

Adopted Levels, Gammas

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

Q(β^-)=-87 10; S(n)=5947 8; S(p)=4074 7; Q(α)=8178 4 2012Wa38
 S(2n)=10818 8, S(2p)=10603 8 (2012Wa38).

²¹⁵At evaluated by S.K. Basu, G. Mukherjee, B. Singh, Srijit Bhattacharya, A. De, D. Mondal.

²¹⁵At Levels

Shell-model configuration assignments are based on predicted level energies, and on those assigned in ²¹⁴Po and ²¹⁶Rn (1993Li07).

Cross Reference (XREF) Flags

- A ²¹⁵Po β^- decay (1.781 ms)
- B ²¹⁹Fr α decay (20 ms)

E(level) [†]	J ^{π}	T _{1/2}	XREF	Comments
0.0 [‡]	9/2 ⁻	0.10 ms 2	AB	% α =100 T _{1/2} : from 1951Me10. J ^{π} : favored α decay (HF=3.3) to ²¹¹ Bi g.s. (J ^{π} =9/2 ⁻); consistent with other odd-A isotopes of At.
169.88 [#] 10	(7/2) ⁻		B	J ^{π} : 169.9 γ M1+E2 to 9/2 ⁻ . In analogy with 896 level (J ^{π} =7/2 ⁻) in ²⁰⁹ Bi, and to other odd-A isotopes of At. Also shell-model prediction.
352.00 [‡] 10	(5/2) ⁻		B	J ^{π} : 352.0 γ E2 to 9/2 ⁻ . In analogy with 2826 level (J ^{π} =5/2 ⁻) in ²⁰⁹ Bi. Also shell-model prediction.
364.0 [@] 10	(13/2) ⁺		B	J ^{π} : shell model.
472.29 [‡] 17	(7/2) ⁻		B	J ^{π} : 472.2 γ (M1) to 9/2 ⁻ . Also shell-model prediction.
517.00 [‡] 20	(13/2) ⁻		B	J ^{π} : 517.0 γ E2 to 9/2 ⁻ . 153 γ to 363 level (13/2 ⁺). Also shell model prediction.
580 [‡]	(3/2) ⁻		B	J ^{π} : shell-model prediction.

[†] From least-squares fit to E γ values.

[‡] Member of configuration= $\pi h_{9/2}^3 \otimes \nu g_{9/2}^4$.

[#] Member of configuration= $\pi h_{9/2}^2 \otimes \pi f_{7/2} \otimes \nu g_{9/2}^4$.

[@] Member of configuration= $\pi h_{9/2}^2 \otimes \pi i_{13/2} \otimes \nu g_{9/2}^4$.

γ (²¹⁵At)

E _i (level)	J _i ^{π}	E γ	I γ	E _f	J _f ^{π}	Mult. [‡]	δ	α [†]	Comments
169.88	(7/2) ⁻	169.9 1	100	0.0	9/2 ⁻	M1+E2	0.73 16	2.06 19	α (K)=1.50 20; α (L)=0.425 13; α (M)=0.106 5; α (N)=0.0274 12; α (O)=0.00566 19 α (P)=0.000702 10
352.00	(5/2) ⁻	352.0 1	100	0.0	9/2 ⁻	E2		0.0830	α (K)=0.0479 7; α (L)=0.0262 4; α (M)=0.00679 10; α (N)=0.001756 25; α (O)=0.000354 5 α (P)=4.01 \times 10 ⁻⁵ 6

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)
 $\gamma(^{215}\text{At})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult. [‡]	α^\dagger	Comments
472.29	(7/2 ⁻)	302.6 3 472.2 2	≈ 12 100 30	169.88 0.0	(7/2 ⁻) 9/2 ⁻	(M1)	0.1613	$\alpha(\text{K})=0.1312$ 19; $\alpha(\text{L})=0.0229$ 4; $\alpha(\text{M})=0.00542$ 8; $\alpha(\text{N})=0.001403$ 20; $\alpha(\text{O})=0.000301$ 5 $\alpha(\text{P})=4.16 \times 10^{-5}$ 6
517.00	(13/2 ⁻)	153 [#]	≈ 3	364.0	(13/2 ⁺)	[E1]	0.1617	$\alpha(\text{K})=0.1290$ 18; $\alpha(\text{L})=0.0249$ 4; $\alpha(\text{M})=0.00591$ 9; $\alpha(\text{N})=0.001513$ 22; $\alpha(\text{O})=0.000312$ 5 $\alpha(\text{P})=3.87 \times 10^{-5}$ 6
		517.0 2	100 21	0.0	9/2 ⁻	E2	0.0310	$\alpha(\text{K})=0.0214$ 3; $\alpha(\text{L})=0.00725$ 11; $\alpha(\text{M})=0.00183$ 3; $\alpha(\text{N})=0.000473$ 7; $\alpha(\text{O})=9.69 \times 10^{-5}$ 14 $\alpha(\text{P})=1.166 \times 10^{-5}$ 17

[†] Additional information 1.

[‡] From K x ray/I γ ratios in coincidence with individual α -particle groups (1993Li07).

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

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Legend

Level Scheme

Intensities: Relative photon branching from each level

 - - - - - \blacktriangleright γ Decay (Uncertain)
