^{30}Si(n,n′γ) 1970Di10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia, A. Chakraborty	NDS 197,1 (2024)	31-May-2024

1970Di10: (n,n′γ) − neutrons were obtained from D(d,n) reaction, E_n=5.9 MeV; pulsed deuteron beams of ≈1 nano second width from ORNL 5.5-MV tandem Van de Graaff accelerators; neutrons interacted with the silicon sample placed ≈10 cm from the D_2 gas target and monitored by a scintillator-photomultiplier neutron detector placed ≈350 cm from the target; Ge(Li) detector, fast-timing discrimination was used to identify γ ray as "prompt" or "back-ground"; measured Eγ, dσ/dΩ at 90°.
1961Li04: ^{30}Mg(n,n′), E=0.2-3.5 MeV; observed 2.20 MeV γ transition from the 1st excited state.

^{30}Si Levels

E(level)†	Jπ‡	Comments
0	0^+	
2235.326 *19*	2^+	
3498.50 *3*	2^+	
3769.48 *4*	1^+	
3787.73 *5*	0^+	
4810.34 *13*	2^+	
4830.84 *5*		
5231.22 *11*	3^-	Jπ: 3^+ in the Adopted Levels.
5278.69 *11*	4^+	
5372.1 *7*	0^+	
5487.59 *8*	3^-	

† From a least squares fit to γ-ray energies.
‡ As listed in 1970Di10 (Fig. 8). No arguments are available.

γ(^{30}Si)

E_γ†	dσ/dΩ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
1263.13 *3*	6.5 *8*	3498.50	2^+	2235.326	2^+		Eγ: other: 1262 keV *4* (1970Di10).
1311.80 *14*	0.5 *2*	4810.34	2^+	3498.50	2^+		Eγ: other: 1311 keV *4* (1970Di10).
1534.12 *4*	1.5 *3*	3769.48	1^+	2235.326	2^+		
1552.36 *4*	2.1 *3*	3787.73	0^+	2235.326	2^+		
1732.3 *8*	3.6 *5*	5231.22	3^-	3498.50	2^+		Eγ: other: 1725 keV *4* (1970Di10).
1989.02 *7*	0.5 *2*	5487.59	3^-	3498.50	2^+		Eγ: other: 1988 keV *4* (1970Di10).
2235.23 *2*	26.2 *27*	2235.326	2^+	0	0^+		
2574.8 *5*	0.9 *2*	4810.34	2^+	2235.326	2^+		Eγ: other: 2576 keV *4* (1970Di10).
2595.39 *4*	1.6# *6*	4830.84		2235.326	2^+		Eγ: other: 2594 keV *4* (1970Di10).
2995.0 *5*	0.4# *2*	5231.22	3^-	2235.326	2^+		Eγ: other: 2985 keV *4* (1970Di10).
3043.2 *1*	0.7# *2*	5278.69	4^+	2235.326	2^+	Q	Eγ: other: 3041 keV *4* (1970Di10). Mult.: based on α-γ(θ) in 1970Du03.
3136.6 *7*	0.2 *1*	5372.1	0^+	2235.326	2^+		Eγ: other: 3134 keV *4* (1970Di10).
3498.33 *5*	3.5 *5*	3498.50	2^+	0	0^+		Eγ: other: 3496 keV *4* (1970Di10).
3769.22 *5*	1.6 *3*	3769.48	1^+	0	0^+		
4810.0 *3*	0.7 *2*	4810.34	2^+	0	0^+		Eγ: other: 4808 keV *4* (1970Di10).

† From Adopted Gammas.
‡ At 90° in units of mb/sr. Statistical uncertainty reported in Table VI, with an estimated absolute normalization uncertainty of 10%. Evaluators list the combined uncertainty − propagating in quadrature (1970Di10).
# Data partially obscured by another γ line (1970Di10).

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Level Scheme

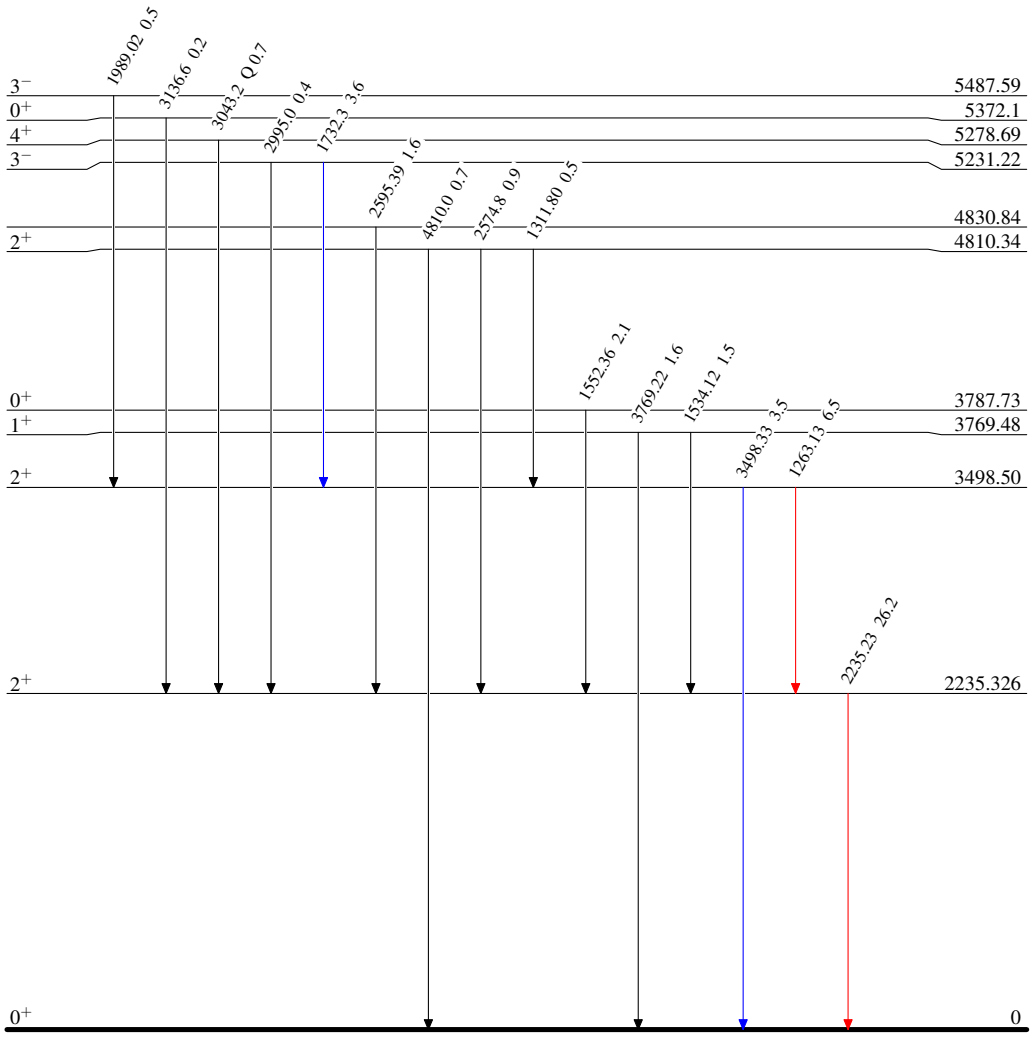
Intensities: Type not specified

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{30}_{14}Si_{16}$