^{35}Ca εp decay (25.7 ms) 1999Tr04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ninel Nica, Balraj Singh	NDS 113, 1563 (2012)	28-May-2012

Parent: ^{35}Ca: E=0; $J^\pi=(1/2^+)$; $T_{1/2}$=25.7 ms *2*; Q(εp)=15876 *SY*; %εp decay=95.7 *14*

^{35}Ca-Q(εp): 15876 *196* (syst,2011AuZZ). Other: 15690 *200* (syst,2003Au03).

^{35}Ca-J^π,$T_{1/2}$: From ^{35}Ca Adopted Levels in ENSDF database.

^{35}Ca-%εp decay: %εp=95.7 *14* (1999Tr04).

1999Tr04 (also 1998Le45): 98% pure ^{35}Ca beam produced by fragmentation of ^{40}Ca beam at 95 MeV/nucleon bombarding a Ni target using SISSI-Alpha and LISE3 spectrometers at GANIL facility. ^{35}Ca beam was implanted into a silicon detector for detecting β-delayed protons, and β-delayed two-proton decays. The implantation detector was positioned between two silicon counters to detect $β^+$ rays. Two additional Si detectors were used for energy-loss and time-of-flight measurements. Three large-volume Ge and two NaI(Tl) detectors for used for γ-ray measurements. Measured βpγ-coin, Ep, Ip, $T_{1/2}$. Deduced levels, proton branches, Gamow-Teller strengths.

1985Ay01: delayed two-proton decay of ^{35}Ca is experimentally studied in this work with proposed intermediate state at 6696 keV in ^{34}Ar populated by proton decay from T=5/2 IAR in ^{35}K at 9053 keV *45*, the same level is at 9163 *26* in 1999Tr04.

S(p)(^{35}K)=84.5 *6* (2011AuZZ).

A 6696 keV intermediate level in ^{34}Ar in 1985Ay01 from delayed 2-proton decay is not confirmed in 1999Tr04.

No β-delayed γ rays were reported by 1999Tr04, implying that ^{35}Ca decays 100% by delayed-proton emission.

Measured I(2p)/I(p)=0.98 *2* for the decay of the IAS at.

^{34}Ar Levels

E(level)	J^π
0	0^+
2090.9 *3*	2^+
3287.5 *5*	2^+
3871 *2*	0^+

Delayed Protons (^{34}Ar)

E(p)	E(^{34}Ar)	I(p)[@]	E(^{35}K)[†]	Comments
	2090.9			
1427 *5*	0	48.5 *13*	1553	
2.28×10^3 *23*	2090.9	5.4 *9*	4523[##]	E(p)=1909-2647, I(p)=8.4 *6* unresolved group. This group populates 2091 (64% *9*), 3288 (12% *5*), and 3871 (24% *8*) levels.
2.28×10^3 *23*	3287.5	1.0 *4*	5720[##]	E(p)=1909-2647, I(p)=8.4 *6* unresolved group. This group populates 2091 (64% *9*), 3288 (12% *5*), and 3871 (24% *8*) levels.
2.28×10^3 *23*	3871	2.0 *7*	6303[##]	E(p)=1909-2647, I(p)=8.4 *6* unresolved group. This group populates 2091 (64% *9*), 3288 (12% *5*), and 3871 (24% *8*) levels.

Continued on next page (footnotes at end of table)

^{35}Ca εp decay (25.7 ms) 1999Tr04 (continued)

Delayed Protons (continued)

E(p)	E(^{34}Ar)	I(p)[@]	E(^{35}K)[†]	Comments
2727 *13*	2090.9	6.0 *5*	4983	
3.22×10^3 *28*	2090.9	2.2 *3*	5490[##]	E(p)=2947-3500 unresolved group.
3592 *25*	0	3.0 *3*	3783	
3822 *36*	0	3.8 *3*	4020	
4041 *71*	2090.9	2.9 *3*	6336	
4570 *48*	0	2.9 *3*	4790	
4754 *38*	0	4.2 *4*	4983	
5018 *71*	0	3.9 *3*	5251	
5294 *48*	0	0.72 *18*	5536	
5466 *48*	0	0.61 *15*	5713	
5616 *37*	0	1.43 *17*	5867	
5834 *60*	0	1.40 *19*	6092	
6.32×10^3 *33*	0	1.09 *17*	6592[##]	E(p)=5983-6649 unresolved group.
6783 *22*	2090.9	3.8 *2*	9169[‡‡]	
7.51×10^3 *38*	0	1.1 *2*	7817[##]	E(p)=7131-7887 unresolved group.
8802 *89*	0	0.41 *6*	9169[‡‡]	

[†] Level energies deduced by evaluators. Values are about 6-8 keV lower in table 2 of 1999Tr04.
[‡] The intermediate level at 9163 decays also by 2-proton emission to ^{33}Cl; measured summed E(p)=4305 *26*, I(p)=4.2 *3*.
[#] Unresolved group of levels.
[@] Absolute intensity per 100 decays.

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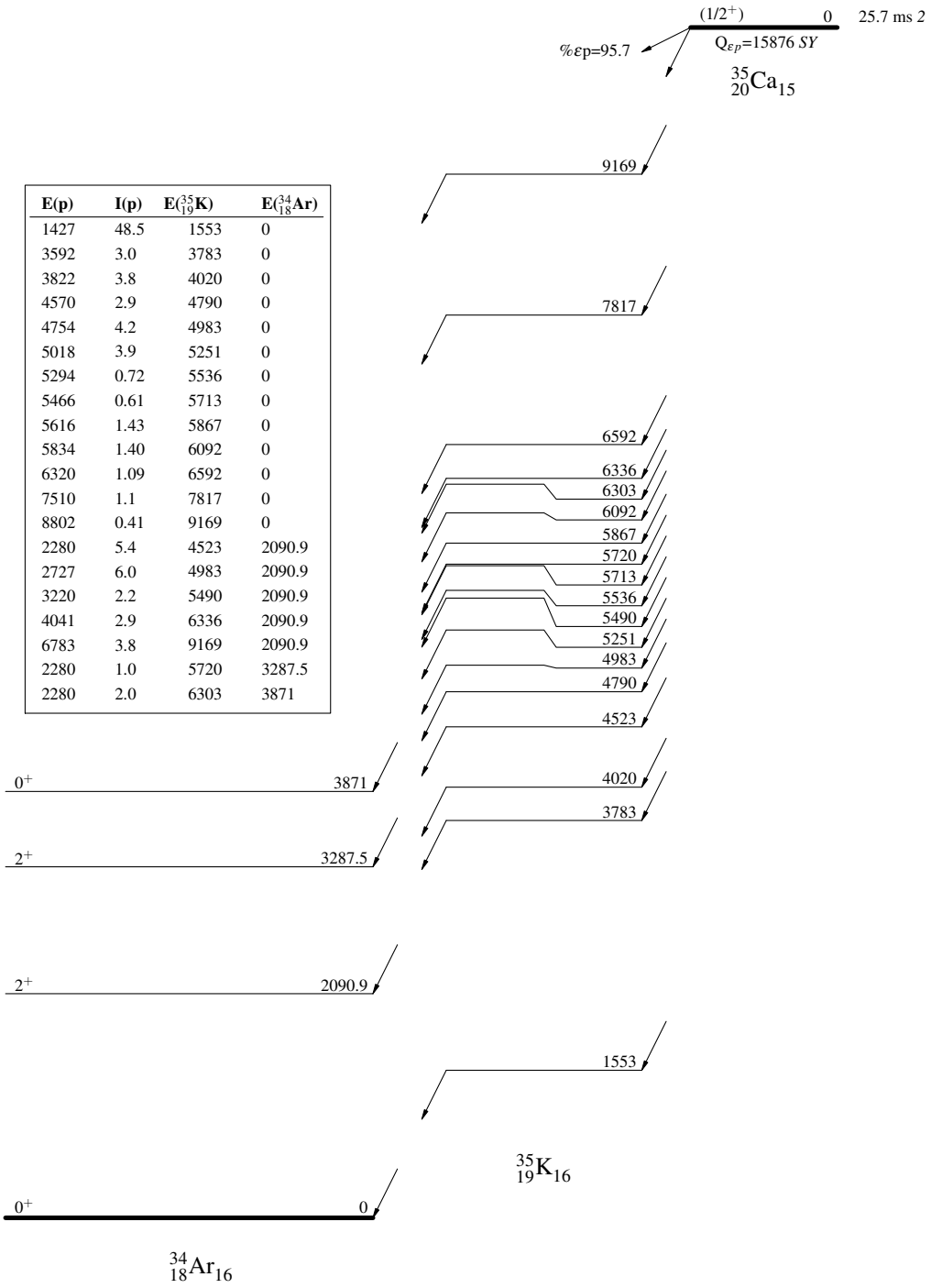
Decay Scheme

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



E(p)	I(p)	E($^{35}_{19}$K)	E($^{34}_{18}$Ar)
1427	48.5	1553	0
3592	3.0	3783	0
3822	3.8	4020	0
4570	2.9	4790	0
4754	4.2	4983	0
5018	3.9	5251	0
5294	0.72	5536	0
5466	0.61	5713	0
5616	1.43	5867	0
5834	1.40	6092	0
6320	1.09	6592	0
7510	1.1	7817	0
8802	0.41	9169	0
2280	5.4	4523	2090.9
2727	6.0	4983	2090.9
3220	2.2	5490	2090.9
4041	2.9	6336	2090.9
6783	3.8	9169	2090.9
2280	1.0	5720	3287.5
2280	2.0	6303	3871