^{41}K(n,n′γ) 1987Kr01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja, E. A. Mccutchan	NDS 133, 1 (2016)	30-Sep-2015

1987Kr01: E=fast reactor neutrons. Measured Eγ and Iγ using Ge(Li) detector.

Other: 1968Ni01: E=2.6-4.0 MeV neutrons produced via the t(p,n) reaction. Measured Eγ with Ge(Li) detector and Iγ, excitation functions and γ(θ) using anticompton spectometer consisting of a central NaI(Tl) crystal surrounded by an annular NaI(Tl) crystal. Data for levels up to 1677 keV.

^{41}K Levels

E(level)†	Jπ‡	Comments
0	$3/2^+$	
980.51 *10*	$1/2^+$	Jπ: 1/2,3/2 from γ(θ) and production cross sections (1968Ni01).
1293.63 *10*	$7/2^-$	Jπ: 7/2 from γ(θ) and production cross sections (1968Ni01).
1559.97 *9*	$3/2^+$	
1582.01 *10*	$3/2^-$	Jπ: 9/2,11/2 from γ(θ) and production cross sections (1968Ni01).
1593.11 *23*	$1/2^+$	
1677.19 *9*	$7/2^+$	
1697.91 *10*	$5/2^+$	
2143.54 *24*	$5/2^+$	
2166.6 *5*	$3/2^-$	
2316.4 *15*	$5/2^-$	
2440.048 *20*	$(3/2,5/2^+)$	
2508.13 *16*	$7/2^+$	
2711.3 *5*	$3/2^+,5/2^+$	
2712.64 *19*	$(7/2)^-$	
2756.89 *24*	$5/2^+$	
2761.7 *23*	$11/2^-$	
3047.6 *10*	$1/2^-,3/2^-$	
3142.6 *5*	$5/2^-$	
3213.4 *3*	$5/2^-$	
3450.0 *7*	$5/2^-,7/2^-$	
3489.7 *7*	$(5/2)^+$	
3572.1 *10*		
3578.3 *4*	$(3/2^+,5/2,7/2^+)$	
3653.2 *7*	$(5/2,7/2^-)$	
3762.0 *9*		
3828.0 *15*	$(5/2,7/2^+)$	
3998.3 *11*	$(5/2^+)$	
4220.0 *6*	(5/2)	
4229.0 *11*	$(5/2)^-$	
4302.6 *11*	$(5/2^+,7/2^+)$	
4346.3 *17*	$(5/2,7/2^-)$	
5083.6? *5*		
5129.4? *5*		
5496.7 *11*	$(7/2^+)$	
5654.2 *6*	$(3/2^-,5/2^+)$	
5914.2 *25*	$(9/2^+)$	E(level): likely the same level as 5912.5 in (n,γ) E=th.
6039.0 *6*		

† From a least-squares fit to Eγ′s, by evaluators.

‡ From the Adopted Levels.

^{41}K(n,n′γ) 1987Kr01 (continued)

γ(^{41}K)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
980.5 *1*	236 *28*	980.51	$1/2^+$	0	$3/2^+$	A_2=0.00 *6* (1968Ni01).
1293.6 *1*	224 *22*	1293.63	$7/2^-$	0	$3/2^+$	A_2=0.26 *3* (1968Ni01).
1418.98 *16*	12.6 *8*	2712.64	$(7/2)^-$	1293.63	$7/2^-$	
1463.9 *9*	2.5 *8*	2756.89	$5/2^+$	1293.63	$7/2^-$	
1468.0 *23*	7.6 *6*	2761.7	$11/2^-$	1293.63	$7/2^-$	
1559.94 *9*	100 *3*	1559.97	$3/2^+$	0	$3/2^+$	
1581.99 *10*	85 *3*	1582.01	$3/2^-$	0	$3/2^+$	
1593.08† *23*	28.4 *24*	1593.11	$1/2^+$	0	$3/2^+$	
1632.6†& *9*	3.1 *9*	3213.4	$5/2^-$	1582.01	$3/2^-$	E_γ: branching ratio in disagreement with (n,γ) suggesting alternate placement (1987Kr01).
1677.14 *9*	162 *4*	1677.19	$7/2^+$	0	$3/2^+$	
1697.88 *10*	124 *4*	1697.91	$5/2^+$	0	$3/2^+$	
x1824.5 *9*	2.9 *9*					
x1832.1 *20*	1.3 *9*					
x1842.6 *9*	3.0 *9*					
1848.9 *4*	7.3 *9*	3142.6	$5/2^-$	1293.63	$7/2^-$	
1880.6 *6*	2.6 *5*	3578.3	$(3/2^+,5/2,7/2^+)$	1697.91	$5/2^+$	
1894.9@ *10*	1.9 *6*	3572.1		1677.19	$7/2^+$	
1900.0 *9*	2.3 *6*	3578.3	$(3/2^+,5/2,7/2^+)$	1677.19	$7/2^+$	
1919.6 *3*	4.6 *5*	3213.4	$5/2^-$	1293.63	$7/2^-$	
1976.0# *7*	11 *3*	3653.2	$(5/2,7/2^-)$	1677.19	$7/2^+$	
2018.3 *4*	1.5 *2*	3578.3	$(3/2^+,5/2,7/2^+)$	1559.97	$3/2^+$	
x2061.2 *7*	2.7 *6*					
x2102.7 *6*	3.9 *7*					
2143.48# *24*	26 *3*	2143.54	$5/2^+$	0	$3/2^+$	
2156.3@ *7*	8.0 *18*	3450.0	$5/2^-,7/2^-$	1293.63	$7/2^-$	
2166.5 *5*	12.9 *18*	2166.6	$3/2^-$	0	$3/2^+$	
2196.0† *7*	1.7 *4*	3489.7	$(5/2)^+$	1293.63	$7/2^-$	
x2371.4‡	1.9 *5*					
2439.97#@ *2*	11.6 *7*	2440.048	$(3/2,5/2^+)$	0	$3/2^+$	
x2454.9 *7*	3.4 *7*					
x2483.2 *10*	3.0 *7*					
x2490.0‡ *9*	1.0 *7*					
2508.05 *16*	8.3 *3*	2508.13	$7/2^+$	0	$3/2^+$	
2522.0 *6*	2.4 *3*	4220.0	(5/2)	1697.91	$5/2^+$	
x2529.5 *10*	1.4 *3*					
x2533.5‡ *11*	0.8 *4*					
2604.6 *11*	1.5 *13*	4302.6	$(5/2^+,7/2^+)$	1697.91	$5/2^+$	
x2682.8‡ *11*	1.5 *8*					
2711.2 *5*	3.7 *5*	2711.3	$3/2^+,5/2^+$	0	$3/2^+$	
x2720.2 *3*	1.7 *5*					
x2735.9 *9*	1.8 *4*					
x2750.9 *13*	2.0 *6*					
2756.74 *25*	9.4 *6*	2756.89	$5/2^+$	0	$3/2^+$	
2767.4& *9*	1.9 *4*	5083.6?		2316.4	$5/2^-$	
2784.0 *10*	1.6 *4*	5496.7	$(7/2^+)$	2712.64	$(7/2)^-$	
2813.1& *6*	4.3 *6*	5129.4?		2316.4	$5/2^-$	
x2896.5 *9*	2.7 *5*					
2935.3 *11*	1.9 *7*	4229.0	$(5/2)^-$	1293.63	$7/2^-$	
3047.5† *10*	1.6 *4*	3047.6	$1/2^-,3/2^-$	0	$3/2^+$	
3052.5† *17*	0.9 *4*	4346.3	$(5/2,7/2^-)$	1293.63	$7/2^-$	

Continued on next page (footnotes at end of table)

^{41}K(n,n′γ) 1987Kr01 (continued)

γ(^{41}K) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π
x3070.8 *11*	2.5 *6*				
3152.4† *9*	3.9 *8*	5914.2	(9/2$^+$)	2761.7	11/2$^-$
3180.2 *11*	5.1 *9*	5496.7	(7/2$^+$)	2316.4	5/2$^-$
x3226.5 *11*	2.3 *11*				
3282.0† *5*	1.6 *2*	6039.0		2756.89	5/2$^+$
x3290.5 *5*	1.6 *2*				
3487.5† *3*	3.3 *9*	5654.2	(3/2$^-$,5/2$^+$)	2166.6	3/2$^-$
3500.5& *11*	1.2 *3*	5083.6?		1582.01	3/2$^-$
3761.8 *9*	1.8 *4*	3762.0		0	3/2$^+$
x3778.5 *8*	3.6 *6*				
x3809.5 *10*	1.7 *3*				
x3820.3 *16*	1.4 *4*				
3827.8† *15*	1.5 *4*	3828.0	(5/2,7/2$^+$)	0	3/2$^+$
3835.6 *11*	1.1 *3*	5129.4?		1293.63	7/2$^-$
x3868.8 *11*	0.9 *3*				
x3941.5 *11*	0.8 *4*				
x3962.8 *25*	0.8 *4*				
3998.1 *11*	1.1 *3*	3998.3	(5/2$^+$)	0	3/2$^+$
x4011.0 *5*	3.0 *3*				
x4022.4 *15*	1.0 *2*				
x4047.7 *11*	1.8 *4*				
x4326.2 *15*	1.1 *4*				
x4337.1 *14*	1.3 *4*				
x4361.1 *3*	1.6 *1*				
x4673.9 *8*	2.2 *4*				
x4711.8 *11*	1.3 *3*				
x4761.2 *7*	3.1 *4*				
x4801.2 *5*	4.6 *4*				
x4917.0 *9*	4.1 *8*				
x5025.8 *11*	2.6 *8*				

† Multiple placement is possible, based on results from (n,γ).
‡ Tentative placement suggested with 5083.6 or 5129.4 level would need additional final level.
# Probable doublet.
@ Based on agreement with results from (p,γ), 1987Kr01 suggest that these are not primary γ-ray transitions, as assigned in (n,γ), E=thermal.
& Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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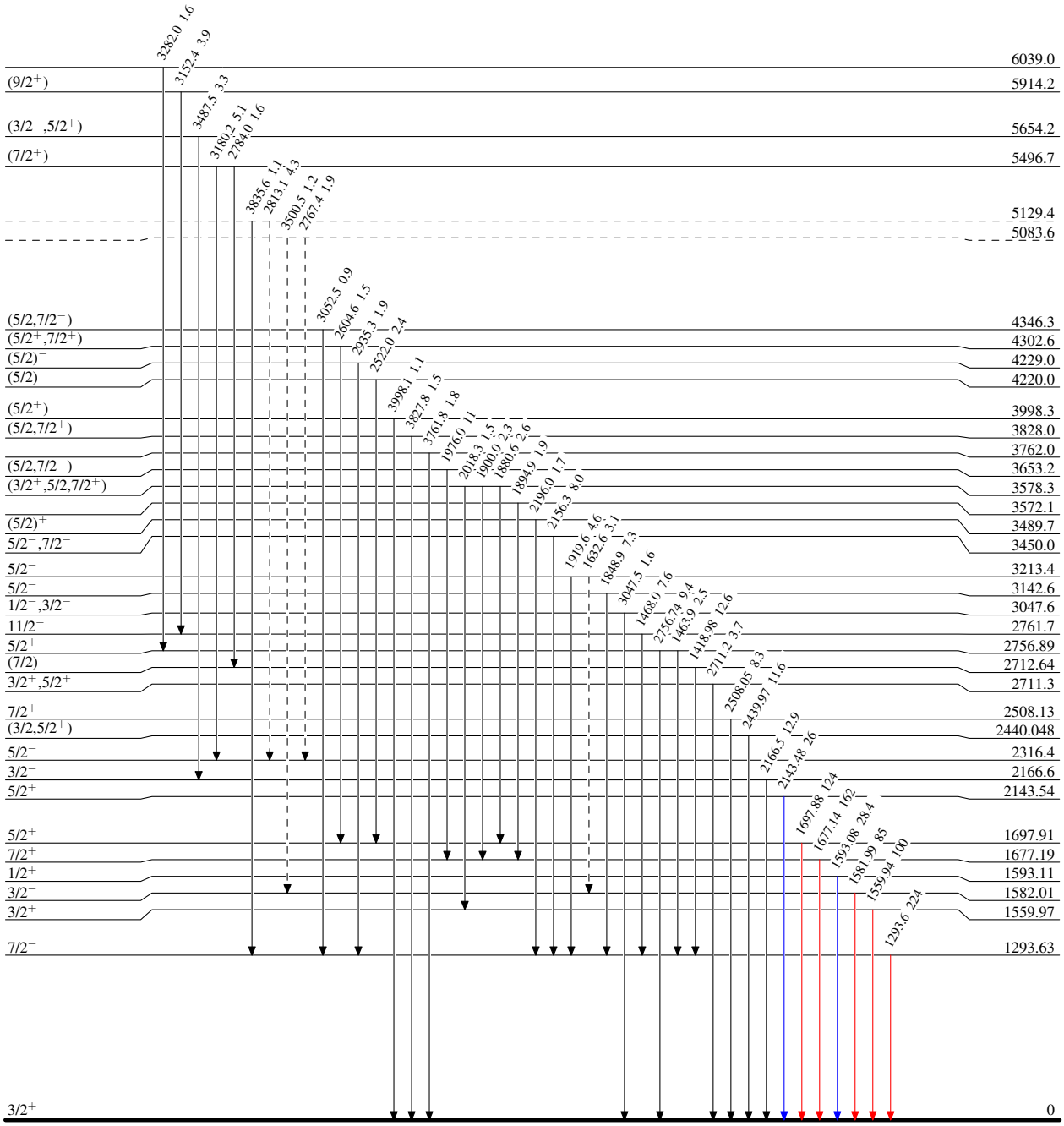
Level Scheme

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)



$^{41}_{19}K_{22}$