^{27}Si $\varepsilon+\beta^+$ decay 1985Da04,1974Ma41,1971De05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 112,1875 (2011)	30-Nov-2010

Parent: ^{27}Si: E=0.0; $J^\pi=5/2^+$; $T_{1/2}$=4.16 s *4*; Q(ε)=4812.36 *10*; %ε+%β^+ decay=100

Other: 1971Be58.

1985Da04: ^{27}Si produced from ^{27}Al(p,n), E=9 MeV, reaction, Compton suppressed Ge(Li), HPGe, NaI detectors; Measured: Eγ, Iγ, deduced weak feeding branches to ^{27}Al excited levels.

1974Ma41: ^{27}Si produced from ^{27}Al(p,n), E=10 MeV, reaction, Ge(Li) detector; Measured Eγ, Iγ, deduced weak feeding branches to ^{27}Al levels and absolute γ-ray feeding intensity to the 2210 keV level.

1971De05: ^{27}Si produced from ^{27}Al(p,n) reaction, Ge(Li) detector, measured Eγ, Iγ, deduced upper limits for the γ-ray feeding intensity to ^{27}Al excited levels.

^{27}Al Levels

E(level)[†]	J^π[‡]
0.0	$5/2^+$
843.77 *10*	$1/2^+$
1014.54 *10*	$3/2^+$
2212.11 *10*	$(7/2^+)$
2734.9 *6*	$5/2^+$
2982.18 *5*	$3/2^+$
3004.2 *9*	$(9/2^+)$

[†] From a least-squares fit to γ-ray energies.

[‡] From Adopted Levels.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ [†]	Iε[†]	Log *ft*	I($\varepsilon+\beta^+$)[†]	Comments
(1808.2 *14*)	3004.2	<0.0005	<4.×10^{-5}	>6.0	<0.0005	av Eβ=319.92 *39*; εK=0.06825 *24*; εL=0.006061 *21*; εM+=0.0004858 *1* I($\varepsilon+\beta^+$) from 1985Da04.
(1830.2 *10*)	2982.18	0.024 *12*	0.0018 *9*	4.34 *22*	0.026 *13*	av Eβ=329.357 *48*; εK=0.06285 *3*; εL=0.005581 *3*; εM+=0.0004473 *2* I($\varepsilon+\beta^+$) from weighted av. of data from 1985Da04, 1974Ma41 and 1971De05.
(2077.5 *12*)	2734.9	0.016 *13*	0.0005 *4*	5.0 *4*	0.017 *13*	av Eβ=436.87 *27*; εK=0.02799 *5*; εL=0.002485 *5*; εM+=0.0001992 *4* I($\varepsilon+\beta^+$) weighted av. of data from 1985Da04 and 1974Ma41.
(2600.3 *10*)	2212.11	0.178 *13*	0.00162 *12*	4.69 *4*	0.180 *13*	av Eβ=671.54; εK=0.008212 *3*; εL=0.0007289 *2*; εM+=5.842×10^{-5} *2* I($\varepsilon+\beta^+$) from 1974Ma41.
(3797.8 *10*)	1014.54	0.0060 *8*	9.9×10^{-6} *13*	7.23 *6*	0.0060 *8*	av Eβ=1232.29; εK=0.0015015 *3*; εL=0.0001332; εM+=1.0678×10^{-5} *2* I($\varepsilon+\beta^+$) weighted av. of data from 1985Da04 and 1974Ma41.
(3968.6 *10*)	843.77	<0.010	<1.×10^{-5}	>7.1	<0.01	av Eβ=1313.81; εK=0.0012565 *2*; εL=0.0001115; εM+=8.935×10^{-6} *2* I($\varepsilon+\beta^+$) weighted av. of data from 1985Da04 and 1974Ma41.
(4812.4 *14*)	0.0	<99.71	<0.0649	>3.6	<99.77	av Eβ=1720.13; εK=0.0005938; εL=5.268×10^{-5}; εM+=4.222×10^{-6} I($\varepsilon+\beta^+$) calculated by the evaluator.

[†] Absolute intensity per 100 decays.

^{27}Si $\varepsilon+\beta^+$ decay 1985Da04,1974Ma41,1971De05 (continued)

$\gamma(^{27}Al)$

E_γ [†]	I_γ [‡#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[†]
170.82[@] *10*	≈0.009	1014.54	3/2$^+$	843.77	1/2$^+$	M1+E2	+0.05 *6*
843.76 *10*	<0.004	843.77	1/2$^+$	0.0	5/2$^+$	(E2)	
1014.52 *10*	≈0.02	1014.54	3/2$^+$	0.0	5/2$^+$	M1+E2	−0.351 *12*
1720.3 *8*	≈0.013	2734.9	5/2$^+$	1014.54	3/2$^+$	M1+E2	+0.115 *8*
2212.01 *10*	0.180 *13*	2212.11	(7/2$^+$)	0.0	5/2$^+$	M1+E2	+0.468 *9*
2734.7 *8*	≈0.004	2734.9	5/2$^+$	0.0	5/2$^+$	D+Q	+0.19 *3*
2982.00 *5*	0.026 *13*	2982.18	3/2$^+$	0.0	5/2$^+$	D+Q	−0.01 *1*
3004.0 *9*	<0.001	3004.2	(9/2$^+$)	0.0	5/2$^+$		

[†] From Adopted Gammas.
[‡] Deduced by the evaluator based on β^-feedings (γ-ray intensities are not presented in 1985Da04, 1974Ma41, 1971De05).
[#] Absolute intensity per 100 decays.
[@] Placement of transition in the level scheme is uncertain.

^{27}Si ε decay 1985Da04,1974Ma41,1971De05

Decay Scheme