^{28}Si(μ^-,$\nu\gamma$) 2007Me18

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 114, 1189 (2013)	1-Apr-2013

Others: 1999Go23, 1997Mo11, 1995Br15, 1972Mi11.
2007Me18: The μ^- beam was obtained from decay of a π^- beam at 90 MeV/c; Measured γ-ray yields using two HPGe detectors at TRIUMF facility.

All data are from 2007Me18, except otherwise noted.

Muonic Lyman (or K) series for Silicon

μ x-ray	Energy	Intensity (in % per capture)
2p-1s	400.177 a)	80.3 *8*
3p-1s	476.80 *5*	7.40 *20*
4p-1s	503.58 *10*	4.27 *20*
5p-1s	515.97 *10*	3.83 *20*
6p-1s	522.74 *10*	2.29 *10*
(7p to ∞p)-1s		1.87 *20*

a): 400.177-keV x ray used for calibration

^{28}Al Levels

E(level)†	J$^\pi$†	$T_{1/2}$	% direct yield/muon capture	Comments
0.0	3^+			Known cascading=16.6% 12.
30.6382 *7*	2^+		3.4 *13*	Known cascading=11.6% 6.
972.35 *3*	0^+		0.5 *2*	Known cascading=1.78% 16.
1013.637 *9*	3^+		0.25 *18*	Known cascading=0.12% 2.
1372.917 *20*	1^+		2.1 *4*	Known cascading=0.03% 2.
1620.30 *4*	1^+		1.20 *17*	
1622.907 *20*	2^+		0.7 *5*	Known cascading=0.22% 13.
2138.910 *10*	2^+		0.9 *5*	Known cascading=0.92% 40.
2201.43 *3*	1^+	42 fs *7*	5.3 *5*	$T_{1/2}$: From 1997Mo11. Other: 27 fs *3* (1995Br15).
2271.745 *19*	4^+		<0.11	
2486.20 *6*	2^+		<0.5	
3105 *1*	1^+		0.84 *8*	
3542.1 *6*	$(1)^+$		0.15 *11*	
3875.773 *11*	2^-		1.3 *4*	
4115 *4*	1^+		0.9 *3*	
4596.56 *4*	3^+			
4848.73 *10*	1^+		1.0 *2*	
4997.01 *5*	2^-		0.46 *23*	
5442.267 *8*	2^-		1.9 *4*	
5741.115 *13*			0.45 *22*	
6419.71 *9*	$(1^+,2^+)$		0.4 *4*	
7725.10 *6*				E(level): From 2012Wa38. Observed γ-ray yield <0.5.

† From Adopted Levels.

^{28}Si(μ^-,$\nu\gamma$) 2007Me18 (continued)

$\gamma(^{28}Al)$

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
30.6382 *7*		30.6382	2^+	0.0	3^+	
400.58 *3*		1372.917	1^+	972.35	0^+	
863.26	0.02 *5*	2486.20	2^+	1622.907	2^+	
865.87 *15*	0.10 *5*	2486.20	2^+	1620.30	1^+	
903.5	<0.1	3105	1^+	2201.43	1^+	E_γ: From level-energy difference.
941.79 *6*	2.30 *11*	972.35	0^+	30.6382	2^+	
983.018 *16*	0.17 *17*	1013.637	3^+	30.6382	2^+	
1013.676 *21*	0.18 *18*	1013.637	3^+	0.0	3^+	
1125.54 *21*	0.13 *7*	2138.910	2^+	1013.637	3^+	
1229.8 *4*	0.76 *13*	2201.43	1^+	972.35	0^+	
1342.30 *11*	1.19 *21*	1372.917	1^+	30.6382	2^+	
1372.8 *2*	4.7	1372.917	1^+	0.0	3^+	
1589.72 *8*	1.10 *16*	1620.30	1^+	30.6382	2^+	
1592.29 *12*	0.11 *8*	1622.907	2^+	30.6382	2^+	
1620.0 *4*		1620.30	1^+	0.0	3^+	
1622.87 *6*	0.55 *33*	1622.907	2^+	0.0	3^+	
1919.1	0.15 *11*	3542.1	$(1)^+$	1622.907	2^+	
1976	<0.1	4115	1^+	2138.910	2^+	
2108.24 *4*	0.84 *16*	2138.910	2^+	30.6382	2^+	
2138.828 *18*	0.85 *21*	2138.910	2^+	0.0	3^+	
2170.70 *3*	4.3 *4*	2201.43	1^+	30.6382	2^+	
2255.42 *5*	0.13 *13*	3875.773	2^-	1620.30	1^+	
2271.650 *23*	<0.11	2271.745	4^+	0.0	3^+	
2486.09 *7*	<0.12	2486.20	2^+	0.0	3^+	
2492	0.23 *12*	4115	1^+	1622.907	2^+	
2742	0.23 *15*	4115	1^+	1372.917	1^+	
2974.0 *3*	<0.2	4596.56	3^+	1622.907	2^+	
3074	0.84 *8*	3105	1^+	30.6382	2^+	
3303.150 *13*	0.66 *15*	5442.267	2^-	2138.910	2^+	
3875.480 *11*	1.0 *3*	3875.773	2^-	0.0	3^+	
4084	0.34 *20*	4115	1^+	30.6382	2^+	
4114	<0.2	4115	1^+	0.0	3^+	
4280.37 *10*	0.32 *32*	6419.71	$(1^+,2^+)$	2138.910	2^+	
4817.21	1.0 *2*	4848.73	1^+	30.6382	2^+	E_γ: from level-energy difference. Other: 4814 keV *2* (2007Me18).
4965.8 *4*	<0.20	4997.01	2^-	30.6382	2^+	
4996.64 *7*	0.32 *16*	4997.01	2^-	0.0	3^+	
5411.069 *8*	0.73 *34*	5442.267	2^-	30.6382	2^+	
5709.852 *13*	0.45 *22*	5741.115		30.6382	2^+	

[†] From Adopted Gammas.
[‡] % yield/muon capture.

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Level Scheme

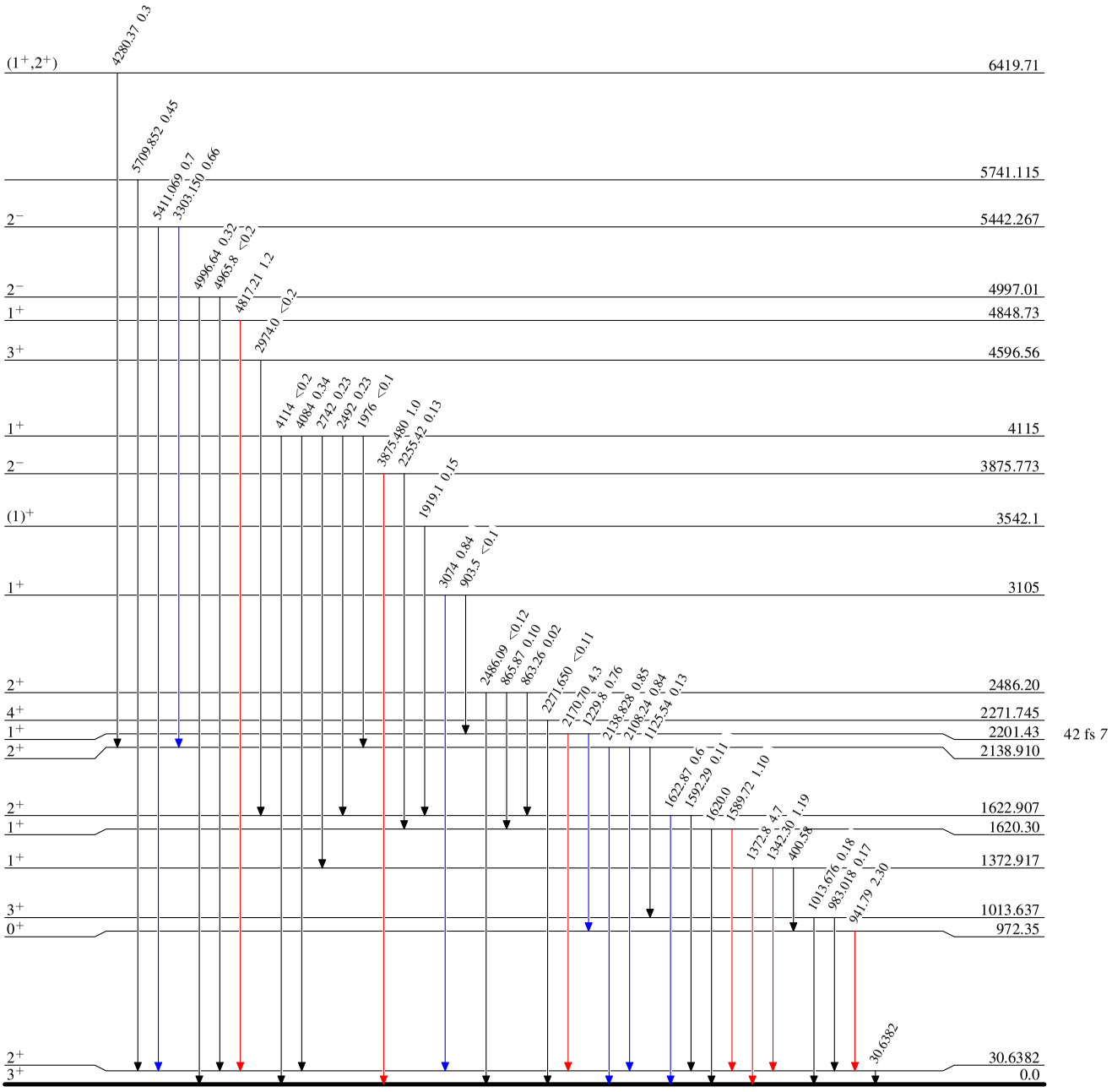
Intensities: % γ-ray yield/muon capture

Legend

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

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

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



$^{28}_{13}Al_{15}$