^{238}U(^{12}C,Fγ),^{208}Pb(^{18}O,Fγ) 2012As06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 146, 1 (2017)	30-Sep-2017

2012As06: E=90 MeV ^{12}C beam was provided by the Legnaro XTU Tandem accelerator; E=85 MeV ^{18}O beam was provided by the Vivitron accelerator of IReS (Strasbourg). Targets were 47 mg/cm^2 ^{238}U and 100 mg/cm^2 ^{208}Pb. γ rays were detected by the Euroball array consisting of 15 cluster Ge, 26 clover Ge detectors, and 30 tapered single-crystal Ge detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin. Deduced levels, J, π, configurations. Comparisons with shell-model calculations.

^{138}Ba Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
0.0[#]	0^+		
1435.4[#] *4*	2^+		
1897.8[#] *5*	4^+		
2089.3[#] *6*	6^+	0.8 μs *1*	$T_{1/2}$: from Adopted Levels.
2201.6 *7*	6^+		
2414.5 *7*	5^+		
3182.0[#] *7*	8^+		
3358.5 *9*	(7^+)		
3620.3 *7*	10^+		
3631.1[c] *7*	9^-		
3908.6[#] *7*	10^+		
4687.1[#] *8*	12^+		
4702.4[c] *7*	(11^-)		
5126.6 *8*			
5184.2[c] *8*	(13^-)		
5356.4 *8*			
5392.3[b] *8*	(13^-)		
5740.0[&] *9*	(11^+)		
5919.8[a] *8*	(14^-)		
5923.7[&] *7*	(12^+)		
6196.5[b] *9*	(15^-)		
6209.0[&] *8*	(13^+)		
6655.7[&] *8*	(14^+)		
6757.6[a] *9*	(16^-)		
6986.9[@] *8*	(14^+)		
7153.9[b] *10*	(17^-)		
7225.9[@] *8*	(15^+)		
7401.7 *10*			
7532.0[@] *9*	(16^+)		
7978.7[@] *10*	(17^+)		
8010.8 *11*			
8280.1[@] *11*	(18^+)		
8936.5[@] *12*	(19^+)		
9332.6[@] *13*	(20^+)		

[†] From a least-squares fit to γ-ray energies.
[‡] Proposed by 2012As06 based on band structures and shell-model predictions.
[#] Band(A): g.s. band.

Continued on next page (footnotes at end of table)

^{238}U(^{12}C,Fγ),^{208}Pb(^{18}O,Fγ) 2012As06 (continued)

^{138}Ba Levels (continued)

[@] Band(B): Band based on (14^+).
[&] Band(C): Band based on (11^+).
[a] Band(D): Band based on (14^-).
[b] Band(d): Band based on (13^-).
[c] Band(E): Band based on 9^-.

γ(^{138}Ba)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π
112.1 *5*	27 *5*	2201.6	6^+	2089.3	6^+	778.4 *3*	41 *6*	4687.1	12^+	3908.6	10^+
183.7 *5*	3.3 *13*	5923.7	(12^+)	5740.0	(11^+)	797.1 *4*	3.0 *15*	5923.7	(12^+)	5126.6	
191.5 *3*		2089.3	6^+	1897.8	4^+	804.2 *3*	9 *3*	6196.5	(15^-)	5392.3	(13^-)
239.0 *4*	2.2 *10*	7225.9	(15^+)	6986.9	(14^+)	837.8 *4*	5.1 *18*	6757.6	(16^-)	5919.8	(14^-)
285.4 *3*	12 *4*	6209.0	(13^+)	5923.7	(12^+)	856.9 *5*	2.4 *12*	8010.8		7153.9	(17^-)
288.2 *3*	12 *4*	3908.6	10^+	3620.3	10^+	944.0 *5*	1.7 *8*	3358.5	(7^+)	2414.5	5^+
301.4 *4*	4.4 *18*	8280.1	(18^+)	7978.7	(17^+)	957.4 *5*	3.1 *15*	7153.9	(17^-)	6196.5	(15^-)
306.1 *3*	7.3 *22*	7532.0	(16^+)	7225.9	(15^+)	980.3 *3*	23 *5*	3182.0	8^+	2201.6	6^+
396.1 *5*	2.1 *10*	9332.6	(20^+)	8936.5	(19^+)	1067.1 *5*	3.5 *15*	6986.9	(14^+)	5919.8	(14^-)
438.3 *3*	40 *6*	3620.3	10^+	3182.0	8^+	1071.3 *3*	7.8 *23*	4702.4	(11^-)	3631.1	9^-
446.7 *3*	7.4 *22*	6655.7	(14^+)	6209.0	(13^+)	1082.1 *3*	7.8 *23*	4702.4	(11^-)	3620.3	10^+
446.7 *5*	5.6 *17*	7978.7	(17^+)	7532.0	(16^+)	1092.7 *3*	73 *11*	3182.0	8^+	2089.3	6^+
449.1 *3*	10 *3*	3631.1	9^-	3182.0	8^+	1205.2 *5*	2 *1*	7401.7		6196.5	(15^-)
462.4 *3*		1897.8	4^+	1435.4	2^+	1221.2 *5*	2.7 *13*	5923.7	(12^+)	4702.4	(11^-)
481.8 *3*	8.3 *25*	5184.2	(13^-)	4702.4	(11^-)	1236.4 *4*	6.0 *18*	5923.7	(12^+)	4687.1	12^+
516.7 *4*	3.2 *13*	2414.5	5^+	1897.8	4^+	1435.4 *4*		1435.4	2^+	0.0	0^+
527.4 *4*	6.9 *20*	5919.8	(14^-)	5392.3	(13^-)	1506.3 *5*	2.4 *12*	5126.6		3620.3	10^+
567.3 *3*	6.1 *18*	5923.7	(12^+)	5356.4		1521.9 *5*	4.2 *15*	6209.0	(13^+)	4687.1	12^+
570.1 *3*	7.1 *21*	7225.9	(15^+)	6655.7	(14^+)	1736.4 *5*	4.9 *17*	5356.4		3620.3	10^+
656.4 *5*	3.2 *15*	8936.5	(19^+)	8280.1	(18^+)	1802.6 *6*	2.9 *14*	6986.9	(14^+)	5184.2	(13^-)
705.2 *3*	23 *5*	5392.3	(13^-)	4687.1	12^+	2119.8 *8*	2.1 *10*	5740.0	(11^+)	3620.3	10^+
726.7 *3*	35 *7*	3908.6	10^+	3182.0	8^+	2303.6 *8*	1.4 *7*	5923.7	(12^+)	3620.3	10^+
778.0 *4*	5.4 *19*	6986.9	(14^+)	6209.0	(13^+)						

^{238}U(^{12}C,Fγ),^{208}Pb(^{18}O,Fγ) 2012As06

Level Scheme

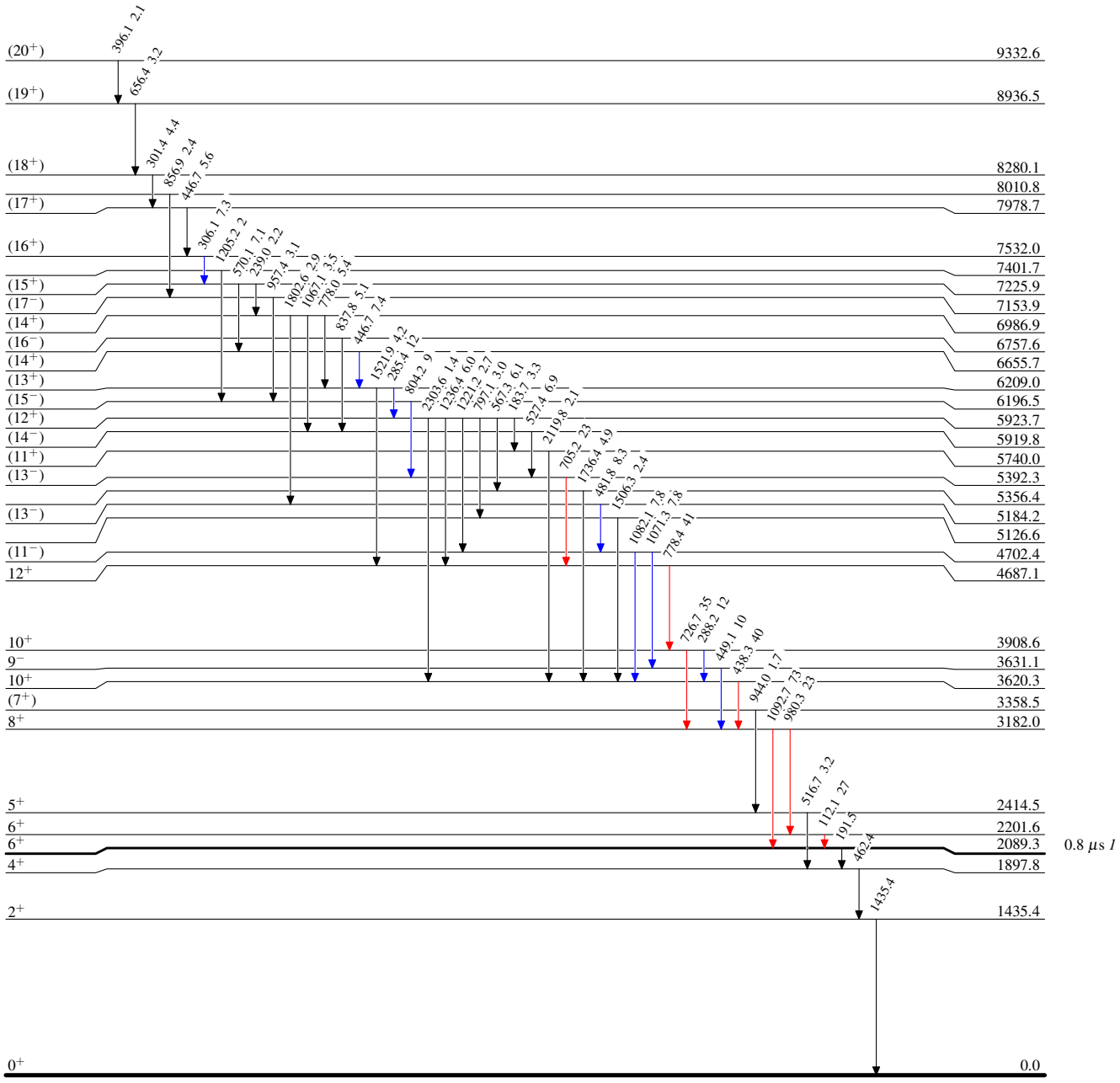
Intensities: Relative I_γ

Legend

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

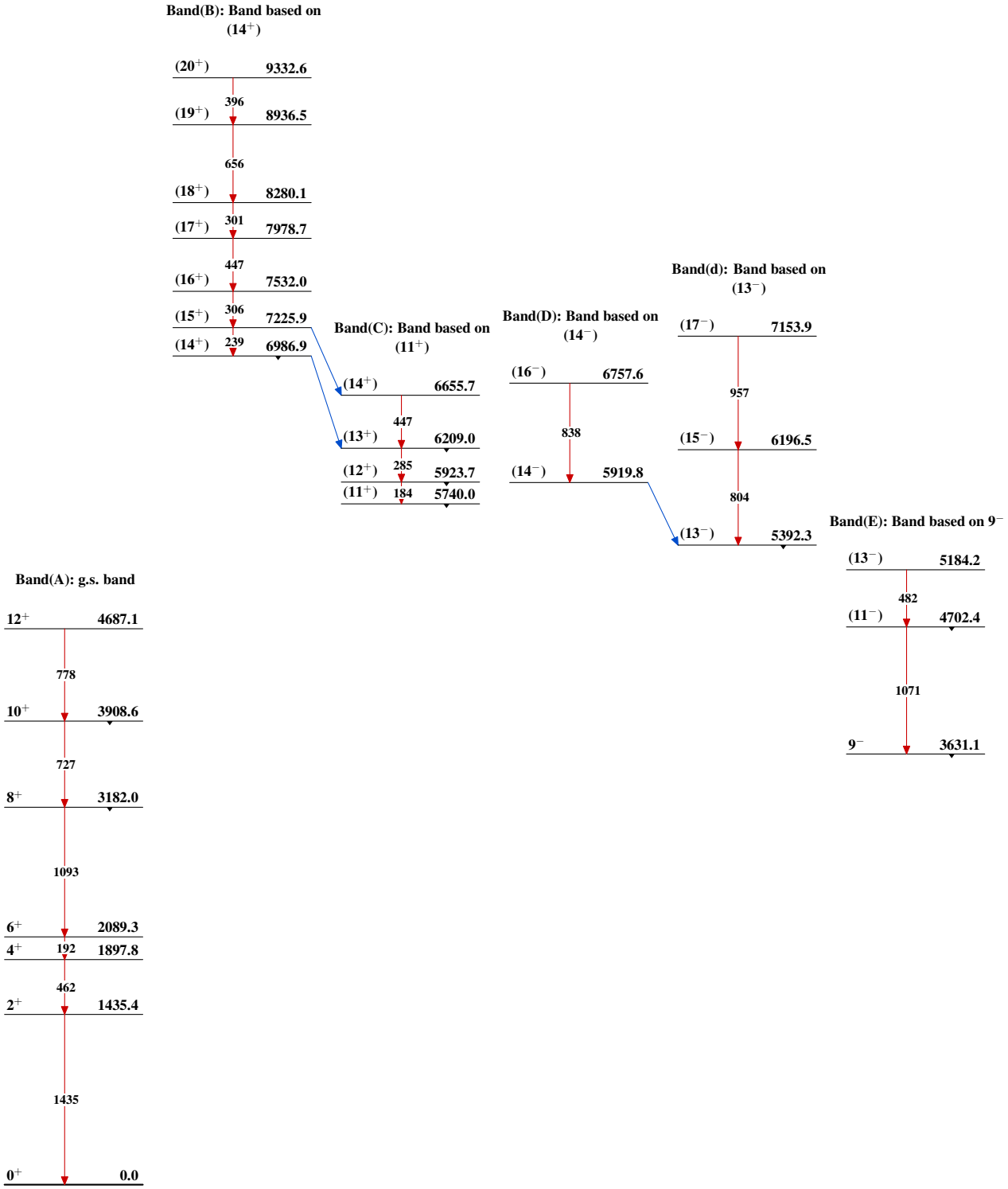
$I_\gamma < 10\% \times I_\gamma^{max}$

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



$^{138}_{56}Ba_{82}$

^{238}U(^{12}C,Fγ),^{208}Pb(^{18}O,Fγ) 2012As06



$^{138}_{56}Ba_{82}$