^{37}K ε decay (1.225 s) 1997Ha32

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	John Cameron, Jun Chen and Balraj Singh, Ninel Nica	NDS 113, 365 (2012)	15-Jan-2012

Parent: ^{37}K: E=0.0; $J^\pi=3/2^+$; $T_{1/2}$=1.225 s *7*; Q(ε)=6147.48 *23*; %ε+%β^+ decay=100.0

^{37}K-Q(ε): From 2011AuZZ. Other: 6147.46 *23* (2003Au03).

1997Ha32: used ^{40}Ca(p,α) reaction with E=15 MeV, He-jet transport system and fast tape transport system with two counting stations, one for γ's (68%-efficient HPGE detector In coincidence with two plastic scintillators for $\beta^-\gamma$), and one for total ^{37}K activity (gas proportional counter); did high-precision measurements of Eγ, Iγ, and β branching ratios.

Others β branching ratios were measured by 1977Az01, 1976Ma14, 1971Mo23, and 1964Ka24.

The most complete and precise data (generally confirmed by previous measurements) are those of 1997Ha32, reason for which they were adopted here (the exact values from ref. are given In the tables, instead of those slightly modified the by the rounding-off rules of this publication).

^{37}Ar Levels

E(level)†	J^π‡
0.0	$3/2^+$
1409.82 *9*	$1/2^+$
1611.26 *9*	$7/2^-$
2490.1 *3*	$3/2^-$
2796.11 *9*	$5/2^+$
3169.8 *3*	$5/2^+$
3601.7 *4*	$3/2^+$
3937.9 *5*	$3/2^+$

† From least-squares fit to Eγ's.
‡ From Adopted Levels.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(2209.6 *6*)	3937.9	0.00109 *12*	7.2×10^{-5} *8*	5.80 *5*	11.6×10^{-4} *13*	av Eβ=500.95 *25*; εK=0.05597 *8*; εL=0.005422 *8*; εM+=0.0007945 *1*
(2545.8 *5*)	3601.7	0.0217 *12*	0.00066 *4*	4.958 *24*	224×10^{-4} *12*	av Eβ=652.34 *21*; εK=0.02659 *3*; εL=0.002575 *3*; εM+=0.0003773 *4*
(2977.7 *4*)	3169.8	0.0027 *2*	3.8×10^{-5} *3*	6.34 *4*	27×10^{-4} *2*	av Eβ=850.98 *18*; εK=0.012560 *8*; εL=0.0012157 *7*; εM+=0.0001781 *1*
(3351.37 *25*)	2796.11	2.05 *11*	0.0171 *9*	3.785 *24*	2.07 *11*	av Eβ=1025.61 *12*; εK=0.007431 *3*; εL=0.0007191 *3*; εM+=0.000105 I($\varepsilon+\beta^+$): others: 2.22 *21* (1977Az01), 2.0 *4* (1964Ka24), which together with 2.07 *11* (1997Ha32) gives the weighted average 2.11 *9* that essentially coincides with the value from 1997Ha32 adopted here.
(3657.4 *4*)	2490.1	0.0029 *4*	1.7×10^{-5} *2*	6.87 *6*	29×10^{-4} *4*	av Eβ=1170.09 *18*; εK=0.005136 *3*; εL=0.0004969 *3*; εM+=7.281×10^{-5} *4*
(4536.22 *25*)	1611.26	0.0025 *20*	$6.\times10^{-6}$ *5*	7.5 *4*	25×10^{-4} *20*	av Eβ=1590.17; εK=0.0021765 *5*; εL=0.0002105; εM+=3.0848×10^{-5} *7*
(4737.66 *25*)	1409.82	0.0042 *7*	8.6×10^{-6} *15*	7.38 *8*	42.2×10^{-4} *75*	av Eβ=1687.35; εK=0.0018440 *4*; εL=0.0001784; εM+=2.6134×10^{-5} *6*
(6147.48 *23*)	0.0	97.81 *11*	0.0772 *8*	3.657 *3*	97.89 *11*	av Eβ=2373.48; εK=0.0007097 *1*; εL=6.863×10^{-5} *1*; εM+=1.0055×10^{-5} *2*

† Absolute intensity per 100 decays.

^{37}K ε decay (1.225 s) 1997Ha32 (continued)

$\gamma(^{37}Ar)$

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π
879[†]	2×10^{-4}[†]	2490.1	$3/2^-$	1611.26	$7/2^-$
1184.84 *10*	263×10^{-4} *12*	2796.11	$5/2^+$	1611.26	$7/2^-$
1386.25 *13*	43×10^{-4} *3*	2796.11	$5/2^+$	1409.82	$1/2^+$
1409.78 *11*	96×10^{-4} *6*	1409.82	$1/2^+$	0.0	$3/2^+$
1611.24 *10*	289×10^{-4} *15*	1611.26	$7/2^-$	0.0	$3/2^+$
2191.5 *8*	9×10^{-4} *3*	3601.7	$3/2^+$	1409.82	$1/2^+$
2490.0 *3*	27×10^{-4} *4*	2490.1	$3/2^-$	0.0	$3/2^+$
2528[†]	1.8×10^{-4}[†]	3937.9	$3/2^+$	1409.82	$1/2^+$
2795.97 *15*	2.04 *11*	2796.11	$5/2^+$	0.0	$3/2^+$
3169.65 *30*	27×10^{-4} *2*	3169.8	$5/2^+$	0.0	$3/2^+$
3601.6 *4*	215×10^{-4} *11*	3601.7	$3/2^+$	0.0	$3/2^+$
3937.7 *5*	9.7×10^{-4} *12*	3937.9	$3/2^+$	0.0	$3/2^+$

[†] ADOPTED by 1997Ha32 based on on-line measurements evaluated by 1978En02.
[‡] Absolute intensity per 100 decays.

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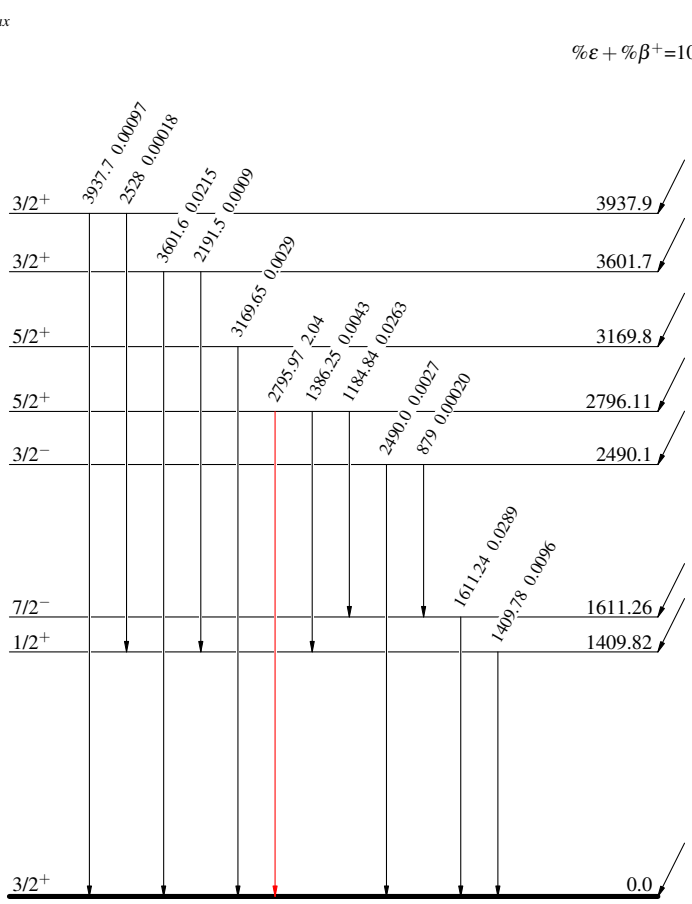
Decay Scheme

Intensities: I_γ per 100 parent decays

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



	Iβ+	Iε	Log *ft*
3937.9	0.00109	0.000072	5.80
3601.7	0.0217	0.00066	4.958
3169.8	0.0027	0.000038	6.34
2796.11	2.05	0.0171	3.785
2490.1	0.0029	0.000017	6.87
1611.26	0.0025	$6. \times 10^{-6}$	7.5
1409.82	0.0042	8.6×10^{-6}	7.38
0.0	97.81	0.0772	3.657