^{80}Se(^{6}Li,3nγ) 1980Ga17

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 125, 201 (2015)	31-Dec-2014

E(^{6}Li)=23 MeV to 29 MeV. Includes data on ^{81}Br(α,2nγ) with E(α)=19 MeV to 25 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$ and excitation function using three Ge(Li) detectors.

^{83}Rb Levels

E(level)[†]	J$^{\pi}$[‡]	Comments
0	5/2$^-$	
5.23	3/2$^-$	
42.32	9/2$^+$	
99.4	3/2$^-$	
389.2	3/2$^-$	J$^{\pi}$: 3/2 from excitation function.
423.5	5/2$^+$	
564.7	(3/2$^-$,5/2,7/2$^-$)	
737.2	7/2$^-$	
794.1	13/2$^+$	J$^{\pi}$: 13/2 from excitation function and $\gamma(\theta)$ data.
805.0	(7/2)$^+$	
1037.9	11/2$^+$	J$^{\pi}$: 11/2 from excitation function and $\gamma(\theta)$ data.
1096.6	(7/2$^+$,9/2$^+$)	
1103.0	9/2$^-$	
1586.9	(9/2,13/2)	J$^{\pi}$: 9/2,13/2 from $\gamma(\theta)$; excitation function favors the lower spin.
1754.1	11/2$^-$	J$^{\pi}$: 11/2 from excitation function.
1780.8		
1890.2	17/2$^+$	J$^{\pi}$: 17/2 from excitation function and $\gamma(\theta)$ data.
1943.3	15/2$^+$	J$^{\pi}$: 15/2 from excitation function and $\gamma(\theta)$ data.
2074.0	13/2$^-$	J$^{\pi}$: (13/2) from excitation function.
2102.3	13/2$^-$	J$^{\pi}$: (11/2,13,2) from excitation function.
2206.6	(13/2)	J$^{\pi}$: (13/2,11/2) from excitation function.
2310.0		
2313.8	13/2$^-$	J$^{\pi}$: 9/2,13/2 from excitation function.
2318.7	(17/2$^+$)	
2414.4	15/2$^-$	J$^{\pi}$: (15/2) from excitation function and $\gamma(\theta)$ data.
2576.8	15/2$^-$	
2596.4	17/2$^-$	
2700.3	17/2$^-$	
2773.1	17/2$^-$	
2860.4	21/2$^+$	
2958.5	19/2$^-$	
3363.4	21/2$^-$	
3559.6		
3727.7	23/2$^+$	

[†] From a least-squares fit to Eγ, by evaluator.
[‡] From the Adopted Levels. Specific arguments for J^{π} assignments based on excitation function and $\gamma(\theta)$ data in 1980Ga17 are included in the comments.

^{80}Se(^{6}Li,3nγ) 1980Ga17 (continued)

$\gamma(^{83}Rb)$

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
(5.23[@] *9*)		5.23	3/2$^-$	0	5/2$^-$		
(42.33[@] *15*)		42.32	9/2$^+$	0	5/2$^-$		
94.1	1.97 *14*	99.4	3/2$^-$	5.23	3/2$^-$		
100.5	10.4 *3*	2414.4	15/2$^-$	2313.8	13/2$^-$	D	Mult.: A_2/A_0=−0.235 *12*, A_4/A_0=−0.013 *16*.
123.5[#]	10.4 *4*	2700.3	17/2$^-$	2576.8	15/2$^-$	D	Mult.: A_2/A_0=−0.224 *11*, A_4/A_0=−0.007 *16*.
176.7	0.66 *6*	2773.1	17/2$^-$	2596.4	17/2$^-$		
182.0	18.6 *5*	2596.4	17/2$^-$	2414.4	15/2$^-$	D	Mult.: A_2/A_0=−0.289 *8*, A_4/A_0=−0.005 *11*.
207.7	1.99 *8*	2414.4	15/2$^-$	2206.6	(13/2)		
258.1[#]	3.81 *12*	2958.5	19/2$^-$	2700.3	17/2$^-$	D	Mult.: A_2/A_0=−0.347 *21*, A_4/A_0=−0.02 *3*.
285.9	2.82 *12*	2700.3	17/2$^-$	2414.4	15/2$^-$	D	Mult.: A_2/A_0=−0.274 *14*, A_4/A_0=0.023 *17*.
289.8[#]	4.87 *15*	389.2	3/2$^-$	99.4	3/2$^-$		
291.5[#a]	0.77 *7*	1096.6	(7/2$^+$,9/2$^+$)	805.0	(7/2)$^+$		
312.0	6.39 *19*	2414.4	15/2$^-$	2102.3	13/2$^-$	D	Mult.: A_2/A_0=−0.34 *3*, A_4/A_0=0.04 *4*.
340.3	1.21 *10*	2414.4	15/2$^-$	2074.0	13/2$^-$		
348.3	1.43 *15*	2102.3	13/2$^-$	1754.1	11/2$^-$		
358.7	3.43 *14*	2773.1	17/2$^-$	2414.4	15/2$^-$	D	Mult.: A_2/A_0=−0.31 *5*, A_4/A_0=0.00 *6*.
362.2	10.9 *3*	2958.5	19/2$^-$	2596.4	17/2$^-$	D	Mult.: A_2/A_0=−0.398 *15*, A_4/A_0=+0.014 *22*.
365.7[#]	2.5 *12*	1103.0	9/2$^-$	737.2	7/2$^-$		
381.3[&#]		423.5	5/2$^+$	42.32	9/2$^+$		
381.3[&]		805.0	(7/2)$^+$	423.5	5/2$^+$		
389.2[#]	5.10 *18*	389.2	3/2$^-$	0	5/2$^-$		
404.9	4.50 *19*	3363.4	21/2$^-$	2958.5	19/2$^-$	D	Mult.: A_2/A_0=−0.57 *4*, A_4/A_0=0.06 *5*.
418.1	1.67 *18*	423.5	5/2$^+$	5.23	3/2$^-$		
549.0	3.9 *3*	1586.9	(9/2,13/2)	1037.9	11/2$^+$	D	Mult.: A_2/A_0=−0.63 *5*, A_4/A_0=0.09 *7*.
559.5[&#a]		564.7	(3/2$^-$,5/2,7/2$^-$)	5.23	3/2$^-$		
559.5[&]		2313.8	13/2$^-$	1754.1	11/2$^-$		
564.7	0.24 *22*	564.7	(3/2$^-$,5/2,7/2$^-$)	0	5/2$^-$		
601.1[a]		3559.6		2958.5	19/2$^-$		
637.8	<0.02	737.2	7/2$^-$	99.4	3/2$^-$		E_γ,I_γ: γ ray not observed in 1980Ga17, which estimate intensity as smaller than 0.1% that of the 737γ intensity.
651.1	3.16 *18*	1754.1	11/2$^-$	1103.0	9/2$^-$		
653.3	6.0 *3*	2596.4	17/2$^-$	1943.3	15/2$^+$		
660.2[#]	3.33 *17*	2414.4	15/2$^-$	1754.1	11/2$^-$		
731.9	5.63 *24*	737.2	7/2$^-$	5.23	3/2$^-$	Q	Mult.: A_2/A_0=0.315 *19*, A_4/A_0=−0.065 *24*.
737.1	16.2 *5*	737.2	7/2$^-$	0	5/2$^-$		Mult.: A_2/A_0=0.450 *7*, A_4/A_0=0.081 *8*.
751.9	100	794.1	13/2$^+$	42.32	9/2$^+$	Q	Mult.: A_2/A_0=0.299 *10*, A_4/A_0=−0.069 *14*.
762.8	2.9 *3*	805.0	(7/2)$^+$	42.32	9/2$^+$		
822.6[#]	5.3 *8*	2576.8	15/2$^-$	1754.1	11/2$^-$		
867.3	3.1 *3*	3727.7	23/2$^+$	2860.4	21/2$^+$		
905.5	3.7 *3*	1943.3	15/2$^+$	1037.9	11/2$^+$		
970.2	16.3 *6*	2860.4	21/2$^+$	1890.2	17/2$^+$	Q	Mult.: A_2/A_0=0.333 *12*, A_4/A_0=−0.092 *14*.
986.6	2.58 *20*	1780.8		794.1	13/2$^+$		
995.6	17.0 *9*	1037.9	11/2$^+$	42.32	9/2$^+$	D	Mult.: A_2/A_0=−0.755 *16*, A_4/A_0=0.110 *23*.
999.2	13.7 *16*	2102.3	13/2$^-$	1103.0	9/2$^-$		
1016.8	14.5 *5*	1754.1	11/2$^-$	737.2	7/2$^-$	Q	Mult.: A_2/A_0=0.256 *19*, A_4/A_0=0.003 *24*.
1036.1	2.49 *17*	2074.0	13/2$^-$	1037.9	11/2$^+$	D	Mult.: A_2/A_0=−0.74 *10*, A_4/A_0=0.21 *14*.
1054.5[a]	4.55 *21*	1096.6	(7/2$^+$,9/2$^+$)	42.32	9/2$^+$		
1096.0	46.0 *16*	1890.2	17/2$^+$	794.1	13/2$^+$	Q	Mult.: A_2/A_0=0.331 *12*, A_4/A_0=−0.040 *15*.
1103.0	26.4 *19*	1103.0	9/2$^-$	0	5/2$^-$	Q	Mult.: A_2/A_0=0.319 *21*, A_4/A_0=−0.08 *3*.
1149.2	11.2 *4*	1943.3	15/2$^+$	794.1	13/2$^+$	D	Mult.: A_2/A_0=−0.903 *14*, A_4/A_0=0.157 *21*.
1168.7	3.03 *23*	2206.6	(13/2)	1037.9	11/2$^+$	D	Mult.: A_2/A_0=−0.42 *6*, A_4/A_0=−0.07 *8*.

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^{80}Se(^{6}Li,3nγ) 1980Ga17 (continued)

$\gamma(^{83}Rb)$ (continued)

E_γ [†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
1211.1	5.8 *3*	2313.8	$13/2^-$	1103.0	$9/2^-$		
1272.1	2.22 *17*	2310.0		1037.9	$11/2^+$	Q	Mult.: A_2/A_0=0.32 *3*, A_4/A_0=−0.11 *4*.
1275.9	1.59 *16*	2313.8	$13/2^-$	1037.9	$11/2^+$		
1524.5	4.60 *24*	2318.7	$(17/2^+)$	794.1	$13/2^+$		
1544.8[a]	5.0 *3*	1586.9	(9/2,13/2)	42.32	$9/2^+$		
1620.2	5.0 *3*	2414.4	$15/2^-$	794.1	$13/2^+$		
1738.5[a]	3.1 *4*	1780.8		42.32	$9/2^+$		

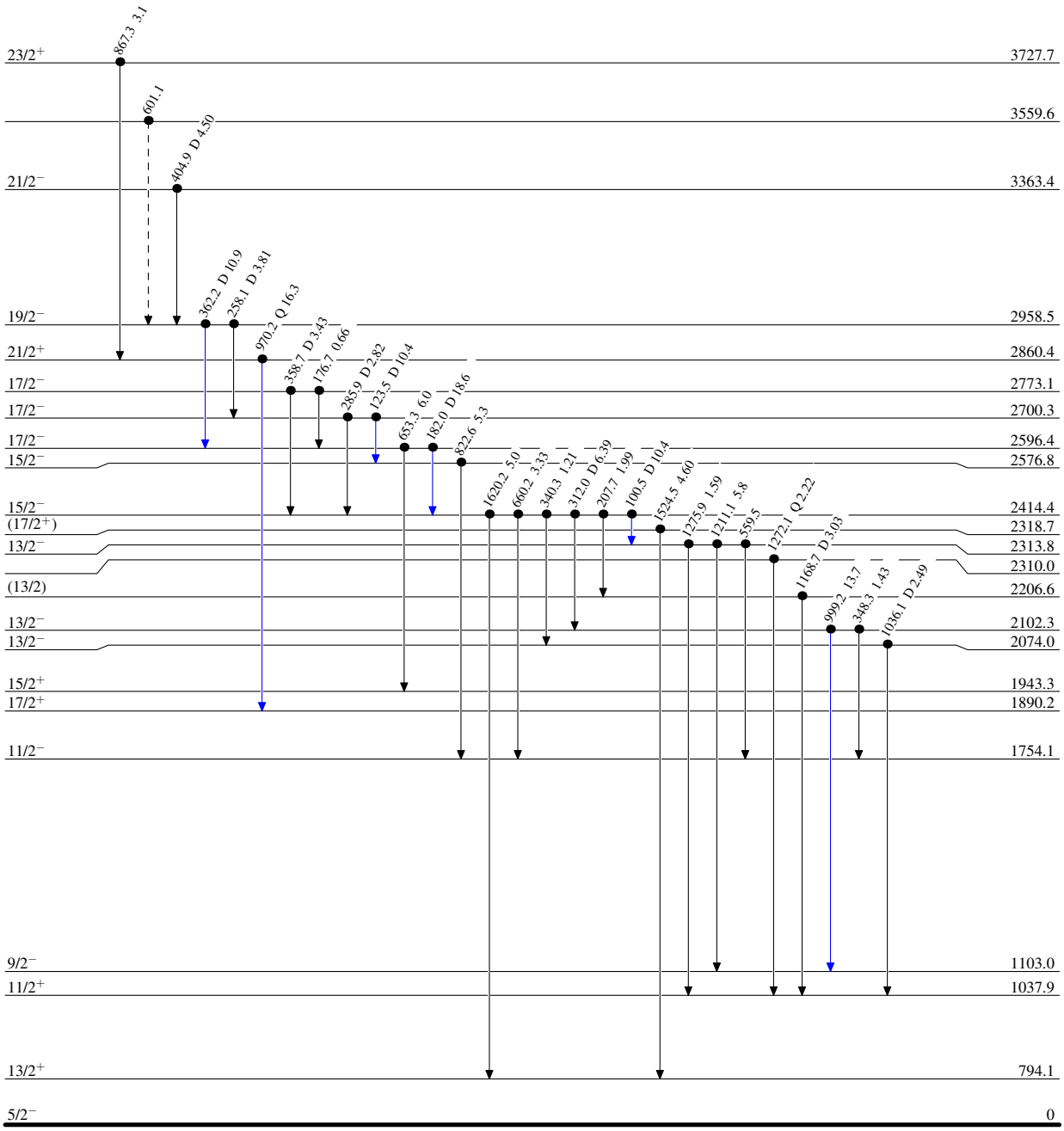
† Relative intensities from ^{80}Se(^{6}Li,3nγ) at E(^{6}Li)=25 MeV normalized to Iγ(752γ), except where noted.
‡ From $\gamma(\theta)$.
# From ^{81}Br(α,2nγ).
@ From the Adopted Gammas.
& Multiply placed.
[a] Placement of transition in the level scheme is uncertain.

^{80}Se(^{6}Li,3nγ) 1980Ga17

Level Scheme

Intensities: Relative I_γ

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



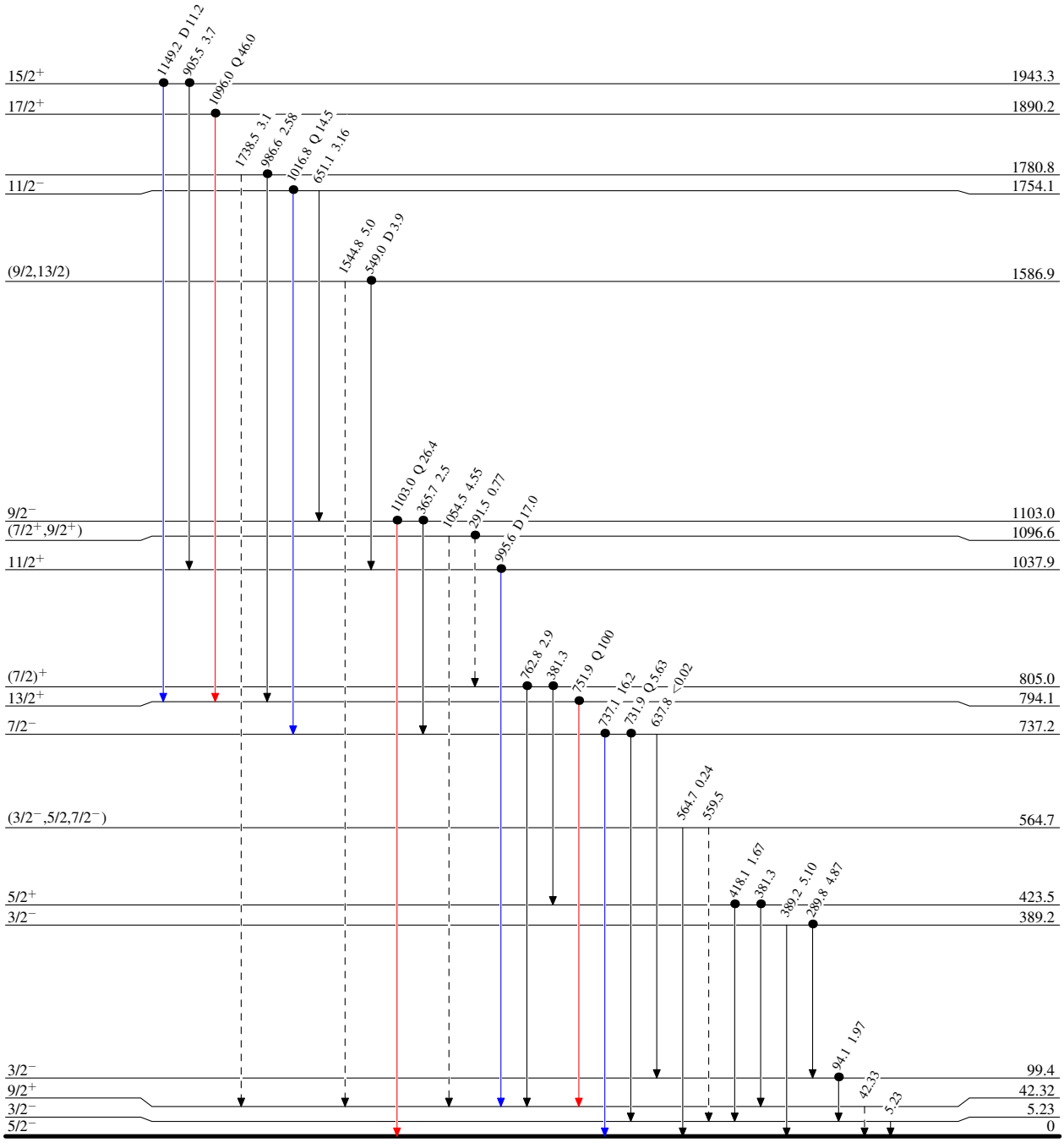
$^{83}_{37}Rb_{46}$

^{80}Se(^{6}Li,3nγ) 1980Ga17

Level Scheme (continued)

Intensities: Relative I_γ

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



$^{83}_{37}Rb_{46}$