

^{215}Bi β^- decay (36.9 s) 2003Ku26

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation		NDS 114, 2023 (2013)	23-Sep-2013

Parent: ^{215}Bi : $E=1347.5+x$; $J^\pi=(25/2 \text{ to } 29/2)^{-}$; $T_{1/2}=36.9 \text{ s } 6$; $Q(\beta^-)=2189 \text{ 15}$; $\% \beta^- \text{ decay}=23.1 \text{ 5}$

^{215}Bi -E, J^π , $T_{1/2}$: From ^{215}Bi Adopted Levels.

^{215}Bi - $Q(\beta^-)$: From 2012Wa38.

^{215}Bi - $\% \beta^-$ decay: $\% \beta^- = 23.8 \text{ 4}$ (2003Ku26) from weighted average of total intensities of five γ rays (226, 255, 293, 308, 419) in cascade, assuming that each γ ray carries the total cascade intensity (see discussion in section 4 of 2003Ku26). Evaluators obtain 23.1% 5 from the weighted average of the same five γ rays using I_γ data and multipolarities assigned in 2003Ku26. The α values were deduced using the BrIcc computer code.

2003Ku26: ^{215}Bi produced by $^{232}\text{Th}(p,X)$ and $^{238}\text{U}(p,X)$ at 1 GeV proton energy, followed by mass separation. Measured E_γ , I_γ , α , $\gamma\gamma$, $\beta\gamma$ coin, $\alpha\gamma$ coin, $\gamma(x \text{ ray})$ coin using large Ge detector for γ , low-energy Ge detector for x rays and low-energy γ rays, plastic scintillator for β .

 ^{215}Po Levels

E(level) [†]	J^π [#]
0.0	9/2 ⁺
293.50 10	(11/2) ⁺
712.60?‡ 23	(15/2 ⁺)
1021.00?‡ 25	(19/2 ⁺)
1247.3?‡ 3	(23/2 ⁺)
1503.2?‡ 5	(23/2 ⁻)
1682.0?‡ 6	(25/2 ⁻)
2001.2?‡ 5	(⁻)
2159.4 6	(⁻)

[†] From E_γ data.

[‡] The orderings of the 158-319-179 and 498-256-226-308-419 γ cascades are not established, the ones given here is just one of the possibilities, thus the positions of the intermediate levels could be different.

[#] From Adopted Levels.

 β^- radiations

E(decay)	E(level)	$I\beta^-$ [‡]	Log ft [†]
(1377 15)	2159.4	6.8 9	5.4
(1535 15)	2001.2?	14.8 16	5.2

[†] Deduced using the LOGFT computer code. 2003Ku26 give 5.18 for 2159 level and 5.48 for 2001 level. These values should be reversed as suggested by γ -ray intensities.

[‡] Absolute intensity per 100 decays.

^{215}Bi β^- decay (36.9 s) **2003Ku26** (continued)

								$\gamma(^{215}\text{Po})$	
E_γ	$I_\gamma^{\text{@}}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.#	α^\dagger	Comments	
158.2 \ddagger 2	3.2 4	2159.4	($-$)	2001.2?	($-$)	[E2]	1.115	$\alpha(\text{K})=0.271$ 4; $\alpha(\text{L})=0.626$ 10; $\alpha(\text{M})=0.166$ 3 $\alpha(\text{N})=0.0426$ 7; $\alpha(\text{O})=0.00816$ 13; $\alpha(\text{P})=0.000752$ 12	
178.7 \ddagger 4	2.2 3	1682.0?	(25/2 $-$)	1503.2?	(23/2 $-$)	[M1]	2.13 4	$\alpha(\text{K})=1.73$ 3; $\alpha(\text{L})=0.305$ 5; $\alpha(\text{M})=0.0721$ 11 $\alpha(\text{N})=0.0186$ 3; $\alpha(\text{O})=0.00388$ 6; $\alpha(\text{P})=0.000502$ 8 $I_{(\gamma+ce)}$: 2003Ku26 list 7.2, evaluators obtain 6.9.	
226.3 \ddagger 1	18.0 10	1247.3?	(23/2 $+$)	1021.00?	(19/2 $+$)	(E2)	0.308	$\alpha(\text{K})=0.1267$ 18; $\alpha(\text{L})=0.1350$ 19; $\alpha(\text{M})=0.0355$ 5 $\alpha(\text{N})=0.00911$ 13; $\alpha(\text{O})=0.001759$ 25; $\alpha(\text{P})=0.0001685$ 24 $I_{(\gamma+ce)}$: 2003Ku26 list 23.7, evaluators obtain 23.5.	
255.9 \ddagger 4	21.9 9	1503.2?	(23/2 $-$)	1247.3?	(23/2 $+$)	(E1)	0.0454	$\alpha(\text{K})=0.0369$ 6; $\alpha(\text{L})=0.00651$ 10; $\alpha(\text{M})=0.001534$ 23 $\alpha(\text{N})=0.000391$ 6; $\alpha(\text{O})=7.97\times 10^{-5}$ 12; $\alpha(\text{P})=9.53\times 10^{-6}$ 14	
293.5 1	14.7 5	293.50	(11/2 $+$)	0.0	9/2 $+$	M1	0.537	$\alpha(\text{K})=0.437$ 7; $\alpha(\text{L})=0.0763$ 11; $\alpha(\text{M})=0.0180$ 3 $\alpha(\text{N})=0.00463$ 7; $\alpha(\text{O})=0.000969$ 14; $\alpha(\text{P})=0.0001253$ 18 I_γ : from coin data. $I_{(\gamma+ce)}$: 2003Ku26 list 22.9, evaluators obtain 22.6.	
308.4 \ddagger 1	22.2 11	1021.00?	(19/2 $+$)	712.60?	(15/2 $+$)	(E2)	0.1161	$\alpha(\text{K})=0.0629$ 9; $\alpha(\text{L})=0.0396$ 6; $\alpha(\text{M})=0.01028$ 15 $\alpha(\text{N})=0.00264$ 4; $\alpha(\text{O})=0.000515$ 8; $\alpha(\text{P})=5.17\times 10^{-5}$ 8 $I_{(\gamma+ce)}$: 2003Ku26 list 24.9, evaluators obtain 24.8.	
319.1 \ddagger 3	4.0 4	2001.2?	($-$)	1682.0?	(25/2 $-$)	[M1]	0.427	$\alpha(\text{K})=0.347$ 5; $\alpha(\text{L})=0.0606$ 9; $\alpha(\text{M})=0.01429$ 21 $\alpha(\text{N})=0.00368$ 6; $\alpha(\text{O})=0.000770$ 11; $\alpha(\text{P})=9.95\times 10^{-5}$ 15	
419.1 \ddagger 2	20 2	712.60?	(15/2 $+$)	293.50	(11/2 $+$)	(E2)	0.0497	$\alpha(\text{K})=0.0321$ 5; $\alpha(\text{L})=0.01325$ 19; $\alpha(\text{M})=0.00337$ 5 $\alpha(\text{N})=0.000865$ 13; $\alpha(\text{O})=0.0001713$ 25; $\alpha(\text{P})=1.82\times 10^{-5}$ 3 $I_{(\gamma+ce)}$: 2003Ku26 list 24.4, evaluators obtain 21.0. Value in 2003Ku26 corresponds to M1 for 419.1 γ .	
498.0 1	15.4 10	2001.2?	($-$)	1503.2?	(23/2 $-$)	[E2]	0.0324	$\alpha(\text{K})=0.0223$ 4; $\alpha(\text{L})=0.00758$ 11; $\alpha(\text{M})=0.00190$ 3 $\alpha(\text{N})=0.000489$ 7; $\alpha(\text{O})=9.76\times 10^{-5}$ 14; $\alpha(\text{P})=1.070\times 10^{-5}$ 15	

\dagger Additional information 1.

\ddagger The orderings of the 158-319-179 and 498-256-226-308-419 cascades are not established, the one given here is just one of the possibilities.

From Adopted Gammas or assumed from J^π assignments.

@ Absolute intensity per 100 decays.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

- $I_\gamma < 2\% \times I_\gamma^{\max}$
- $I_\gamma < 10\% \times I_\gamma^{\max}$
- $I_\gamma > 10\% \times I_\gamma^{\max}$
- Coincidence

