

²⁵Si ϵ p decay 2004Th09,2021Su03

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty		NDS 186, 2 (2022)	31-Mar-2022

Parent: ²⁵Si: E=0; J ^{π} =5/2⁺; T_{1/2}=219.2 ms +10-14; Q(ϵ p)=10472 10; % ϵ p decay=37.0 11

²⁵Si-J ^{π} : From ²⁵Si Adopted Levels (2009Fi05).

²⁵Si-T_{1/2}: Weighted average of 218.9 ms +10-14 (2021Su03), 225 ms 6 (1965Mc01), 218 ms 4 (1966Re07), 232 ms 15 (1992Ha28), and 222.6 ms 59 (1993Ro06).

²⁵Si-% ϵ p decay: From weighted average of 38.2 11 (2021Su03), 34.5 18 (2004Th09), and 36.6 15 (1993Ro06 – without considering the intensity of 2278 keV proton group and assuming an uncertainty of 1.5. Reported uncertainties in Table I probably statistical only and yield an uncertainty of 0.1).

Other references: 1993Ro06, 1992Ha28, 1985Zh05.

2004Th09: ²⁵Si was produced from ¹²C(³⁶Ar,X), E=95 MeV/nucleon, fragmentation reaction. Fragments were separated by LISE3 spectrometer, mass identification by time-of-flight, ΔE in Si stack detector. Measured Ep in Si detector.

2021Su03: ²⁵Si was obtained from ⁹Be(³⁶Ar,X), E=150 MeV/nucleon, fragmentation reaction. Fragments were separated by A1900 fragment separator; measured E γ , I γ , $\gamma\gamma$, and p γ -coin, E(p), I(p) using the Gaseous Detector with Germanium Tagging (GADGET) system of a proton detector and the SeGA array; deduced %I β p, %I γ , γ branching ratios, half-life of ²⁵Si.

²⁴Mg Levels

E(level) [†]	J ^{π} [†]	T _{1/2}
0	0 ⁺	stable
1368.667 5	2 ⁺	
4122.853 12	4 ⁺	
4238.35 4	2 ⁺	

[†] From Adopted Levels.

γ (²⁴Mg)

E γ	I γ [†]	E _i (level)	J _i ^{π}	E _f	J _f ^{π}	Comments
1368.625 5	22.1 9	1368.667	2 ⁺	0	0 ⁺	
2754.016 11	0.94 6	4122.853	4 ⁺	1368.667	2 ⁺	
2869.50 6	0.147 14	4238.35	2 ⁺	1368.667	2 ⁺	I γ : %branching: 25 3 (2021Su03).
4237.96 6	0.44 3	4238.35	2 ⁺	0	0 ⁺	I γ : %branching: 75 3 (2021Su03).

[†] Absolute intensity per 100 decays.

Delayed Protons (²⁴Mg)

E(p) [†]	E(²⁴ Mg)	I(p) ^{†@}	E(²⁵ Al)	Comments
3077 14		0.7 3		
401 1	0	13.7 13	2672	I(p): (rel) = 49.8 48.
555 11	1368.667	2.0 7	4189	I(p): (rel) = 7.2 27.
943 2	1368.667	4.7 7	4582	I(p): (rel) = 17.1 24.
1268 6	1368.667	1.7 5	4908	I(p): (rel) = 6.1 18.
1377 6	4238.35	1.2 3	7892	I(p): (rel) = 4.3 12.
1489 7	4122.853	1.4 4	7892	I(p): (rel) = 5.0 5.
1573 7	0	1.2 4	3844	I(p): (rel) = 4.3 13.
1804 8	4122.853	1.7 4	8193	I(p): (rel) = 6.1 14.
1917 2	0	6.5 7	4189	I(p): (rel) = 23.5 27.
2162 4	1368.667	5.0 7	5802	I(p): (rel) = 18.1 26.

Continued on next page (footnotes at end of table)

^{25}Si ε p decay 2004Th09,2021Su03 (continued)Delayed Protons (continued)

$E(p)^\dagger$	$E(^{24}\text{Mg})$	$I(p)^\ddagger@$	$E(^{25}\text{Al})$	Comments
2307 4	0	4.5 7	4582	I(p): (rel) = 16.5 25.
2980 9	1368.667	0.47 19	6620	I(p): (rel) = 1.7 7.
3231 8	1368.667	1.5 4	6871	I(p): (rel) = 5.4 13.
3326 6	0	1.6 3	5597	I(p): (rel) = 5.9 12.
3463 3	1368.667	7.7 9	7107	I(p): (rel) = 28.1 34.
3610 11	1368.667	1.6 5	7255	I(p): (rel) = 5.9 18.
3899 2	0	0.94 19	6170	I(p): (rel) = 3.4 7.
4252 2	1368.667	27.5 28	7892	I(p): (rel) = 100.
4545 10	1368.667	1.8 5	8193	I(p): (rel) = 6.6 18.
4850 6	0	2.8 5	7107	I(p): (rel) = 10.3 17.
4986 8	0	<1.70 [#]	7255	I(p): (rel) = 2.30 4.
5407 7	0	0.99 19	7678	I(p): (rel) = 3.6 7.
5624 3	0	6.9 7	7892	I(p): (rel) = 25.1 27.
6802 7	0	0.60 14	9073	I(p): (rel) = 2.2 5.

[†] Center-of-mass energies.

[‡] Percent of the total proton decays. Relative measured intensities given in Table 2 of 2004Th09 have been multiplied by a factor of 0.275 to $\Sigma I_p = 100$. Relative intensities of 2004Th09 are listed in comments section.

[#] 2004Th09 gives $I_p < 4.9$ 9 scales to 1.35 25. Other value: 1.4 4 (1992Ha28).

[@] For absolute intensity per 100 decays, multiply by 0.370 11.

^{25}Si ϵp decay 2004Th09,2021Su03Decay Scheme γ Intensities: $I(\gamma+ce)$ per 100 parent decays

I(p) Intensities: Relative I(p)

