

<sup>85</sup>Rb(n,n'γ),(n,n') 1980Ba29

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen		NDS 116, 1 (2014)	31-Dec-2013

1980Ba29: E=0.55-2.10 MeV, time-gatedGe(Li) and intrinsic germanium detectors. Natural Rb target. Measured σ(n,n') by neutron tof. Hauser-Feshbach calculations, additional results are reported in 1979ReZX.

Others:

1972To16: E=0.3-2.2 MeV,Ge(Li) detector with FWHM=4.5 keV at Eγ=1 MeV. Natural and enriched targets.

1973Ba25: E=0.12-1.9 MeV, neutron time-of-flight measurements, time-gatedGe(Li) detector. Natural Rb target.

<sup>85</sup>Rb Levels

E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	T <sub>1/2</sub>	Comments
0.0	5/2 <sup>-</sup>		
151.17 4	3/2 <sup>-</sup>		
281.00 6	1/2 <sup>-</sup>		
513.88 8	9/2 <sup>+</sup>	985 ns 20	T <sub>1/2</sub> : from 1972Ad01: pulsed beam techniques, delayed ny coincidences.
731.55 8	3/2 <sup>-</sup>		
868.50 11	7/2 <sup>-</sup>		
885.47 16	1/2 <sup>-</sup>		J <sup>π</sup> : J <sup>π</sup> =3/2 <sup>-</sup> is definitely ruled out by Hauser-Feshbach calculations.
919.38 7	5/2 <sup>-</sup>		
950.61 9	(5/2 <sup>+</sup> )		
1175.06 7	(3/2 <sup>-</sup> ,5/2 <sup>-</sup> )		E(level),J <sup>π</sup> : this level may be a doublet of a level with J <sup>π</sup> =(5/2 <sup>-</sup> ) and another one with J <sup>π</sup> =(7/2 <sup>+</sup> ), but the agreement in branching of 1175γ and 1024γ between this reaction and (p,γ) suggest that both reactions populate the same single level which then cannot have J <sup>π</sup> =7/2 <sup>+</sup> .
1292.80 20	13/2 <sup>+</sup>		
1295.57 9	3/2 <sup>-</sup>		
1383.72 10	5/2 <sup>-</sup>		
1444.59 9	7/2 <sup>-</sup>		
1448.68 12	(5/2 <sup>+</sup> ,7/2 <sup>+</sup> )		
1495.73 14	1/2 <sup>-</sup>		
1630.68 17	(5/2 <sup>-</sup> )		
1747.2 4	(11/2 <sup>+</sup> ,13/2 <sup>+</sup> )		
1786.41 16	(5/2 <sup>+</sup> )		
1792.2 3	1/2 <sup>-</sup>		
1801.6 3	(9/2 <sup>+</sup> ,11/2 <sup>+</sup> ,13/2 <sup>+</sup> )		
1851.97 25	(3/2,5/2 <sup>+</sup> )		
1949.6 6	(1/2 <sup>-</sup> )		
1999.3? 7	(1/2 <sup>-</sup> )		

<sup>†</sup> From least-squares fit to Eγ data.

<sup>‡</sup> Deduced by 1980Ba29 from comparison of Hauser-Feshbach calculations with observed γ-branching.

γ(<sup>85</sup>Rb)

E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>γ</sub> <sup>†</sup>	I <sub>γ</sub> <sup>‡</sup>	E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>	Mult. <sup>b</sup>
151.17	3/2 <sup>-</sup>	151.20 5	100	0.0	5/2 <sup>-</sup>	
281.00	1/2 <sup>-</sup>	129.83 4	100	151.17	3/2 <sup>-</sup>	
513.88	9/2 <sup>+</sup>	513.83 10	100	0.0	5/2 <sup>-</sup>	M2
731.55	3/2 <sup>-</sup>	450.5 2	67.3 23	281.00	1/2 <sup>-</sup>	
		580.4 <sup>c</sup> 2	4.8 <sup>c</sup> 4	151.17	3/2 <sup>-</sup>	
		731.5 1	100 3	0.0	5/2 <sup>-</sup>	
868.50	7/2 <sup>-</sup>	354.7 3	2.1 3	513.88	9/2 <sup>+</sup>	

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$^{85}\text{Rb}(n,n'\gamma),(n,n')$  **1980Ba29** (continued) $\gamma(^{85}\text{Rb})$  (continued)

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_f$	$J_f^\pi$
868.50	$7/2^-$	717.4 3	1.0 2	151.17	$3/2^-$
		868.3 2	100 3	0.0	$5/2^-$
885.47	$1/2^-$	734.3 2	100 3	151.17	$3/2^-$
		885.5 3	3.7 4	0.0	$5/2^-$
919.38	$5/2^-$	638.7 5	0.5 2	281.00	$1/2^-$
		768.2 1	100 3	151.17	$3/2^-$
		919.3 1	41.7 12	0.0	$5/2^-$
950.61	$(5/2^+)$	436.7 3	3.8 4	513.88	$9/2^+$
		799.4 2	10.6 4	151.17	$3/2^-$
		950.6 1	100 3	0.0	$5/2^-$
1175.06	$(3/2^-, 5/2^-)$	443.6 3	3.4 5	731.55	$3/2^-$
		894.2 3	9.4 5	281.00	$1/2^-$
		1023.9 1	100 4	151.17	$3/2^-$
		1175.0 @ 1	27.5 @ 12	0.0	$5/2^-$
1292.80	$13/2^+$	778.9 2	100	513.88	$9/2^+$
1295.57	$3/2^-$	376.0 4	3 #	919.38	$5/2^-$
		1014.5 2	20.0 15	281.00	$1/2^-$
		1144.4 1	100 4	151.17	$3/2^-$
		1295.6 2	49.4 19	0.0	$5/2^-$
1383.72	$5/2^-$	464.1 2	100 5	919.38	$5/2^-$
		1232.6 1	87 5	151.17	$3/2^-$
		1383.7 3	4.9 5	0.0	$5/2^-$
1444.59	$7/2^-$	575.9 2	47.0 25	868.50	$7/2^-$
		930.8 2	12.2 6	513.88	$9/2^+$
		1444.6 1	100 4	0.0	$5/2^-$
1448.68	$(5/2^+, 7/2^+)$	497.9 3	23.2 26	950.61	$(5/2^+)$
		580.4 c 2	3.3 c 6	868.50	$7/2^-$
		934.6 2	100 3	513.88	$9/2^+$
		1448.7 2	18.2 15	0.0	$5/2^-$
1495.73	$1/2^-$	610.3 3	22 4	885.47	$1/2^-$
		1214.7 3	13.1 20	281.00	$1/2^-$
		1344.5 2	100 5	151.17	$3/2^-$
		1495.8 3	16.8 16	0.0	$5/2^-$
1630.68	$(5/2^-)$	679.8 8	5.3 14	950.61	$(5/2^+)$
		762.0 2	100 5	868.50	$7/2^-$
		1480.0 4	8.1 11	151.17	$3/2^-$
		1630.8 3	38.1 18	0.0	$5/2^-$
1747.2	$(11/2^+, 13/2^+)$	454.5 5	17 5	1292.80	$13/2^+$
		1233.2 5	100 12	513.88	$9/2^+$
1786.41	$(5/2^+)$	1054.4 4	11.3 12	731.55	$3/2^-$
		1272.3 3	24.6 19	513.88	$9/2^+$
		1786.6 2	100 6	0.0	$5/2^-$
1792.2	$1/2^-$	1060.4 d 2	13.0 & 13	731.55	$3/2^-$
		1641.0 3	100 8	151.17	$3/2^-$
1801.6	$(9/2^+, 11/2^+, 13/2^+)$	508.5 6	6 #	1292.80	$13/2^+$
		1287.8 3	100	513.88	$9/2^+$
1851.97	$(3/2^-, 5/2^+)$	1120.1 3	72 6	731.55	$3/2^-$
		1852.5 4	100 8	0.0	$5/2^-$
1949.6	$(1/2^-)$	1798.5 8	100 60	151.17	$3/2^-$
		1949.5 8	70 70	0.0	$5/2^-$
1999.3?	$(1/2^-)$	1999.3 ad 7	100	0.0	$5/2^-$

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$^{85}\text{Rb}(n,n'\gamma),(n,n')$  1980Ba29 (continued)

$\gamma(^{85}\text{Rb})$  (continued)

† From 1980Ba29. The values are systematically 0.03% smaller than the values from other reaction studies. The values from 1972To16 exhibit even a larger systematic deviation.

‡ From 1979ReZX: averages of values determined at several incident neutron energies. Uncertainties are of statistical origin only. Agreement with 1973Ba25 and 1972To16 is good except for the decay of the 1176-level.

# From 1980Ba29, not given in 1979ReZX.

@ This  $\gamma$  also originates from  $^{87}\text{Rb}$ . From 1972To16  $I_{\gamma}=72$ . From comparison with Adopted values, evaluators explain this difference as due to a different feeding of the two parts of the 1175-doublet.

& From comparison with a preliminary listing in 1979ReZX, the authors' listed value of  $I_{\gamma}=13$  13 should probably be  $I_{\gamma}=13.0$  13.

<sup>a</sup> This  $\gamma$  may be contributed by  $^{87}\text{Rb}$  impurity.

<sup>b</sup> From Adopted Gammas.

<sup>c</sup> Multiply placed with intensity suitably divided.

<sup>d</sup> Placement of transition in the level scheme is uncertain.

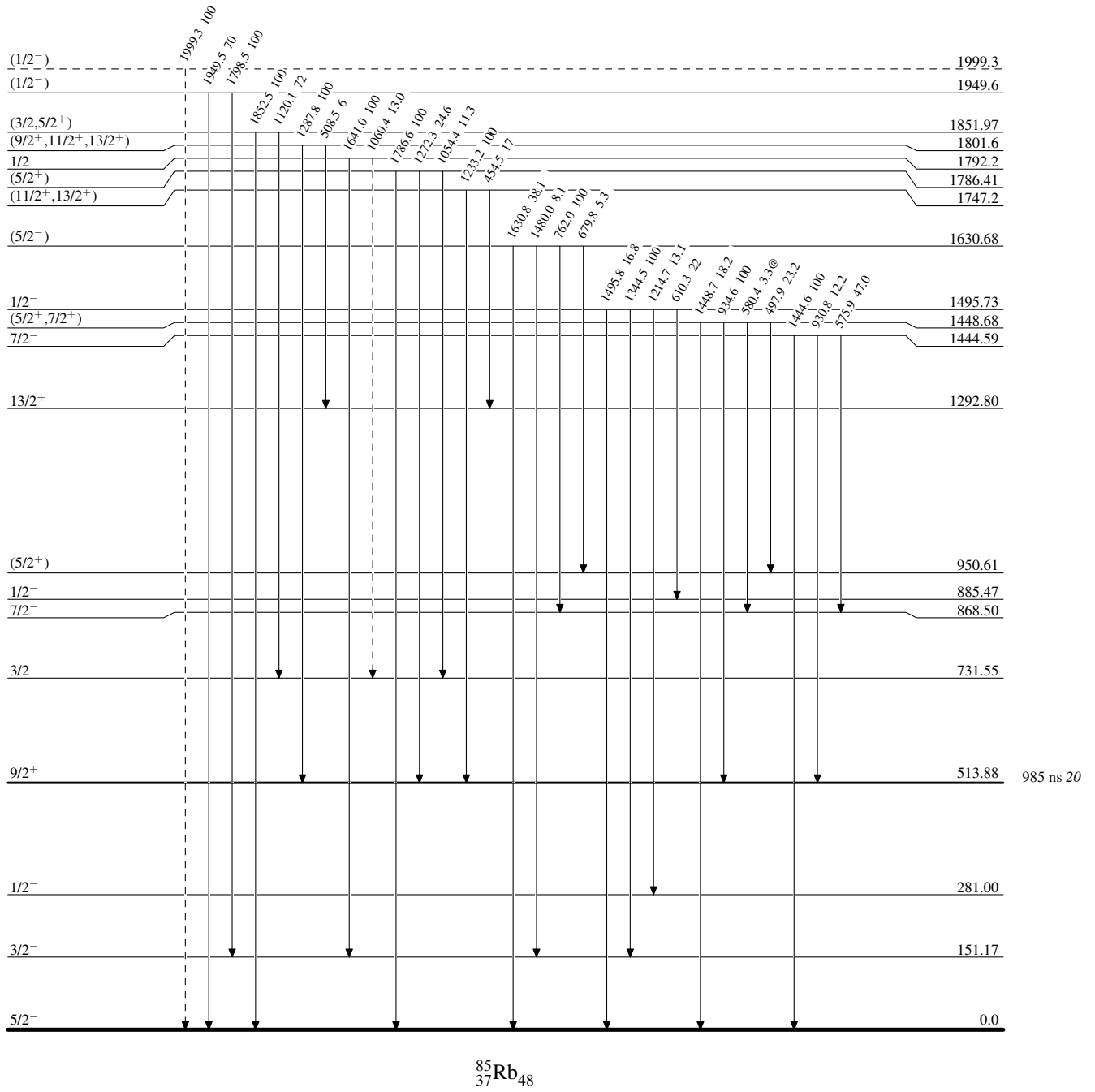
$^{85}\text{Rb}(n,n'\gamma),(n,n')$  1980Ba29

Legend

Level Scheme

Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided

-----▶  $\gamma$  Decay (Uncertain)



$^{85}_{37}\text{Rb}_{48}$

$^{85}\text{Rb}(n,n'\gamma),(n,n')$  1980Ba29

## Level Scheme (continued)

Intensities: Relative photon branching from each level

@ Multiply placed: intensity suitably divided

