

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Alexandru Negret, Balraj Singh		NDS 114, 841 (2013)	30-Jun-2013

$Q(\beta^-) = -1.060 \times 10^4$ 22; $S(n) = 13374$ 3; $S(p) = 2175.8$ 23; $Q(\alpha) = -3141$ 6 [2012Wa38](#)

$S(2n) = 27280$ 100 (syst), $S(2p) = 8149$ 7, $Q(\epsilon p) = 781$ 6 ([2012Wa38](#)).

^{75}Rb produced and identified by [1975Ra03](#) in spallation reaction with 600 MeV protons at ISOLDE-CERN facility. Later studies of

^{75}Rb decay: [1975Bo52](#), [1977Da04](#), [1983Ke08](#).

Production: $^{58}\text{Ni}(^{20}\text{Ne}, p2n)$ ([1983Ke08](#)), $^{50}\text{Cr}(^{32}\text{S}, X)$ $E = 190$ MeV ([1975Bo52](#)).

Mass measurement: [2011Et01](#) (Penning-trap using TITAN at TRIUMF), [2007Ke09](#), [1994Ot01](#), [1979Ep01](#).

Nuclear structure calculations: [1980Ca23](#), [2007Wy01](#).

[Additional information 1](#).

 ^{75}Rb LevelsCross Reference (XREF) Flags

A ^{75}Sr ϵ decay (88 ms)
B $^{40}\text{Ca}(^{40}\text{Ca}, \alpha p \gamma)$

E(level) [†]	J^π	$T_{1/2}$	XREF	Comments
0 [#]	3/2 ⁽⁻⁾	19.0 s 12	AB	$\% \epsilon + \% \beta^+ = 100$ Measured isotope shift $\delta \nu(^{75}\text{Rb}-^{78}\text{Rb}) = -41.1$ MHz 17 (2011Ma66 , collinear laser spectroscopy). J^π : spin from hyperfine structure using collinear-laser spectroscopy at TRIUMF facility. Probable 3/2[312] proton orbital (1997Gr07). $T_{1/2}$: weighted average of 21.4 s 10 (1983Ke08), 17.0 s 10 (1977Da04), 17.6 s 16 (1975Bo52), 21 s 3 (1975Ra03).
38.0 ^a 8	(3/2 ⁺)		AB	
144.0 [@] 7	(5/2 ⁻)		AB	
354.0 [#] 8	(7/2 ⁻)		B	
378.0 ^{&} 7	(5/2 ⁺)		B	
542.1 ^a 11	(7/2 ⁺)		B	
607.0 [@] 9	(9/2 ⁻)		B	
609.9 ^{&} 11	(9/2 ⁺)		B	
924.0 [#] 11	(11/2 ⁻)		B	
1037.3 ^a 14	(11/2 ⁺)		B	
1124.7 ^{&} 14	(13/2 ⁺)		B	
1276.0 [@] 14	(13/2 ⁻)		B	
1697.0 [#] 15	(15/2 ⁻)		B	
1785.5 ^a 14	(15/2 ⁺)		B	
1857.7 ^{&} 17	(17/2 ⁺)		B	
2138.0 [@] 17	(17/2 ⁻)		B	
2662.0 [#] 18	(19/2 ⁻)		B	
2779.7 ^{&} 20	(21/2 ⁺)		B	
3179.0 [@] 20	(21/2 ⁻)		B	
3803.0 [#] 21	(23/2 ⁻)		B	
3864.7 ^{&} 22	(25/2 ⁺)		B	
4380.0 [@] 22	(25/2 ⁻)		B	
5091.7 ^{&} 24	(29/2 ⁺)		B	

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Adopted Levels, Gammas (continued) ^{75}Rb Levels (continued)

E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF
5102.0 [#] 23	(27/2 ⁻)	B	9750 [#] 3	(39/2 ⁻)	B	16419 [@] 4	(53/2 ⁻)	B
5727.0 [@] 24	(29/2 ⁻)	B	10401 [@] 3	(41/2 ⁻)	B	18085 ^{&} 4	(57/2 ⁺)	B
6444 ^{&} 3	(33/2 ⁺)	B	11309 ^{&} 4	(45/2 ⁺)	B	18938 [@] 4	(57/2 ⁻)	B
6539.0 [#] 25	(31/2 ⁻)	B	11519 [#] 3	(43/2 ⁻)	B	21045 ^{&} 4	(61/2 ⁺)	B
7195 [@] 3	(33/2 ⁻)	B	12190 [@] 4	(45/2 ⁻)	B	21774 [@] 4	(61/2 ⁻)	B
7926 ^{&} 3	(37/2 ⁺)	B	13285 ^{&} 4	(49/2 ⁺)	B	24300 ^{&} 4	(65/2 ⁺)	B
8094 [#] 3	(35/2 ⁻)	B	13443 [#] 4	(47/2 ⁻)	B	24916 [@] 4	(65/2 ⁻)	B
8755 [@] 3	(37/2 ⁻)	B	14181 [@] 4	(49/2 ⁻)	B	28468 [@] 4	(69/2 ⁻)	B
9543 ^{&} 3	(41/2 ⁺)	B	15518 ^{&} 4	(53/2 ⁺)	B	32365 [@] 4	(73/2 ⁻)	B

[†] From least-squares fit to $E\gamma$'s, assuming $\Delta(E\gamma)=1$ keV.

[‡] From band assignments (1997Gr07) based on neighboring odd-A Br and Rb isotopes.

[#] Band(A): Band based on $3/2^{-}$, $\alpha=-1/2$. Low-lying members of the band built on $\pi 3/2[312]$ Nilsson orbital (1997Gr07). Higher members are discussed in 2007Wy01 and 2010Da19 in terms of $\pi p_{3/2} - \pi f_{5/2}$ pseudospin doublet and band termination.

[@] Band(a): Band based on $3/2^{-}$, $\alpha=+1/2$. Lifetimes measured for levels of $J^{\pi}=9/2^{-}$ to $65/2^{-}$ (2010Da19). Variation in transition quadrupole moment over the whole range=0.37 eb. Band remains collective at maximum spin. See also comment for $\alpha=-1/2$ signature for configuration.

[&] Band(B): Band based on $(3/2^{+})$, $\alpha=+1/2$. Low-lying members of the band built on $\pi 3/2[431]$ Nilsson orbital (1997Gr07). Higher members are discussed in 2007Wy01 and 2010Da19 in terms of $\pi p_{3/2} - \pi f_{5/2}$ pseudospin doublet and band termination. Lifetimes measured for levels of $J^{\pi}=13/2^{+}$ to $61/2^{+}$ (2010Da19). Variation in transition quadrupole moment over the whole range=0.33 eb. Band remains collective at maximum spin.

^a Band(b): Band based on $(3/2^{+})$, $\alpha=-1/2$. Possible signature partner of band built on $(3/2^{+})$ state at 38 keV.

 $\gamma(^{75}\text{Rb})$

$E_i(\text{level})$	J_i^{π}	$E_{\gamma}^{\dagger}$	E_f	J_f^{π}	Mult.	$E_i(\text{level})$	J_i^{π}	$E_{\gamma}^{\dagger}$	E_f	J_f^{π}	Mult.
38.0	(3/2 ⁺)	(38)	0	3/2 ⁽⁻⁾		1857.7	(17/2 ⁺)	733	1124.7	(13/2 ⁺)	(Q) [#]
144.0	(5/2 ⁻)	144	0	3/2 ⁽⁻⁾	(D) [‡]	2138.0	(17/2 ⁻)	862	1276.0	(13/2 ⁻)	
354.0	(7/2 ⁻)	210	144.0	(5/2 ⁻)		2662.0	(19/2 ⁻)	965	1697.0	(15/2 ⁻)	
		354	0	3/2 ⁽⁻⁾		2779.7	(21/2 ⁺)	922	1857.7	(17/2 ⁺)	(Q) [#]
378.0	(5/2 ⁺)	234	144.0	(5/2 ⁻)		3179.0	(21/2 ⁻)	1041	2138.0	(17/2 ⁻)	
		340	38.0	(3/2 ⁺)	(D) [‡]	3803.0	(23/2 ⁻)	1141	2662.0	(19/2 ⁻)	
		378	0	3/2 ⁽⁻⁾	(D) [‡]	3864.7	(25/2 ⁺)	1085	2779.7	(21/2 ⁺)	
542.1	(7/2 ⁺)	164	378.0	(5/2 ⁺)	(D) [‡]	4380.0	(25/2 ⁻)	1201	3179.0	(21/2 ⁻)	
607.0	(9/2 ⁻)	253	354.0	(7/2 ⁻)		5091.7	(29/2 ⁺)	1227	3864.7	(25/2 ⁺)	
		463	144.0	(5/2 ⁻)		5102.0	(27/2 ⁻)	1299	3803.0	(23/2 ⁻)	
609.9	(9/2 ⁺)	68	542.1	(7/2 ⁺)		5727.0	(29/2 ⁻)	1347	4380.0	(25/2 ⁻)	
		232	378.0	(5/2 ⁺)		6444	(33/2 ⁺)	1352	5091.7	(29/2 ⁺)	
924.0	(11/2 ⁻)	317	607.0	(9/2 ⁻)		6539.0	(31/2 ⁻)	1437	5102.0	(27/2 ⁻)	
		570	354.0	(7/2 ⁻)		7195	(33/2 ⁻)	1468	5727.0	(29/2 ⁻)	
1037.3	(11/2 ⁺)	495	542.1	(7/2 ⁺)		7926	(37/2 ⁺)	1482	6444	(33/2 ⁺)	
1124.7	(13/2 ⁺)	515	609.9	(9/2 ⁺)	(Q) [#]	8094	(35/2 ⁻)	1555	6539.0	(31/2 ⁻)	
1276.0	(13/2 ⁻)	669	607.0	(9/2 ⁻)		8755	(37/2 ⁻)	1560	7195	(33/2 ⁻)	
1697.0	(15/2 ⁻)	773	924.0	(11/2 ⁻)		9543	(41/2 ⁺)	1617	7926	(37/2 ⁺)	
1785.5	(15/2 ⁺)	661 [@]	1124.7	(13/2 ⁺)		9750	(39/2 ⁻)	1656	8094	(35/2 ⁻)	
		748	1037.3	(11/2 ⁺)		10401	(41/2 ⁻)	1646	8755	(37/2 ⁻)	

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Adopted Levels, Gammas (continued) $\gamma(^{75}\text{Rb})$ (continued)

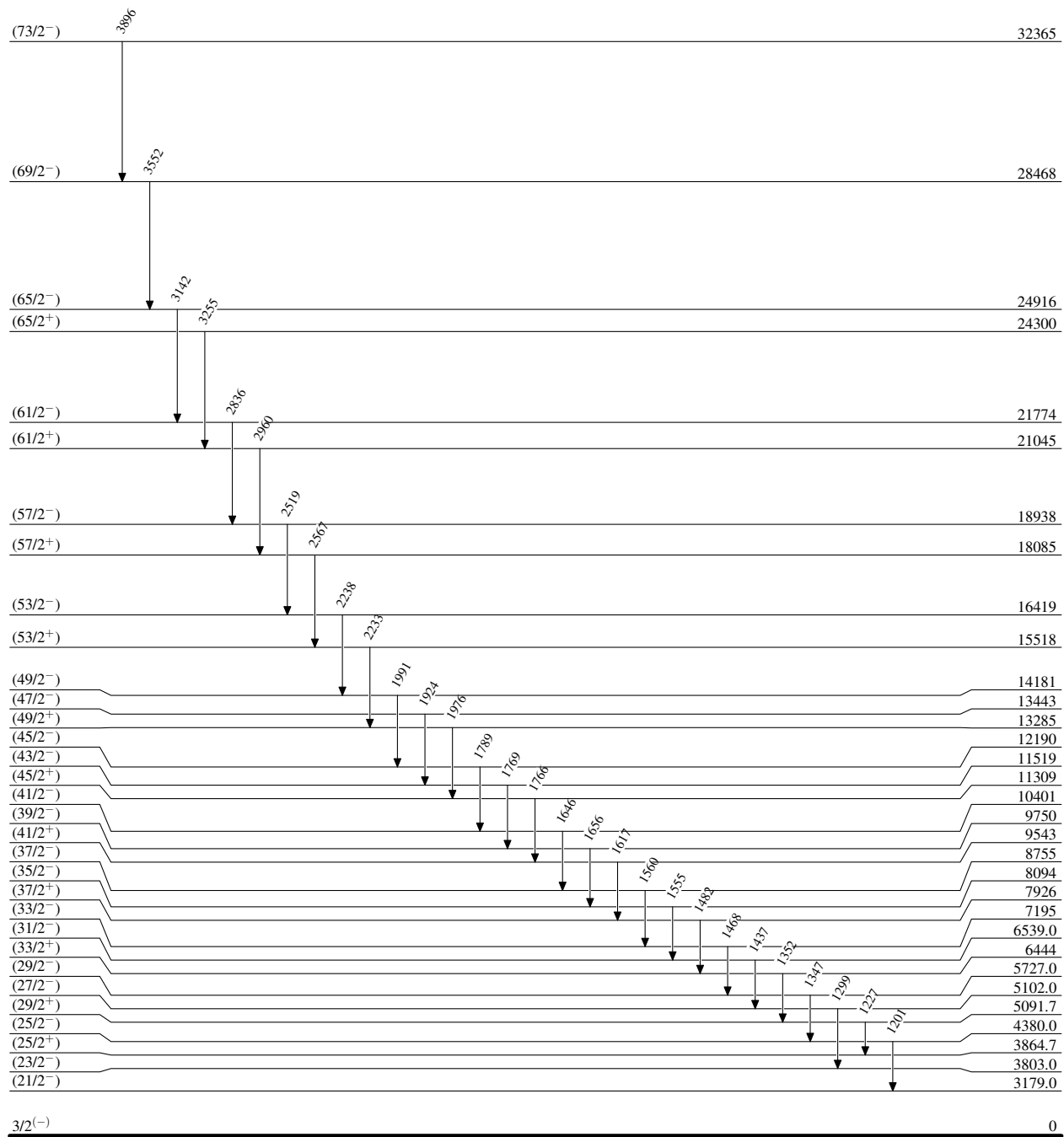
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	E_f	J_f^π	$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	E_f	J_f^π
11309	(45/2 ⁺)	1766	9543	(41/2 ⁺)	18085	(57/2 ⁺)	2567	15518	(53/2 ⁺)
11519	(43/2 ⁻)	1769	9750	(39/2 ⁻)	18938	(57/2 ⁻)	2519	16419	(53/2 ⁻)
12190	(45/2 ⁻)	1789	10401	(41/2 ⁻)	21045	(61/2 ⁺)	2960	18085	(57/2 ⁺)
13285	(49/2 ⁺)	1976	11309	(45/2 ⁺)	21774	(61/2 ⁻)	2836	18938	(57/2 ⁻)
13443	(47/2 ⁻)	1924	11519	(43/2 ⁻)	24300	(65/2 ⁺)	3255	21045	(61/2 ⁺)
14181	(49/2 ⁻)	1991	12190	(45/2 ⁻)	24916	(65/2 ⁻)	3142	21774	(61/2 ⁻)
15518	(53/2 ⁺)	2233	13285	(49/2 ⁺)	28468	(69/2 ⁻)	3552	24916	(65/2 ⁻)
16419	(53/2 ⁻)	2238	14181	(49/2 ⁻)	32365	(73/2 ⁻)	3896	28468	(69/2 ⁻)

[†] Uncertainty is less than 1 keV for low energy strong γ rays and up to 2 keV for transitions near the top of bands.

[‡] Consistent with $\Delta J=1$, dipole from $\gamma\gamma(\theta)$ (DCO) in ($^{40}\text{Ca},\alpha p\gamma$).

Consistent with $\Delta J=2$, Q from $\gamma\gamma(\theta)$ (DCO) in ($^{40}\text{Ca},\alpha p\gamma$).

@ Placement of transition in the level scheme is uncertain.

Adopted Levels, GammasLevel Scheme $3/2^{-}$

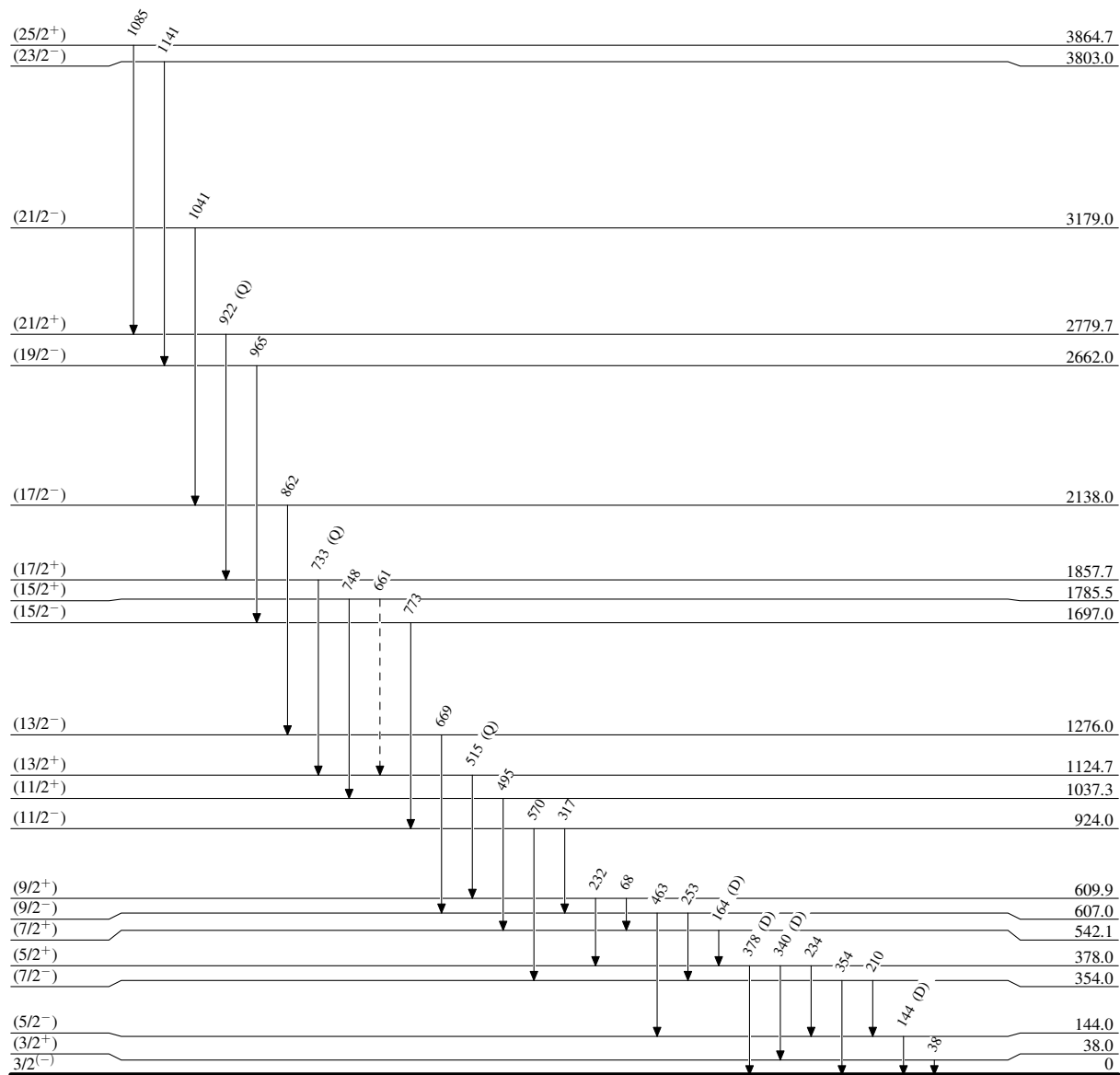
0

19.0 s 12

 $^{75}_{37}\text{Rb}_{38}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)-----► γ Decay (Uncertain)

19.0 s 12

 $^{75}\text{Rb}_{38}$

Adopted Levels, Gammas