^{208}Pb(^{16}O,Xγ) 2011Po13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 199,271 (2025)	1-Sep-2024

Adopted/Edited the XUNDL dataset compiled by B. Singh (McMaster), November 8, 2011.

E=85 from Vivitron accelerator of IReS Strasbourg. Target=100 mg/cm^2. Measured Eγ, Iγ, γγ, γγ(θ) using the Euroball array of 15 Cluster Ge detectors placed in the backward direction, 26 Clover Ge detectors around 90°, and 30 tapered single-crystal Ge detectors. Identification of γ rays to a particular nuclide based on the detection of γ rays from complementary fragments produced in the fission-fusion reaction. Comparison with shell-model calculations.

^{81}As Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0	3/2$^-$	1613.31@ *25*	9/2$^{(+)}$	2624.3 *4*	(9/2)$^+$	3292.1# *5*	17/2$^-$
335.71# *17*	5/2$^-$	1730.5 *4*	(11/2$^-$)	2758.3& *4*	(11/2)$^+$	3421.9@ *11*	(17/2$^+$)
737.49 *17*	7/2$^-$	2142.0 *5*		2974.8& *4*	(13/2$^+$)	3669.2# *7*	(21/2$^-$)
1128.65# *23*	9/2$^-$	2250.9@ *3*	13/2$^{(+)}$	3126.4& *5*	(15/2$^+$)		
1194.9 *5*	7/2	2359.0# *4*	13/2$^-$	3290.9& *6*	(17/2$^+$)		

† From a least-squares fit to Eγ data in 2011Po13.
‡ Based on γ transition multipolarity determined (as mentioned in the text) from γγ(θ) measurements.
# Band(A): Band based on 5/2$^-$.
@ Band(B): Band based on 9/2$^{(+)}$.
& Band(C): Band based on (11/2)$^+$.

γ(^{81}As)

Coincidence rates between γ rays as a function θ, normalized to 75°, are listed in comments (Table IV – 2011Po13).

Eγ	Iγ†	Ei(level)	Jiπ	Ef	Jfπ	Comments
134.0 *5*	<4	2758.3	(11/2)$^+$	2624.3	(9/2)$^+$	
151.6 *3*	11 *4*	3126.4	(15/2$^+$)	2974.8	(13/2$^+$)	
164.5 *3*	8 *3*	3290.9	(17/2$^+$)	3126.4	(15/2$^+$)	
216.5 *3*	18 *4*	2974.8	(13/2$^+$)	2758.3	(11/2)$^+$	
335.6 *2*	53 *6*	335.71	5/2$^-$	0.0	3/2$^-$	
377.1 *4*	6 *2*	3669.2	(21/2$^-$)	3292.1	17/2$^-$	
391.3 *4*	3.0 *15*	1128.65	9/2$^-$	737.49	7/2$^-$	
401.6 *3*	16 *4*	737.49	7/2$^-$	335.71	5/2$^-$	
482.4 *4*	4 *2*	2624.3	(9/2)$^+$	2142.0		
602.0 *4*	5 *2*	1730.5	(11/2$^-$)	1128.65	9/2$^-$	
628.6 *4*	5 *2*	2359.0	13/2$^-$	1730.5	(11/2$^-$)	
637.6 *2*	44 *5*	2250.9	13/2$^{(+)}$	1613.31	9/2$^{(+)}$	(637.6γ)[875.8γ](737.6γ(θ)): Iγ(22°)/Iγ(75°)=1.32 *26*, Iγ(46°)/Iγ(75°)=1.40 *18*. (637.6γ)(875.8γ(θ)): Iγ(22°)/Iγ(75°)=0.81 *17*, Iγ(46°)/Iγ(75°)=0.98 *12*.
723.8 *4*	10 *4*	2974.8	(13/2$^+$)	2250.9	13/2$^{(+)}$	
737.6 *2*	47 *5*	737.49	7/2$^-$	0.0	3/2$^-$	
792.9 *2*	37 *6*	1128.65	9/2$^-$	335.71	5/2$^-$	(792.9γ)(335.6γ(θ)): Iγ(22°)/Iγ(75°)=1.31 *16*, Iγ(46°)/Iγ(75°)=1.18 *10*.
859.2 *5*	5 *2*	1194.9	7/2	335.71	5/2$^-$	
875.8 *2*	63 *6*	1613.31	9/2$^{(+)}$	737.49	7/2$^-$	(875.8γ)[401.6γ](335.6γ(θ)): Iγ(22°)/Iγ(75°)=0.89 *13*,

Continued on next page (footnotes at end of table)

^{208}Pb(^{16}O,Xγ) 2011Po13 (continued)

$\gamma(^{81}As)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
						Iγ(46°)/Iγ(75°)=0.96 *9*.
						(875.8γ)(401.6$\gamma(\theta)$): Iγ(22°)/Iγ(75°)=1.29 *17*, Iγ(46°)/Iγ(75°)=1.15 *11*.
						(875.8γ)(737.6$\gamma(\theta)$): Iγ(22°)/Iγ(75°)=0.94 *18*, Iγ(46°)/Iγ(75°)=0.86 *11*.
933.1 *3*	24 *6*	3292.1	17/2$^-$	2359.0	13/2$^-$	(933.1γ)(1230.2$\gamma(\theta)$): Iγ(22°)/Iγ(75°)=1.25 *20*, Iγ(46°)/Iγ(75°)=1.09 *10*.
1013.4 *6*	<2	2142.0		1128.65	9/2$^-$	
1145.0 *5*	10 *4*	2758.3	(11/2)$^+$	1613.31	9/2$^{(+)}$	
1171 *1*	<3	3421.9	(17/2$^+$)	2250.9	13/2$^{(+)}$	
1230.2 *4*	30 *8*	2359.0	13/2$^-$	1128.65	9/2$^-$	(1230.2γ)(792.9$\gamma(\theta)$): Iγ(22°)/Iγ(75°)=1.21 *18*, Iγ(46°)/Iγ(75°)=1.10 *10*.
1429.6 *8*	4 *2*	2624.3	(9/2)$^+$	1194.9	7/2	
1495.5 *7*	6 *2*	2624.3	(9/2)$^+$	1128.65	9/2$^-$	
1629.7 *7*	4 *2*	2758.3	(11/2)$^+$	1128.65	9/2$^-$	

[†] Relative to Iγ(336)+Iγ(738)=100 in 2011Po13.

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Level Scheme

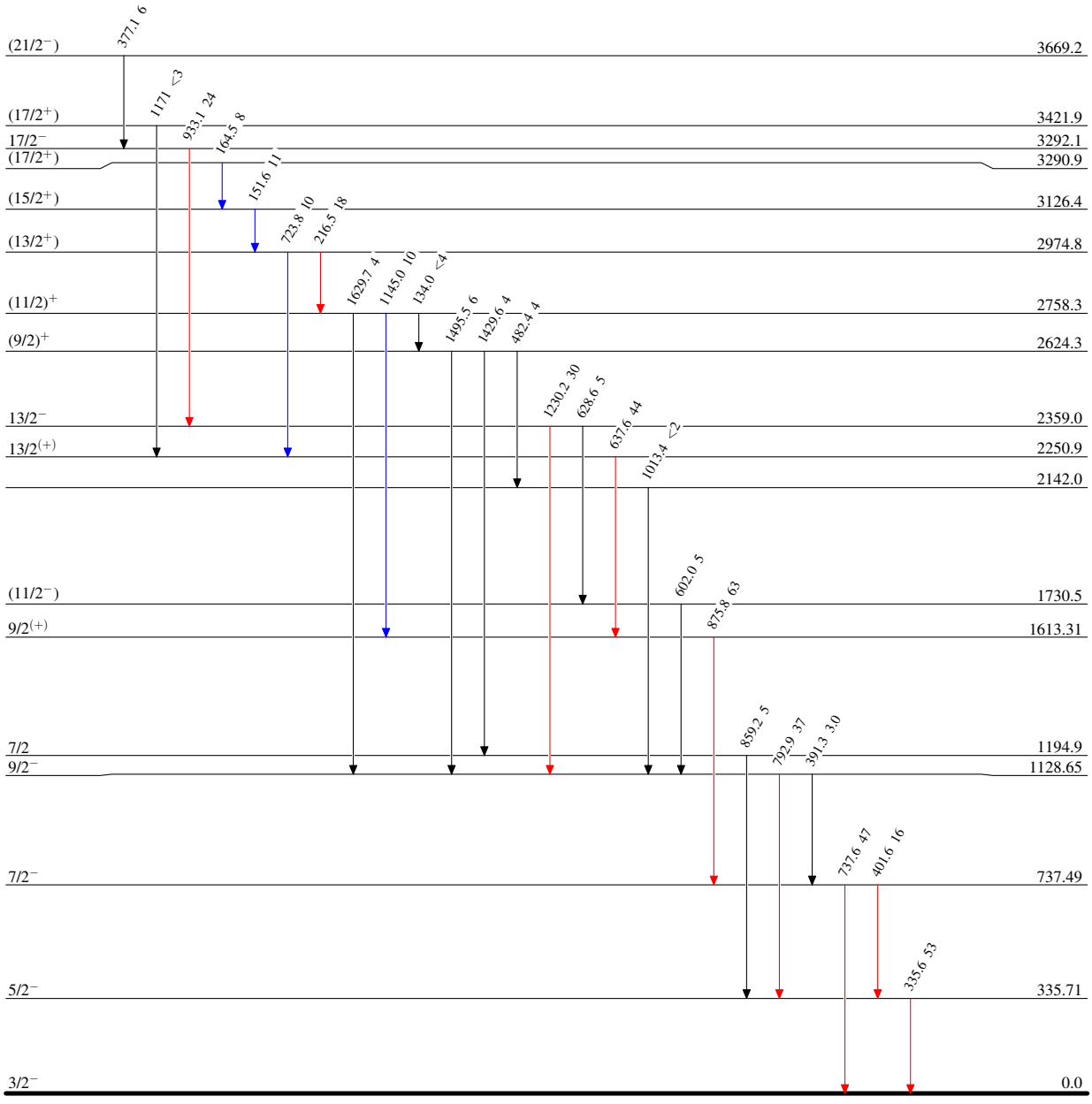
Intensities: Relative I_γ

Legend

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

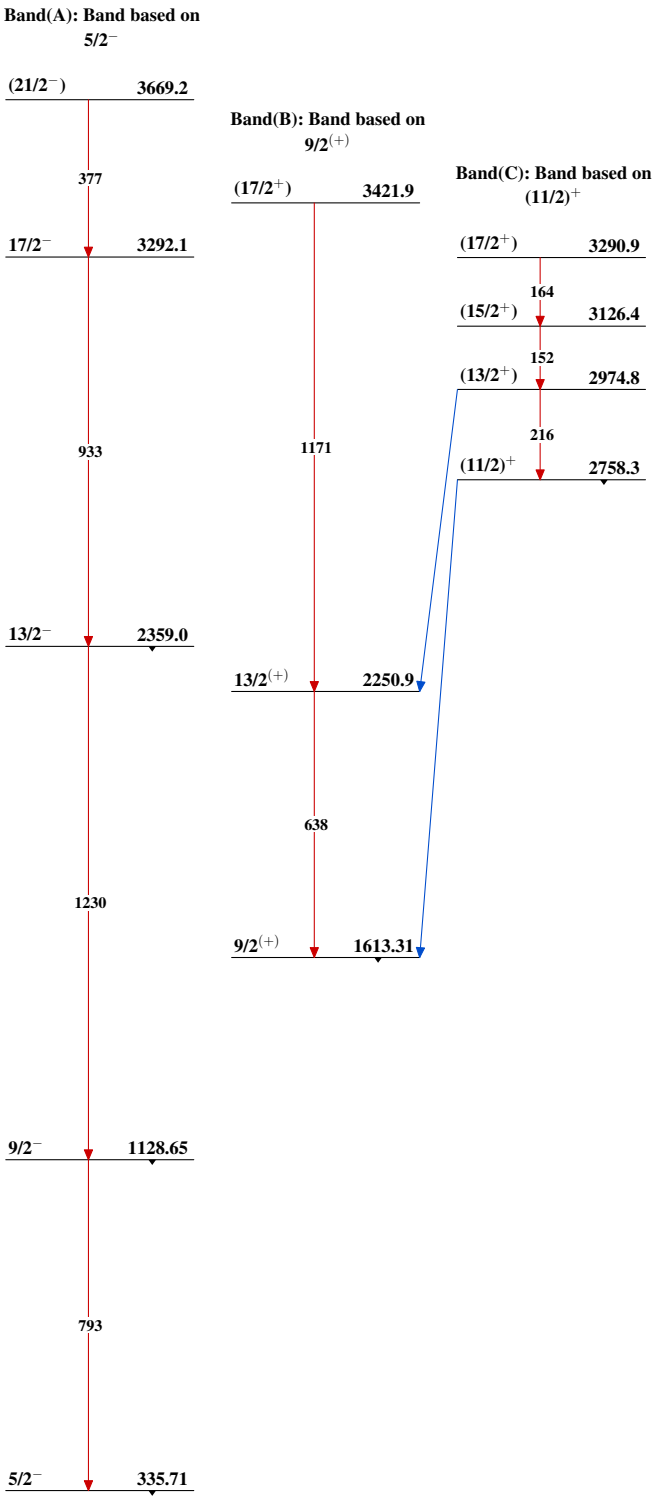
$I_\gamma < 10\% \times I_\gamma^{max}$

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



$^{81}_{33}As_{48}$

$^{208}Pb(^{16}O,X\gamma)$ 2011Po13



$^{81}_{33}As_{48}$