

$^9\text{Be}(^{25}\text{Al}, ^{25}\text{Si}\gamma)$ 2018Lo10

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty		NDS 205,1 (2025)	31-May-2025

Additional information 1.

Adapted/Edited the XUNDL dataset compiled by J. Chen (NSCL, MSU), May 17, 2018.

2018Lo10: E=118 MeV/nucleon ^{26}Si beam was produced by projectile fragmentation on a 550 mg/cm² thick ^9Be primary target with E=150 MeV/nucleon ^{36}Ar primary beam provided by the NSCL cyclotron. Beam fragments were separated by the A1900 separator. Secondary target was a 287.3 mg/cm² thick ^9Be . γ rays were detected with the CAESAR high-efficiency array consisting of 192 CsI(Na) scintillators and in a separate experiment, SeGA array comprised of 32-fold segmented HPGe detectors; the reaction residues were analyzed with the S800 spectrograph and identified according to energy loss versus time-of-flight. Measured E_γ , I_γ , particle- γ -coin, particle- $\gamma\gamma$ -coin. Deduced levels, J, π . Comparison with shell-model calculations. Discussed astrophysical implication for $^{24}\text{Al}(p,\gamma)^{25}\text{Si}$ reaction rate.

 ^{25}Si Levels

<u>E(level)[†]</u>	<u>Jπ[‡]</u>	<u>E(level)[†]</u>	<u>Jπ[‡]</u>	<u>E(level)[†]</u>	<u>Jπ[‡]</u>	<u>E(level)[†]</u>	<u>Jπ[‡]</u>
0	(5/2 ⁺)	1961 6	(3/2 ⁺)	2585 8	(5/2 ⁺)	3695 9	(9/2 ⁺)
45 6	(3/2 ⁺)	2365 7	(9/2 ⁺)	3035 9	(9/2 ⁺)	3802 8	(1/2 ⁺)
870 5	(1/2 ⁺)	2380 8	(7/2 ⁺)	3160 50	(7/2 ⁺)		

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

[‡] As given in 2018Lo10 on the basis of shell-model predictions.

 $\gamma(^{25}\text{Si})$

<u>E_i(level)</u>	<u>Jπ_i</u>	<u>Eγ</u>	<u>Iγ[†]</u>	<u>E_f</u>	<u>Jπ_f</u>	<u>E_i(level)</u>	<u>Jπ_i</u>	<u>Eγ</u>	<u>Iγ[†]</u>	<u>E_f</u>	<u>Jπ_f</u>
870	(1/2 ⁺)	825 4	90 7	45	(3/2 ⁺)	2585	(5/2 ⁺)	2585 12	39 11	0	(5/2 ⁺)
		870 6	10 3	0	(5/2 ⁺)	3035	(9/2 ⁺)	670 5	100	2365	(9/2 ⁺)
1961	(3/2 ⁺)	1091 6	68 12	870	(1/2 ⁺)	3160	(7/2 ⁺)	3160 50	100	0	(5/2 ⁺)
		1916 7	10 8	45	(3/2 ⁺)	3695	(9/2 ⁺)	1315 7	45 8	2380	(7/2 ⁺)
		1961 8	22 9	0	(5/2 ⁺)			3695 14	55 14	0	(5/2 ⁺)
2365	(9/2 ⁺)	2365 7	100	0	(5/2 ⁺)	3802	(1/2 ⁺)	1841 11	9 2	1961	(3/2 ⁺)
2380	(7/2 ⁺)	2335 12	46 18	45	(3/2 ⁺)			2932 9	61 5	870	(1/2 ⁺)
		2380 12	54 22	0	(5/2 ⁺)			3757 12	30 4	45	(3/2 ⁺)
2585	(5/2 ⁺)	2540 9	61 13	45	(3/2 ⁺)						

[†] Relative photon branching from each level.

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Level Scheme

Intensities: % photon branching from each level

