^{87}Sr IT decay

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson and W. D. Kulp(a)	NDS 129, 1 (2015)	27-Jul-2015

Parent: ^{87}Sr: E=388.533 *3*; $J^\pi=1/2^-$; $T_{1/2}$=2.815 h *12*; %IT decay=99.70 *8*

^{87}Sr-%IT decay: from a measurement of the ratio of ^{87}Rb $\hat{X}_{K\alpha}$ to ^{87}Sr $X_{K\alpha}$, 1969Zo04 determined a value of 0.30% *8* for the ε branch to ^{87}Rb.

^{87}Sr Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	$9/2^+$		
388.533 *3*	$1/2^-$	2.815 h *12*	$T_{1/2}$: weighted average of 2.80 h *3* (1951Hy24), 2.83 h *2* (1965Bo42), 2.805 h *1* (1968Go30, with reported uncertainty divided by 3 to give 1σ value), 2.83 h *5* (1969Zo04), 2.793 h *9* (1970Le07), 2.81 h *2* (1970LyZZ), 2.97 h *10* (1971Bu08), 2.83 h *1* (1971Ja24 and 1971Oo01), 2.81 h *2* (1972Em01), 2.795 h *13* (1982Gr07), 2.827 h *1* (1992An19), and 2.811 h *27* (1997We13). The two most precise values, 2.805 *1* and 2.827 *1*, differ by about 20 σ and the reduced-χ^2 value for the average is 28. Although the 2.805 value is somewhat old, it is from a reliable lab and measured by T1/2 experts, who have provided metrology standards for several nuclei. The next most precise value is 2.793 *9*, which supports this lower value. With the two uncertainties of 0.001 increased to 0.003, the reduced-χ^{+2} is 3.7 and the Limitation of Relative Statistical Weight method (1985ZiZY,1992Ra09) expands the final uncertainty to include the most precise value; and this uncertainty of 0.012 is adopted. $T_{1/2}$: a change in this half-life has been measured to be 0.8% *5* for a change in temperature from 293 K to 77 K (2001Al23).

[†] From ^{87}Sr Adopted Levels.

$\gamma(^{87}Sr)$

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[†]	$I_{(\gamma+ce)}$[‡]	Comments
388.531 *3*	82.44 *21*	388.533	$1/2^-$	0.0	$9/2^+$	M4	0.213	100	α(K)exp=0.177 *6*; K/L=6.82 *13* α(exp)=0.212 *3* B(M4)(W.u.)=11.24 *6* ce(K)/(γ+ce)=0.1494 *18*; ce(L)/(γ+ce)=0.0219 *3*; ce(M)/(γ+ce)=0.00376 *6* ce(N)/(γ+ce)=0.000459 *7*; ce(O)/(γ+ce)=2.58×10^{-5} *4* α(K)=0.181 *3*; α(L)=0.0266 *4*; α(M)=0.00456 *7* α(N)=0.000557 *8*; α(O)=3.13×10^{-5} *5* Mult.: From α(exp). E_γ: from 1988AL01 as measured in ^{87}Y (80 h) ε+β+ decay. α(K)exp: weighted average of 0.180 *15* (1961Hu12), 0.16 *2* (1970Ca17), 0.162 *10* (1970Kl02), 0.177 *6* (1970Le07), and 0.19 *1* (1971Vo06). K/L from 1966Sa16; other 7.5 (1963Gr41). α(exp): from average of 0.212 *3* (1968Go30) and 0.211 *6* (1970Le07). I_γ: from $I_\gamma(1+\alpha)$=100 and α=0.213 *3*.

[†] Additional information 1.

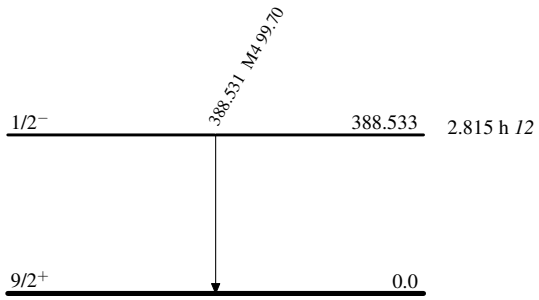
[‡] For absolute intensity per 100 decays, multiply by 0.9970 *8*.

^{87}Sr IT decay

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

%IT=99.70 *8*



$^{87}_{38}Sr_{49}$