^{37}Ca εp decay (181.1 ms) 1974Se11,1991Ga23,1995Tr03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ninel Nica, John Cameron and Balraj Singh	NDS 113, 1 (2012)	31-Dec-2011

Parent: ^{37}Ca: E=0.0; $J^\pi=3/2^+$; $T_{1/2}$=181.1 ms *10*; Q(εp)=9806.83 *79*; %εp decay=82.1 *7*

^{37}Ca-Q(εp): From 2011AuZZ. Other: 9781 *22* (2003Au03).

^{37}Ca-%εp decay: %εp=82.1 *7* (1997Tr05). Total proton intensity listed here adds to 76.4%.

1974Se11: measured delayed protons and relative intensities.

1991Ga23 (and 1990Ga17): measured delayed protons (pγ coin) and deduced B(GT) values.

1995Tr03, 1997Tr05: measured delayed protons (pγ coin) and deduced B(GT) values and Γ_γ/Γ_p ratios.

1997Ka10: unpublished results of ^{37}Ca decay reported with many additional levels than in 1991Ga23.

The level scheme given here, mainly from 1991Ga23, is incomplete. In a follow-up study at ISOLDE-CERN by the same group as 1991Ga23, many additional levels in ^{37}K are reported from an unpublished work (reference 10 and table V in 1997Ka10): 3853, 5459, 5479.8, 5624.1, 5713, 6047, 6274, 6543, 6605 doublet, 6912, 8273, 8314, 8378, 8429, 8486, 8525, 8605, 8653. These levels will decay mostly by proton emission. Levels at 5446, 5465 and 5569 reported in 1991Ga23 were not listed in table V of 1997Ka10.

^{36}Ar Levels

E(level)†	J^π†
0.0	0^+
1970.38 *5*	2^+
4178.32 *11*	3^-
4329.1 *7*	$(0,1,2)^+$

† From ^{36}Ar Adopted Levels dataset.

Delayed Protons (^{36}Ar)

E(p)†	E(^{36}Ar)	I(p)‡&	E(^{37}K)#	Comments
407	4329.1		6605	
571	1970.38		4414.7	
870 *15*	0.0	5.2 *5*	2750.5	I(p): from $I_{\varepsilon+\beta^+}$=8.0% 5 (^{37}Ca ε decay) and Γ_γ/Γ_p=0.54 *3* (1995Tr03).
1189	1970.38		5049.5	
1257	1970.38		5119.6	
1346	0.0	≈0.2	3240.0	I(p): from $I_{\varepsilon+\beta^+}$=5.0% 5 (^{37}Ca ε decay) and Γ_γ/Γ_p=22 *3* (1995Tr03).
1399	4178.32		7474	
1455	1970.38		5323.3	
1553	1970.38	0.058 *13*	5424	
1709 *10*	0.0	3.2 *2*	3622.8	
1747	1970.38		5624	
1925 *10*	0.0	3.5 *2*	3839	
2128	1970.38		6015	
2203	1970.38		6092	
2271	0.0	0.06 *2*	4192	
2498 *20*	0.0	1.10 *5*	4414.7	
2534	1970.38		6432	
2580 *20*	0.0	1.4 *1*	4496	
2745[a] *20*	0.0	1.10 *15*	4669.6	Reported by 1974Se11 but not by 1991Ga23 and 1997Ka10. I(p): same relative intensity As 2498 proton group (1974Se11).

Continued on next page (footnotes at end of table)

^{37}Ca εp decay (181.1 ms) 1974Se11,1991Ga23,1995Tr03 (continued)

Delayed Protons (continued)

E(p)[†]	E(^{36}Ar)	I(p)[‡&]	E(^{37}K)[#]
3063 *15*	0.0	1.0 *10*	5017
3103 *3*	0.0	46.7	5050
3173 *10*	0.0	8.5 *4*	5119.6
3320	1970.38		7240
3339 *30*	0.0	0.56 *4*	5323.3
3405	0.0	0.052 *7*	5358
3446	1970.38		7370
3487[@] *20*	0.0	0.13 *1*	5446
3512[@]	0.0	0.22 *2*	5468
3610[@]	0.0	0.039 *7*	5568
3664	0.0	0.15 *2*	5624
3699	1970.38		7474
3703	1970.38	0.10 *1*	7634
3825	0.0	0.054 *8*	5789
3872	1970.38		7807
3899	1970.38	0.10 *1*	7835
3965	0.0	0.18 *2*	5933
4045 *20*	0.0	0.58 *4*	6015
4120	0.0	0.37 *3*	6092
4345	0.0	0.14 *1*	6324
4435	0.0	0.076 *12*	6416
4450	0.0	0.13 *2*	6432
4619	0.0	0.06 *3*	6605
4678	0.0	0.020 *4*	6684
4750	0.0	0.008 *2*	6740
4832	0.0	0.015 *4*	6824
4978	0.0	0.16 *2*	6974
5072	0.0	0.11 *1*	7071
5181	0.0	0.30 *7*	7183
5237	0.0	0.046 *7*	7240
5363	0.0	0.21 *2*	7370
5464	0.0	0.35 *4*	7474
5530	0.0	0.021 *4*	7542
5647	0.0	0.034 *7*	7662
5788	0.0	0.16 *2*	7807
6004	0.0	0.039 *7*	8029

[†] From 1974Se11 when uncertainty is quoted, otherwise values deduced by the evaluators from ^{37}K level in 1997Ka10 and S(p)=1857.63 *9* (2011AuZZ) for ^{37}K. Values correspond to proton energies in the lab system. According to data presented in table V of 1997Ka10, several additional proton branches exist for which data details are not available.

[‡] From ^{37}Ca ε decay (based on B(GT) values from 1991Ga23) assuming $\Gamma=\Gamma_p$, except when noted otherwise.

[#] From ^{37}K levels.

[@] Reported in 1991Ga23, not in 1997Ka10.

[&] Absolute intensity per 100 decays.

[a] Placement of transition in the level scheme is uncertain.

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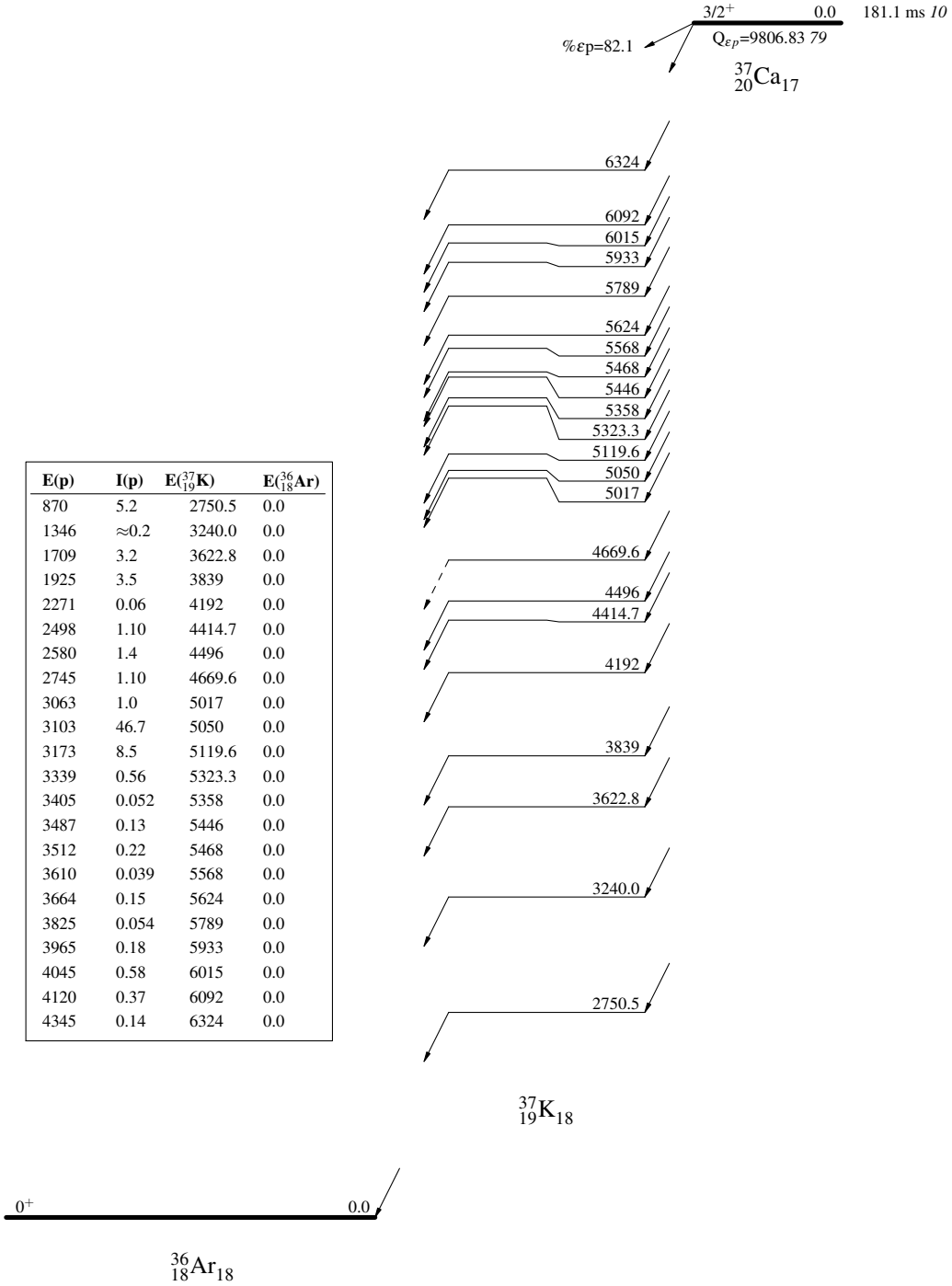
Decay Scheme

I(p) Intensities: I(p) per 100 parent decays



E(p)	I(p)	E($^{37}_{19}$K)	E($^{36}_{18}$Ar)
870	5.2	2750.5	0.0
1346	≈0.2	3240.0	0.0
1709	3.2	3622.8	0.0
1925	3.5	3839	0.0
2271	0.06	4192	0.0
2498	1.10	4414.7	0.0
2580	1.4	4496	0.0
2745	1.10	4669.6	0.0
3063	1.0	5017	0.0
3103	46.7	5050	0.0
3173	8.5	5119.6	0.0
3339	0.56	5323.3	0.0
3405	0.052	5358	0.0
3487	0.13	5446	0.0
3512	0.22	5468	0.0
3610	0.039	5568	0.0
3664	0.15	5624	0.0
3825	0.054	5789	0.0
3965	0.18	5933	0.0
4045	0.58	6015	0.0
4120	0.37	6092	0.0
4345	0.14	6324	0.0

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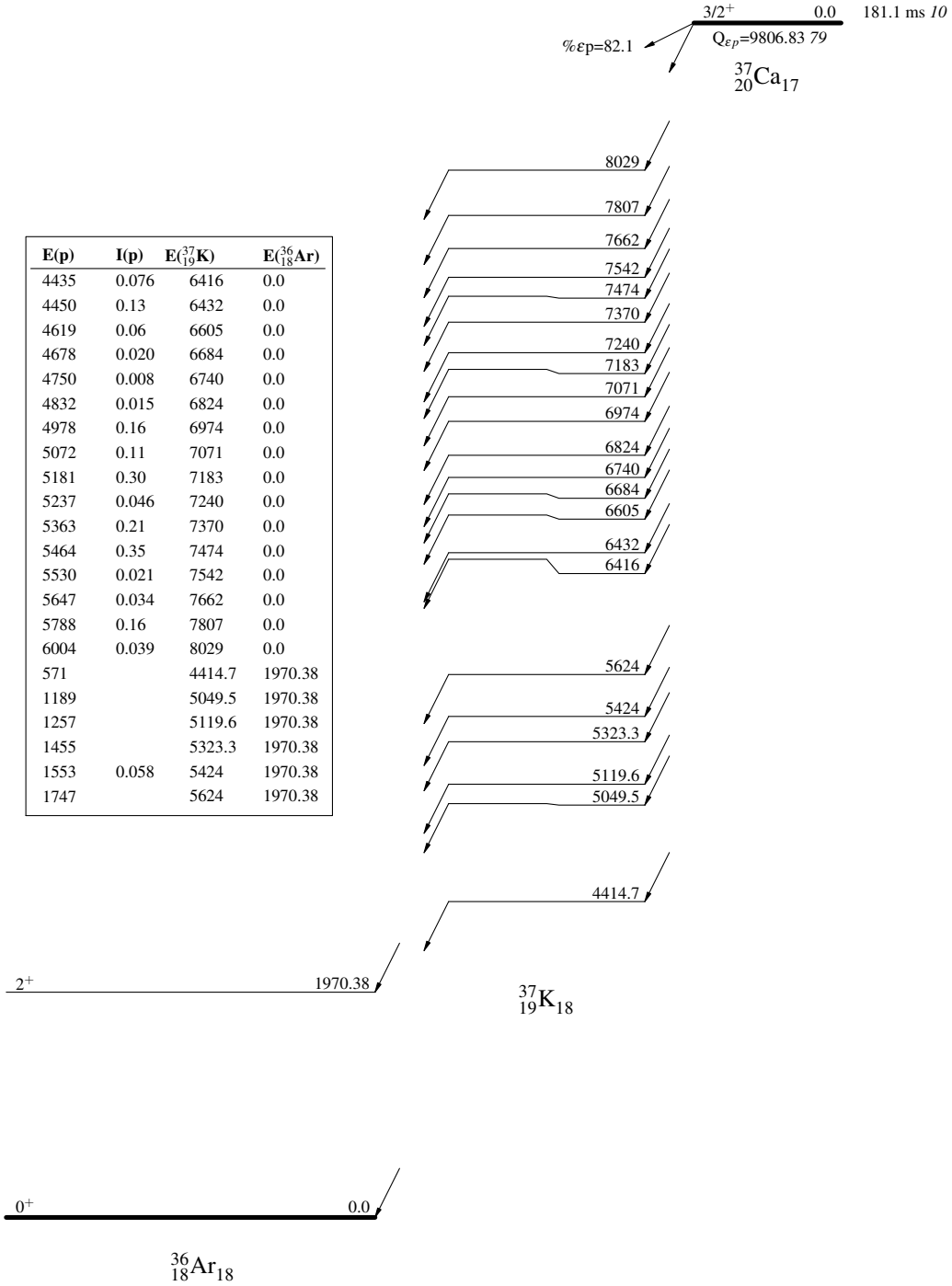
Decay Scheme (continued)

I(p) Intensities: I(p) per 100 parent decays



E(p)	I(p)	E($^{37}_{19}$K)	E($^{36}_{18}$Ar)
4435	0.076	6416	0.0
4450	0.13	6432	0.0
4619	0.06	6605	0.0
4678	0.020	6684	0.0
4750	0.008	6740	0.0
4832	0.015	6824	0.0
4978	0.16	6974	0.0
5072	0.11	7071	0.0
5181	0.30	7183	0.0
5237	0.046	7240	0.0
5363	0.21	7370	0.0
5464	0.35	7474	0.0
5530	0.021	7542	0.0
5647	0.034	7662	0.0
5788	0.16	7807	0.0
6004	0.039	8029	0.0
571		4414.7	1970.38
1189		5049.5	1970.38
1257		5119.6	1970.38
1455		5323.3	1970.38
1553	0.058	5424	1970.38
1747		5624	1970.38

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Decay Scheme (continued)

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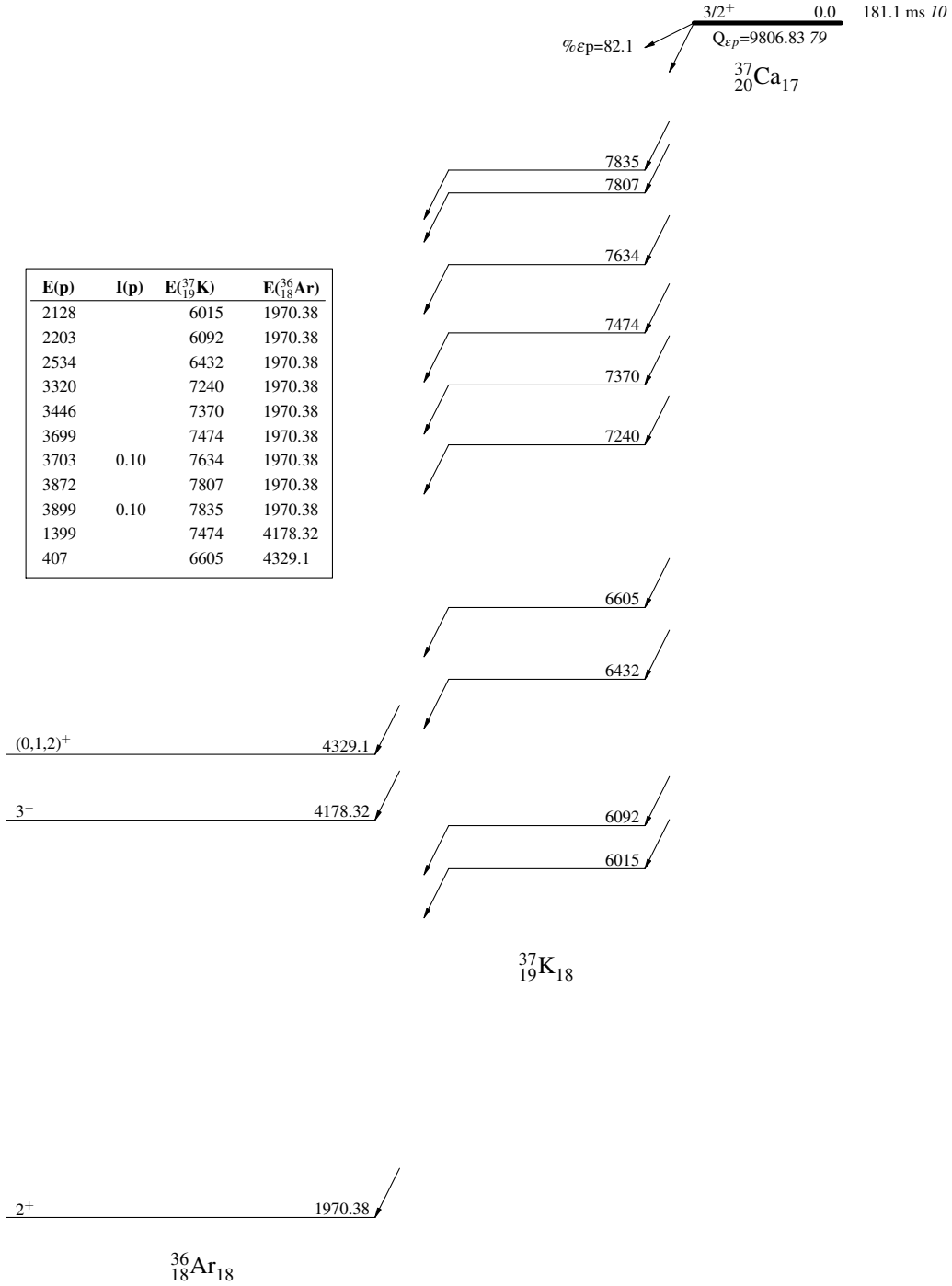

E(p)	I(p)	E($^{37}_{19}$K)	E($^{36}_{18}$Ar)
2128		6015	1970.38
2203		6092	1970.38
2534		6432	1970.38
3320		7240	1970.38
3446		7370	1970.38
3699		7474	1970.38
3703	0.10	7634	1970.38
3872		7807	1970.38
3899	0.10	7835	1970.38
1399		7474	4178.32
407		6605	4329.1