

$^{209}\text{Bi}(\pi^-, 5n\gamma)$ **1978Be24**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	C. J. Chiara and F. G. Kondev		NDS 111,141 (2010)	1-Oct-2009

1978Be24: 1.22-g/cm² Bi powder target contained in thin plastic cover; $E(\pi^-) = 125$ MeV; stopped pions identified with three scintillators and a Cerenkov counter preceding the target and one scintillator after the target; one planarGe(Li) and one Compton-suppressedGe(Li) with 2% and 10% efficiencies at 1.3 MeV, respectively, for measuring prompt and delayed γ spectra; time windows used were up to 50 ns after a π^- stop, 50 ns to 1 μ s after, and 1 μ s after until the subsequent π^- stop.

 ^{204}Pb Levels

E(level) [†]	J π [‡]	T _{1/2} [‡]	Comments
0	0 ⁺		
899.15 20	2 ⁺		
1273.5 3	4 ⁺		
2185.2 4	9 ⁻	66.93 min 10	Additional information 1.
3190.9 6	11 ⁻		
3515.6 7	12 ⁺		
4134.0 7	14 ⁺		
4301.2 7	15 ⁺		
4886.9 7	16 ⁺		
5347.7 8	16 ⁺		
5663.6 8	17 ⁻		
6097.3 8	19 ⁻		
7401.4 9	(20)		

[†] From a least-squares fit to E_γ .

[‡] From Adopted Levels.

 $\gamma(^{204}\text{Pb})$

I γ normalization: I γ per stopped π^- normalized to pionic x-ray intensity.

E γ [†]	I γ	E _i (level)	J π _i	E _f	J π _f	E γ [†]	I γ	E _i (level)	J π _i	E _f	J π _f
167.2 2	1.5 4	4301.2	15 ⁺	4134.0	14 ⁺	752.9 2	0.13 6	4886.9	16 ⁺	4134.0	14 ⁺
315.9 2	1.7 6	5663.6	17 ⁻	5347.7	16 ⁺	776.7 2	0.26 17	5663.6	17 ⁻	4886.9	16 ⁺
324.7 2	1.8 4	3515.6	12 ⁺	3190.9	11 ⁻	899.15 20	8.1 [‡] 5	899.15	2 ⁺	0	0 ⁺
374.35 20	8.4 [‡] 11	1273.5	4 ⁺	899.15	2 ⁺	911.7 2	5.5 [‡] 18	2185.2	9 ⁻	1273.5	4 ⁺
433.7 2	0.33 17	6097.3	19 ⁻	5663.6	17 ⁻	1005.7 5	1.4 1	3190.9	11 ⁻	2185.2	9 ⁻
585.7 [#] 2	<0.4	4886.9	16 ⁺	4301.2	15 ⁺	1046.7 [#] 5	<0.4	5347.7	16 ⁺	4301.2	15 ⁺
618.4 2	1.1 2	4134.0	14 ⁺	3515.6	12 ⁺	1304.1 5	0.36 9	7401.4	(20)	6097.3	19 ⁻

[†] Uncertainties not given by **1978Be24**; evaluator assigns 0.2 keV for $E_\gamma < 1$ MeV (planarGe(Li) measurement) and 0.5 keV for $E_\gamma > 1$ MeV.

[‡] **1978Be24** do not indicate how the transitions below the T_{1/2}=67.2 min isomer were correlated with the π^- , or how their intensities were determined, considering the μ s scale of the timing in their experiment.

[#] Placement of transition in the level scheme is uncertain.

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Legend

Level Scheme
 Intensities: Type not specified

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

