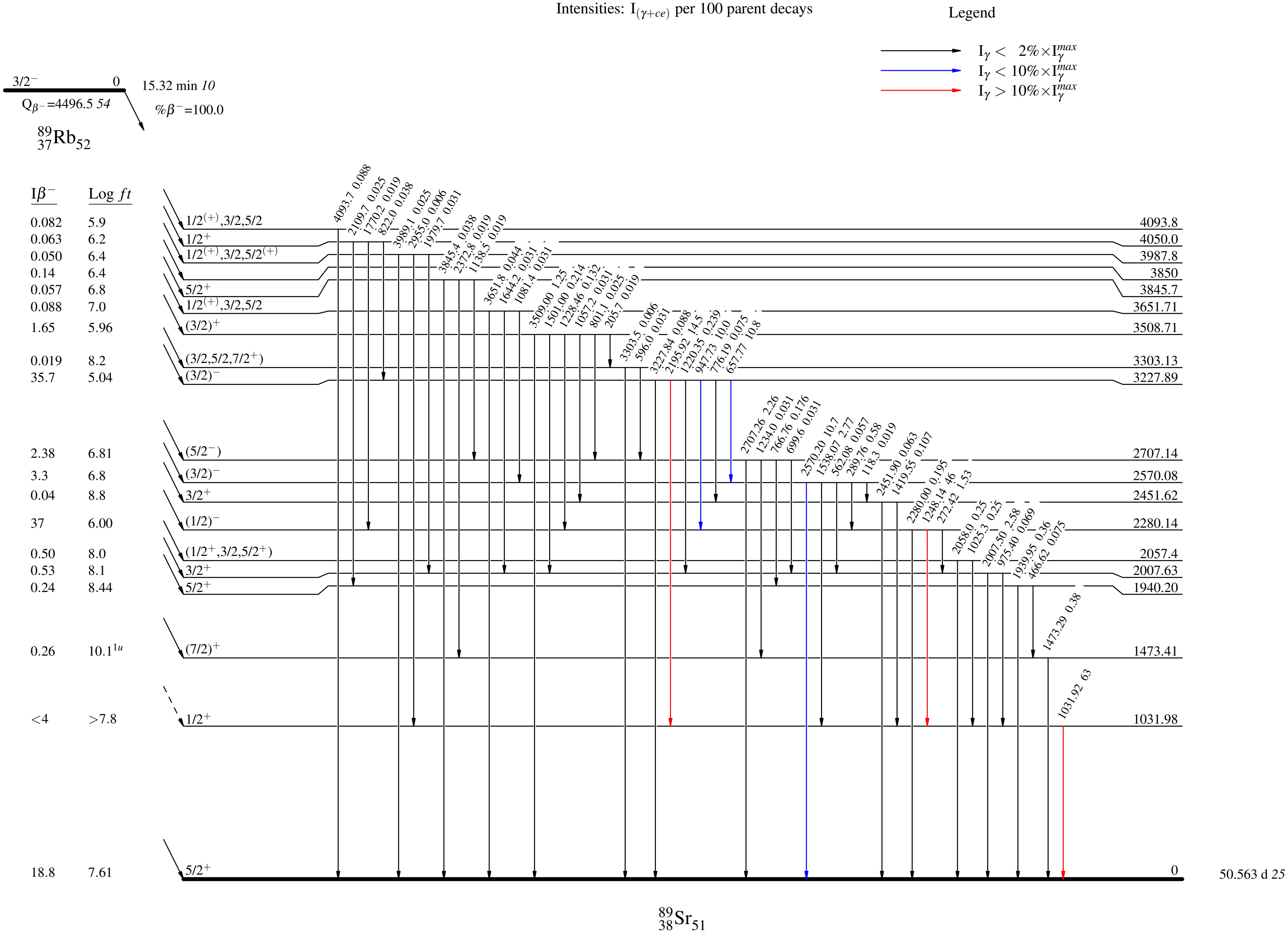
E_γ[†]	I_γ[‡&]	E_i(level)	J^π_i	E_f	J^π_f
[x]2685.6 *4*	0.05 *1*				
2707.26[#] *15*	3.5 *2*	2707.14	(5/2$^-$)	0	5/2$^+$
[x]2818.1 *5*	0.02 *1*				
[x]2947.9 *4*	0.03 *1*				
2955.0 *12*	0.010 *5*	3987.8	1/2$^{(+)}$,3/2,5/2$^{(+)}$	1031.98	1/2$^+$
[x]3037.5 *4*	0.02 *1*				
[x]3141.7 *3*	0.09 *1*				
3227.84[@] *13*	0.13 *1*	3227.89	(3/2)$^-$	0	5/2$^+$
[x]3263.6 *3*	0.03 *1*				
3303.5 *8*	0.010 *5*	3303.13	(3/2,5/2,7/2$^+$)	0	5/2$^+$
3509.00[#] *19*	1.98 *12*	3508.71	(3/2)$^+$	0	5/2$^+$
3651.8 *4*	0.06 *2*	3651.71	1/2$^{(+)}$,3/2,5/2	0	5/2$^+$
[x]3781.8 *5*	0.02 *1*				
3845.4 *6*	0.05 *1*	3845.7	5/2$^+$	0	5/2$^+$
3989.1 *8*	0.03 *1*	3987.8	1/2$^{(+)}$,3/2,5/2$^{(+)}$	0	5/2$^+$
4093.7 *6*	0.13 *2*	4093.8	1/2$^{(+)}$,3/2,5/2	0	5/2$^+$

[†] From 1973He01, unless otherwise stated.
[‡] From 1973He01.
[#] Weighted average from 1973He01, 1973BlZH, and 1971UkZY.
[@] Weighted average from 1973He01 and 1973BlZH.
[&] For absolute intensity per 100 decays, multiply by 0.629 *10*.
[x] γ ray not placed in level scheme.

^{89}Rb β^- decay (15.32 min)   1973He01

Decay Scheme

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



$^{89}_{38}Sr_{51}$-5