

$^{36}\text{K } \varepsilon\alpha$ decay (341 ms) 1996II02,1980Es01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 201,1 (2025)	31-Oct-2024

Parent: ^{36}K : E=0.0; $J^\pi=2^+$; $T_{1/2}=341$ ms 3; $Q(\varepsilon\alpha)=6173.4$ 3; $\% \varepsilon\alpha$ decay=0.0031 5

$^{36}\text{K}-J^\pi, T_{1/2}$: From Adopted Levels of ^{36}K in ENSDF database (2012 update).

$^{36}\text{K}-Q(\varepsilon\alpha)$: Deduced from mass excesses of ^{36}K , ^{32}S and ^4He from [2021Wa16](#).

$^{36}\text{K}-\% \varepsilon\alpha$ decay: $\% \varepsilon\alpha=0.0031$ 5 from $\Sigma[\% I(\alpha)]$ in [1996II02](#). Other: 0.0034 5 from $\Sigma[\% I(\alpha)]$ in [1980Es01](#).

[1996II02](#) (also [1997II03](#)): ^{36}K from spallation on CaO with 500 MeV protons from the TRIUMF cyclotron. Silicon surface barrier detector, microchannel plate in back-to-back geometry. Measured α and proton groups.

[1980Es01](#): ^{36}K from $^{36}\text{Ar}(p,n)$ reaction on ^{36}Ar implanted in Al foils with 20 MeV protons from University of Jyvaskyla MC-20 cyclotron. Fast tape He-jet transport system. Silicon surface barrier detectors measured α and proton groups.

Others: [1986Ho35](#), [1980Ew01](#).

 ^{32}S Levels

E(level)	J^π
0.0	0^+

Delayed Alphas (^{32}S)

All data from [1996II02](#), except for 4443-keV level.

E(α)	E(^{32}S)	I(α) ^{†‡}	E(^{36}Ar)	Comments
1522 3	0.0	5×10^{-5} 1	8352	
1562 3	0.0	2.4×10^{-5} 8	8397	
1963 3	0.0	6×10^{-5} 2	8847	
2016 3	0.0	0.0015 4	8907	Other: E(α)=2015 5, %I(α)=0.0015 5 (1980Es01).
2229 3	0.0	1.5×10^{-4} 4	9147	Other: E(α)=2213 10, %I(α)=0.00044 18 (1980Es01).
2419 3	0.0	1.1×10^{-5} 3	9360	Other: E(α)=2430 15, %I(α)= 3×10^{-5} 2 (1980Es01).
2513 3	0.0	8×10^{-6} 3	9467	Other: E(α)=2553 15, %I(α)= 2×10^{-5} 2 (1980Es01).
2727 3	0.0	0.0010 3	9708	Other: E(α)=2725 5, %I(α)=0.0010 4 (1980Es01).
2982 3	0.0	8×10^{-6} 2	9994	
3170 3	0.0	1.1×10^{-5} 4	10205	Other: E(α)=3146 15, %I(α)= 2×10^{-5} 2 (1980Es01).
3278 3	0.0	4×10^{-5} 1	10327	Other: E(α)=3271 15, %I(α)= 3×10^{-5} 2 (1980Es01).
3385 3	0.0	2.6×10^{-5} 7	10447	Other: E(α)=3375 15, %I(α)= 6×10^{-5} 3 (1980Es01).
3487 3	0.0	1.1×10^{-4} 3	10562	Other: E(α)=3479 15, %I(α)= 1.1×10^{-4} 5 (1980Es01).
3518 3	0.0	6×10^{-5} 2	10597	Other: E(α)=3516 15, %I(α)= 8×10^{-5} 4 (1980Es01).
3613 4	0.0	4×10^{-6} 2	10704	
3748 3	0.0	1.7×10^{-5} 5	10856	
3849 4	0.0	3.5×10^{-6} 15	10969	
3926 3	0.0	2.8×10^{-5} 8	11056	Other: E(α)=3922 15, %I(α)= 4×10^{-5} 2 (1980Es01).
4086 4	0.0	6×10^{-6} 2	11236	
4443 [#] 20	0.0	4×10^{-5} 2	11639	E(α),I(α): from 1980Es01 , but not confirmed in 1996II02 .

[†] From [1996II02](#), unless otherwise noted. Values are also available in [1980Es01](#) but less complete and they are given under comments. Absolute intensities %I(α) in [1996II02](#) and [1980Es01](#) are determined by authors relative to %I(p)=0.33 9 of E(p)=970 proton group, which is determined by [1980Es01](#) relative to %I γ =79 8 of 1970 γ in ^{36}Ar from ^{36}Ar ε decay reported in [1972Mi13](#).

[‡] Absolute intensity per 100 decays.

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

$^{36}\text{K} \varepsilon\alpha$ decay (341 ms) 1996II02,1980Es01Decay SchemeI(α) Intensities: I(α) per 100 parent decays