

$^{209}\text{Bi}(n,2n\gamma)$ 1971Fe07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 108,1583 (2007)	1-Jun-2007

E=14.7 MeV.

Other: 1982Wu02.

 ^{208}Bi Levels

γ -branching: values given are those of the authors. The values differ somewhat from those implied by the $I(\gamma)$ data since corrections for background impurity lines have been taken into account.

E(level) [†]	$J^{\pi\ddagger}$	Comments
0.0	5 ⁺	
63.5 3	4 ⁺	
511.2 3	6 ⁺	
602.2 4	4 ⁺	γ -branching: 540 γ :602g=25:75.
628.6 5	5 ⁺	
634.3 4	3 ⁺	
650.6 3	7 ⁺	
887.4 4	5 ⁺	γ -branching: 285 γ :824 γ :888g=25:45:30.
925.3 11	2 ⁺	
936.2 4	3 ⁺	
961.6? 7		E(level): this is not the same level As that At 959.1 seen In (p,n γ) since the strong 896 γ from that level In (p,n γ) is not seen here.
1033.7 3	(4) ⁺	
1070.6 4	(3) ⁺	
1108.5?		
1384.5 6	(3 ⁺ ,4,5 ⁺)	γ -branching: 313 γ :1385g=80:20.
1436.1 5		γ -branching: 500 γ :834g=60:40.
1470.8 5	(5) ⁺	
1570.8 4	10 ⁻	
1636.9 8		
1666.5 4		γ -branching: 1064 γ :1155g=45:55. Note, however, that the 1155 γ is also placed deexciting the 1805 level.
1805.8 4		γ -branching: 1155 γ :1171g=55:45. Note, however, that the 1155 γ is also placed deexciting the 1666 level.
1845.1 5	(4) ⁻	γ -branching: 774 γ :1334g=70:30.
1926.1? 5	(3) ⁻	
1938.0 5		

[†] From a least-squares fit to the authors' E(γ).[‡] From Adopted Levels. $\gamma(^{208}\text{Bi})$

E_{γ}	$I_{\gamma}^{\dagger}$	$E_i(\text{level})$	J_i^{π}	E_f	J_f^{π}	Comments
(63.5)		63.5	4 ⁺	0.0	5 ⁺	E_{γ} : from level energy difference.
260.0 @		1926.1?	(3) ⁻	1666.5		
285.3 5	20 10	887.4	5 ⁺	602.2	4 ⁺	
291.0 10	60 [‡] 10	925.3	2 ⁺	634.3	3 ⁺	
300.8 @		1938.0		1636.9		
313.5 13	40 [‡] 10	1384.5	(3 ⁺ ,4,5 ⁺)	1070.6	(3) ⁺	
327.3 6	30 10	961.6?		634.3	3 ⁺	
447.9 3	30 10	511.2	6 ⁺	63.5	4 ⁺	

Continued on next page (footnotes at end of table)

$^{209}\text{Bi}(n,2n\gamma)$ **1971Fe07 (continued)** $\gamma(^{208}\text{Bi})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
499.6 10	45 $\ddagger$ 30	1436.1		936.2	3 ⁺	
511.0 5	$\ddagger$	511.2	6 ⁺	0.0	5 ⁺	
539.6 8	40 10	602.2	4 ⁺	63.5	4 ⁺	
565.1 3	80 30	628.6	5 ⁺	63.5	4 ⁺	
570.8 3	65 30	634.3	3 ⁺	63.5	4 ⁺	
597.5 5	40 30	1108.5?		511.2	6 ⁺	E_γ : 1971Pr02 report a 597.9 γ in $^{208}\text{Pb}(p,n\gamma)$ but assign it to $^{74}\text{Ge}(n,n'\gamma)$.
602.1 5	120 40	602.2	4 ⁺	0.0	5 ⁺	
650.6 3	90 30	650.6	7 ⁺	0.0	5 ⁺	I_γ : not corrected for population from the 2.6-ms isomeric level.
774.4 4	30 10	1845.1	(4) ⁻	1070.6	(3) ⁺	
823.7 5	40 10	887.4	5 ⁺	63.5	4 ⁺	
833.9 3	50 10	1436.1		602.2	4 ⁺	
855.5 3	55 10	1926.1?	(3) ⁻	1070.6	(3) ⁺	
872.7 3	65 10	936.2	3 ⁺	63.5	4 ⁺	
887.5 5	30 10	887.4	5 ⁺	0.0	5 ⁺	
920.2 3	380 80	1570.8	10 ⁻	650.6	7 ⁺	I_γ : transition is from 2.6-ms isomeric level.
959.6 3	35 10	1470.8	(5) ⁺	511.2	6 ⁺	
1007.0 3	140 30	1070.6	(3) ⁺	63.5	4 ⁺	
1033.7 3	35 10	1033.7	(4) ⁺	0.0	5 ⁺	
1064.4 4	20 10	1666.5		602.2	4 ⁺	
1155.3 [#] 3	$\leq 25^\#$	1666.5		511.2	6 ⁺	I_γ : the 1155 γ , $\sigma(\gamma)=25$ 6, is placed deexciting the 1666 and 1805 levels.
1155.3 [#] 3	$\leq 25^\#$	1805.8		650.6	7 ⁺	I_γ : the 1155 γ , $\sigma(\gamma)=25$ 6, is placed deexciting the 1666 and 1805 levels.
1171.5 3	20 6	1805.8		634.3	3 ⁺	
1334.2 5	14 10	1845.1	(4) ⁻	511.2	6 ⁺	
1384.6 6	11 7	1384.5	(3 ⁺ ,4,5 ⁺)	0.0	5 ⁺	
1636.9 8		1636.9		0.0	5 ⁺	
1938.0 5	15 5	1938.0		0.0	5 ⁺	

[†] Values are $\sigma(\gamma)$ in mb.[‡] Interfering background line present.[#] Multiply placed with undivided intensity.[@] Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Type not specified
& Multiply placed: undivided intensity given

Legend

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$
 $\cdots \longrightarrow$ γ Decay (Uncertain)

