

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 192,1 (2023)	1-Aug-2023

$Q(\beta^-) = -3429$ 24; $S(n) = 7644$ 25; $S(p) = 2428$ 24; $Q(\alpha) = 4701$ 26 [2021Wa16](#)

 ^{200}Bi LevelsCross Reference (XREF) Flags

- A** ^{200}Po ε decay
B ^{204}At α decay
C $^{193}\text{Ir}(^{12}\text{C}, 5n\gamma)$
D $^{186}\text{W}(^{19}\text{F}, 5n\gamma)$

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
0	7 ⁺	36.4 min 5	ABCD	$\% \varepsilon + \% \beta^+ = 100$ J^π : Atomic beam (1959Ax98); π from the proposed configuration and systematics of single-particle states in the region. T _{1/2} : From 1970DaZM . Other: 35 min 5 (1950Ne77). Configuration = $\pi(h_{9/2}^{+1}) \otimes \nu(f_{5/2}^{-1})$. $\% \varepsilon + \% \beta^+ \approx 100$
0+x	(2 ⁺)	31 min 2	A	Additional information 1. E(level): x=100 keV 70 estimated in 2021Ko07 . J^π : From systematics and the observed feeding to the 2 ⁺ state in ^{200}Pb following ^{200}Bi ε decay (1972Kr08). T _{1/2} : From 1978LiZM in ^{200}Po ε decay. Configuration = $\pi(h_{9/2}^{+1}) \otimes \nu(f_{5/2}^{-1})$.
53.30+x 9 428.20 10	10 ⁻	0.40 s 5	A C	$\% \text{IT} = 100$ J^π : 428.2 γ E3 to 7 ⁺ ; systematics of similar isomers in neighboring odd-odd Bi isotopes. T _{1/2} : From 428.2 γ (t) in $^{193}\text{Ir}(^{12}\text{C}, 5n\gamma)$ (1972Ha73). Configuration = $\pi(h_{9/2}^{+1}) \otimes \nu(i_{13/2}^{-1})$.
430.20+x 10			A	
575.50+x 12			A	
671.00+x 8			A	
695.11+x 8			A	
818.60+x 12			A	
850.00+x 9			A	
876.08+x 11			A	
931.3+x 3			A	
999.01+x 10			A	
1127.00+x? 16			A	
1253.00+x 14			A	
1271.52+x 11			A	
1285.52+x 8			A	
1352.10+x? 19			A	
1387.50+x 15			A	
1401.50+x? 13			A	
1424.1+x 6			A	
y [‡]			D	Additional information 2.
193.0+y [‡] 10			D	
431.0+y [‡] 15			D	
720.0+y [‡] 18			D	

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Adopted Levels, Gammas (continued) ^{200}Bi Levels (continued)

E(level) [†]	XREF	Comments
1056.0+y [‡] 20	D	
1432.0+y [‡] 23	D	
1855.0+y [‡] 25	D	
z [#]	D	Additional information 3.
199.0+z [#] 5	D	
446.2+z [#] 7	D	
740.7+z [#] 9	D	
1083.8+z [#] 10	D	
1475.2+z [#] 12	D	
1918.8+z [#] 13	D	
2417.8+z [#] 16	D	
2970.7+z [#] 17	D	
3577.7+z [#] 18	D	

[†] From a least-squares fit to E_γ.[‡] Band(A): band 1.[#] Band(B): band 2.γ(^{200}Bi)

E _i (level)	J _i ^π	E _γ [†]	I _γ [†]	E _f	J _f ^π	Mult. [#]	α [@]	Comments
53.30+x		53.3 7	100	0+x	(2 ⁺)			
428.20	10 ⁻	428.2 1	100	0	7 ⁺	E3	0.1728 24	B(E3)(W.u.)=0.00041 6 α(K)=0.0766 11; α(L)=0.0714 10; α(M)=0.01891 27 α(N)=0.00485 7; α(O)=0.000922 13; α(P)=8.19×10 ⁻⁵ 11 E _γ , I _γ : From $^{193}\text{Ir}(^{12}\text{C}, 5n\gamma)$ (1972Ha73). Mult.: From α(K)exp=0.09 5 in $^{193}\text{Ir}(^{12}\text{C}, 5n\gamma)$ (1972Ha73).
430.20+x		430.3 1	100	0+x	(2 ⁺)			
575.50+x		145.4 1	100 5	430.20+x				
		575.1 2	32 5	0+x	(2 ⁺)			
671.00+x		617.7 1	58 3	53.30+x				
		671.0 1	100 5	0+x	(2 ⁺)			
695.11+x		694.8 1	100	0+x	(2 ⁺)			
818.60+x		147.6 1	100 5	671.00+x				
		818.8	13.0 15	0+x	(2 ⁺)			
850.00+x		154.4 & 3	4.3 4	695.11+x				
		796.7 1	100 5	53.30+x				
		850.0 1	63 3	0+x	(2 ⁺)			
876.08+x		205.0 1	83 4	671.00+x				
		876.5 3	100 6	0+x	(2 ⁺)			
931.3+x		260.3 3	100	671.00+x				
999.01+x		328.1 1	100 5	671.00+x				
		945.7 1	42 4	53.30+x				
1127.00+x?		551.5 1	100	575.50+x				
1253.00+x		434.4 1	100 5	818.60+x				
		582.0 2	5.9 11	671.00+x				

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Adopted Levels, Gammas (continued)

$\gamma(^{200}\text{Bi})$ (continued)							
$E_i(\text{level})$	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [#]	$\alpha^\text{@}$	Comments
1271.52+x	272.6 1	65 6	999.01+x				
	395.4 1	71 6	876.08+x				
	1271.3 2	100 6	0+x	(2 ⁺)			
1285.52+x	590.2 1	85 3	695.11+x				
	1285.8 1	100 6	0+x	(2 ⁺)			
1352.10+x?	225.1 1	100	1127.00+x?				
1387.50+x	102.3 2	17 3	1285.52+x				
	692.0 2	63 17	695.11+x				
	1387.8 4	100 10	0+x	(2 ⁺)			
1401.50+x?	730.5 1	100	671.00+x				
1424.1+x	492.8 5		931.3+x				E_γ : Seen only in $\gamma\gamma$ coincidence.
193.0+y	193 ‡ 1	100 ‡	y		(M1)	1.576 32	$\alpha(\text{K})=1.283$ 26; $\alpha(\text{L})=0.223$ 5; $\alpha(\text{M})=0.0525$ 11 $\alpha(\text{N})=0.01344$ 27; $\alpha(\text{O})=0.00275$ 6; $\alpha(\text{P})=0.000327$ 7
431.0+y	238 ‡ 1	100 ‡	193.0+y		(M1)	0.878 16	$\alpha(\text{K})=0.716$ 13; $\alpha(\text{L})=0.1241$ 23; $\alpha(\text{M})=0.0292$ 5 $\alpha(\text{N})=0.00746$ 14; $\alpha(\text{O})=0.001525$ 28; $\alpha(\text{P})=0.0001816$ 33
720.0+y	289 ‡ 1	100 ‡	431.0+y		(M1)	0.514 9	$\alpha(\text{K})=0.419$ 7; $\alpha(\text{L})=0.0725$ 12; $\alpha(\text{M})=0.01702$ 29 $\alpha(\text{N})=0.00435$ 7; $\alpha(\text{O})=0.000890$ 15; $\alpha(\text{P})=0.0001060$ 18
1056.0+y	336 ‡ 1	100 ‡	720.0+y		(M1)	0.341 6	$\alpha(\text{K})=0.278$ 4; $\alpha(\text{L})=0.0479$ 8; $\alpha(\text{M})=0.01125$ 18 $\alpha(\text{N})=0.00288$ 5; $\alpha(\text{O})=0.000588$ 10; $\alpha(\text{P})=7.00\times 10^{-5}$ 11
1432.0+y	376 ‡ 1	100 ‡	1056.0+y		(M1)	0.251 4	$\alpha(\text{K})=0.2051$ 32; $\alpha(\text{L})=0.0352$ 6; $\alpha(\text{M})=0.00827$ 13 $\alpha(\text{N})=0.002116$ 33; $\alpha(\text{O})=0.000433$ 7; $\alpha(\text{P})=5.15\times 10^{-5}$ 8
1855.0+y	423 ‡ 1	100 ‡	1432.0+y		(M1)	0.1831 28	$\alpha(\text{K})=0.1496$ 23; $\alpha(\text{L})=0.0256$ 4; $\alpha(\text{M})=0.00601$ 9 $\alpha(\text{N})=0.001537$ 24; $\alpha(\text{O})=0.000314$ 5; $\alpha(\text{P})=3.75\times 10^{-5}$ 6
199.0+z	199.0 ‡ 5	100 ‡	z		(M1)	1.446 23	$\alpha(\text{K})=1.178$ 18; $\alpha(\text{L})=0.2049$ 32; $\alpha(\text{M})=0.0482$ 8 $\alpha(\text{N})=0.01233$ 19; $\alpha(\text{O})=0.00252$ 4; $\alpha(\text{P})=0.000300$ 5
446.2+z	247.2 ‡ 5	100 ‡	199.0+z		(M1)	0.790 12	$\alpha(\text{K})=0.644$ 10; $\alpha(\text{L})=0.1117$ 17; $\alpha(\text{M})=0.0263$ 4 $\alpha(\text{N})=0.00672$ 10; $\alpha(\text{O})=0.001372$ 21; $\alpha(\text{P})=0.0001634$ 25
740.7+z	294.5 ‡ 5	100 ‡	446.2+z		(M1)	0.488 7	$\alpha(\text{K})=0.398$ 6; $\alpha(\text{L})=0.0688$ 10; $\alpha(\text{M})=0.01616$ 24 $\alpha(\text{N})=0.00413$ 6; $\alpha(\text{O})=0.000845$ 12; $\alpha(\text{P})=0.0001006$ 15
1083.8+z	343.1 ‡ 5	100 ‡	740.7+z		(M1)	0.322 5	$\alpha(\text{K})=0.263$ 4; $\alpha(\text{L})=0.0452$ 7; $\alpha(\text{M})=0.01062$ 15 $\alpha(\text{N})=0.00272$ 4; $\alpha(\text{O})=0.000555$ 8; $\alpha(\text{P})=6.61\times 10^{-5}$ 10
1475.2+z	391.4 ‡ 5	100 ‡	1083.8+z		(M1)	0.2255 33	$\alpha(\text{K})=0.1842$ 27; $\alpha(\text{L})=0.0316$ 5; $\alpha(\text{M})=0.00742$ 11 $\alpha(\text{N})=0.001897$ 27; $\alpha(\text{O})=0.000388$ 6; $\alpha(\text{P})=4.62\times 10^{-5}$ 7
1918.8+z	443.6 ‡ 5	100 ‡	1475.2+z		(M1)	0.1612 23	$\alpha(\text{K})=0.1317$ 19; $\alpha(\text{L})=0.02253$ 32; $\alpha(\text{M})=0.00529$ 8 $\alpha(\text{N})=0.001352$ 19; $\alpha(\text{O})=0.000276$ 4; $\alpha(\text{P})=3.29\times 10^{-5}$ 5
2417.8+z	499.0 ‡	100 ‡	1918.8+z		(M1)	0.1179 16	$\alpha(\text{K})=0.0964$ 13; $\alpha(\text{L})=0.01643$ 23; $\alpha(\text{M})=0.00385$ 5 $\alpha(\text{N})=0.000985$ 14; $\alpha(\text{O})=0.0002014$ 28; $\alpha(\text{P})=2.402\times 10^{-5}$ 34

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Adopted Levels, Gammas (continued) $\gamma(^{200}\text{Bi})$ (continued)

<u>$E_i(\text{level})$</u>	<u>E_γ[†]</u>	<u>I_γ[†]</u>	<u>E_f</u>	<u>Mult.[#]</u>	<u>α[@]</u>	<u>Comments</u>
2970.7+z	552.9 [‡] 5	100 [‡]	2417.8+z	(M1)	0.0898 13	$\alpha(\text{K})=0.0735$ 10; $\alpha(\text{L})=0.01249$ 18; $\alpha(\text{M})=0.00293$ 4 $\alpha(\text{N})=0.000749$ 11; $\alpha(\text{O})=0.0001531$ 22; $\alpha(\text{P})=1.827\times 10^{-5}$ 26
3577.7+z	607.0 [‡] 5	100 [‡]	2970.7+z	(M1)	0.0703 10	$\alpha(\text{K})=0.0575$ 8; $\alpha(\text{L})=0.00975$ 14; $\alpha(\text{M})=0.002285$ 32 $\alpha(\text{N})=0.000584$ 8; $\alpha(\text{O})=0.0001195$ 17; $\alpha(\text{P})=1.426\times 10^{-5}$ 20

[†] From ^{200}Po ε decay, unless otherwise stated.

[‡] From $^{186}\text{W}(^{19}\text{F}, 5n\gamma)$.

[#] From DCO ratios in $^{186}\text{W}(^{19}\text{F}, 5n\gamma)$ (1994Da17), unless otherwise stated. The M1 assignment is favored over E1 from intensity balances, when gating on γ -ray transitions above the level of interest.

[@] Additional information 4.

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

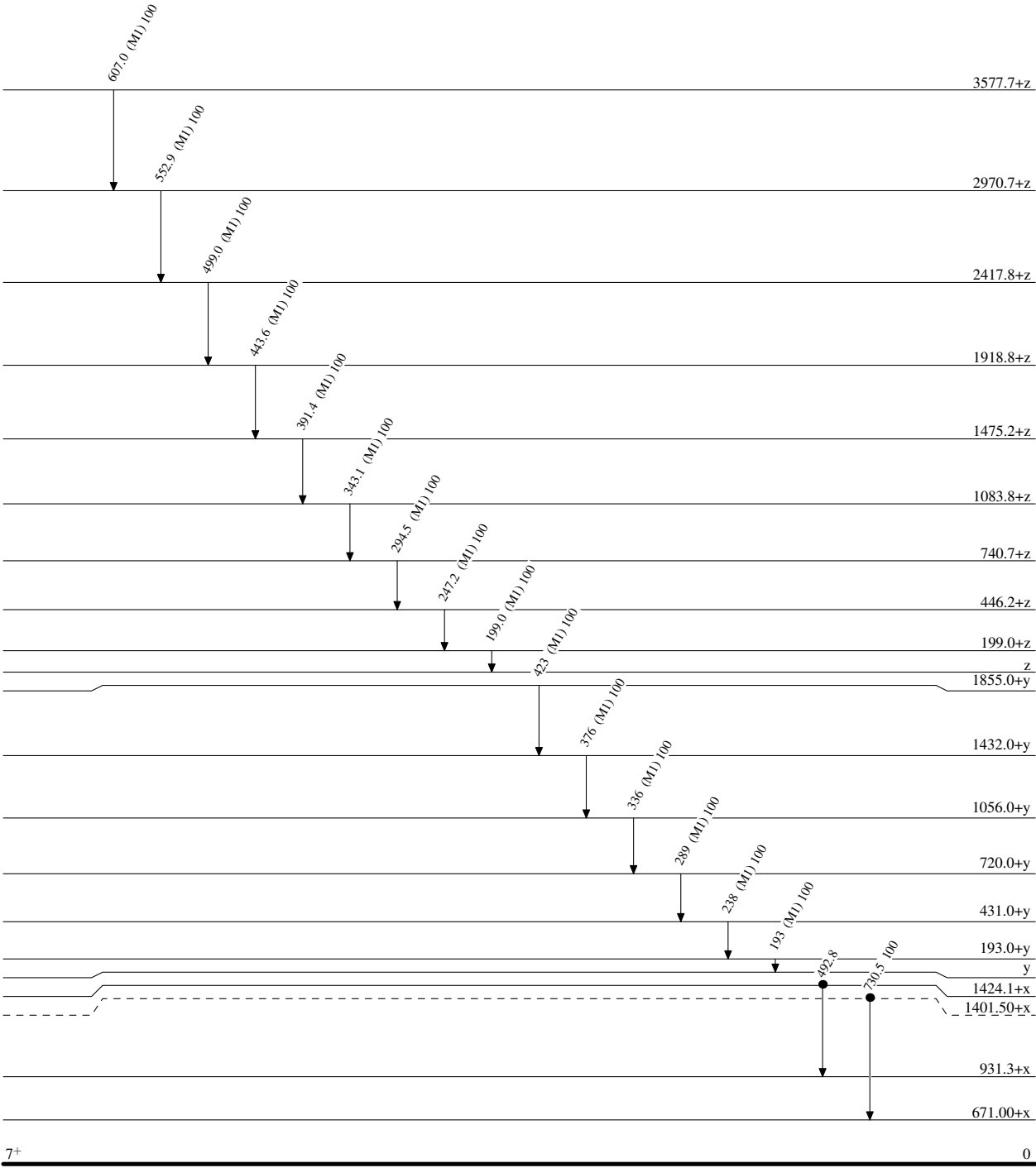
Adopted Levels, Gammas

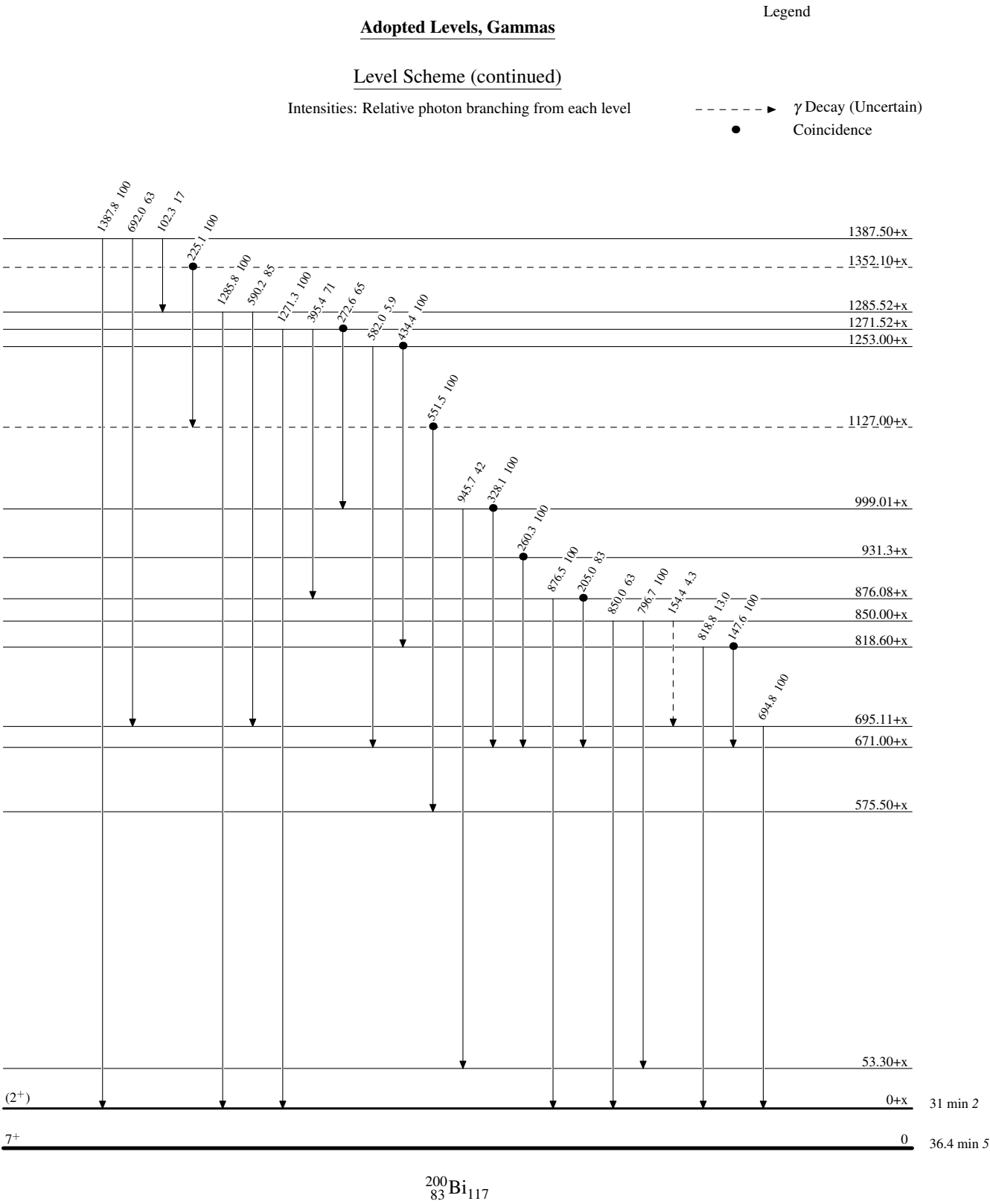
Legend

Level Scheme

Intensities: Relative photon branching from each level

● Coincidence





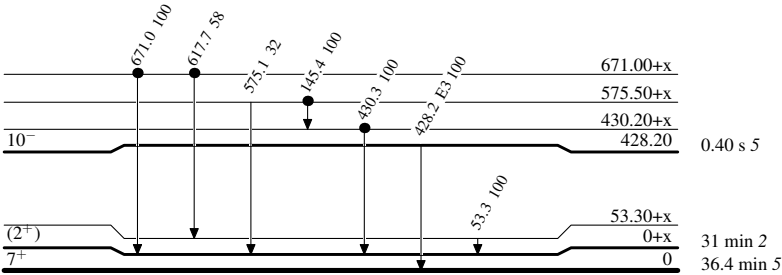
Adopted Levels, Gammas

Legend

Level Scheme (continued)

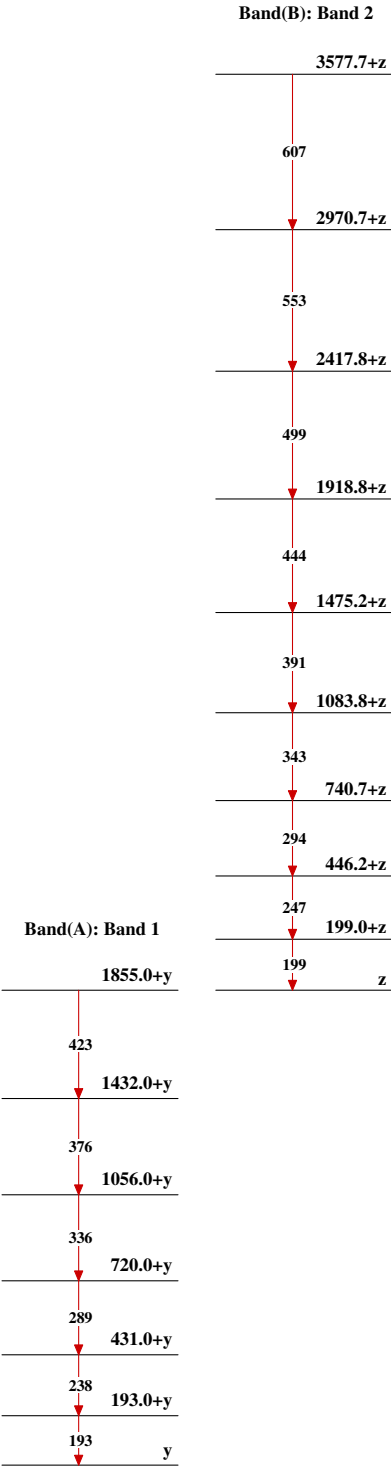
Intensities: Relative photon branching from each level

● Coincidence



$^{200}_{83}\text{Bi}_{117}$

Adopted Levels, Gammas



$^{200}_{83}\text{Bi}_{117}$