Adopted Levels, Gammas

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	C. Morse	NDS 189,111 (2023)	23-Sep-2022

$Q(\beta^-)$=1093 *10*; S(n)=5795 *11*; S(p)=5051 *15*; $Q(\alpha)$=5650 *syst*   2021Wa16
$\Delta Q(\alpha)$=101 (2021Wa16).
S(2n)=10761 *11*, S(2p)=12454 SY *298* (2021Wa16).

^{251}Bk Levels

Cross Reference (XREF) Flags

A	^{251}Cm β^- decay
B	^{255}Es α decay

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$	XREF	Comments
0[#]	(3/2$^-$)	56 min *1*	AB	%β^-=100
				configuration=π3/2$^-$[521] (1978Lo13)
				T$_{1/2}$: Weighted average of 55.6 min *11* (1984Li05) and 57.0 min *17* (1967Di02).
				Other: 55.6 min (1978Lo13, citing unpublished data).
				%β^-: No α decay, SF expected; calculated T$_{1/2}(\alpha)\approx2\times10^9$ min (2019Mo01),
				calculated T$_{1/2}$(SF)$\approx5\times10^7$ min (1985Lo17).
32.5[#] *6*	(5/2$^-$)		AB	
35.5[@] *14*	(7/2$^+$)	40 μs *3*	AB	configuration=π7/2$^+$[633] (1978Lo13)
				T$_{1/2}$: From ^{255}Es α decay.
72[@]	(9/2$^+$)		B	J$^{\pi}$: Rotational band member.
123[@]	(11/2$^+$)		B	J$^{\pi}$: Rotational band member.
269.1 *10*	(5/2$^+$)		AB	configuration=π5/2$^+$[642] (1978Lo13)
311.7 *10*	(1/2$^+$)		A	configuration=π1/2$^+$[400] (1978Lo13)
422.3[&] *8*	(3/2$^-$)[b]		A	configuration=π1/2$^-$[530] (1978Lo13)
438.2[&] *10*	(1/2$^-$)[b]		A	
542.6[a] *8*	(1/2$^-$)[b]		A	configuration=π1/2$^-$[521] (1978Lo13)
562.5[a] *7*	(3/2$^-$)[b]		A	
978.4 *6*	(1/2$^-$,3/2$^-$)[b]		A	

† From least-squares fit to Eγ, with uncertainties assumed to be 1 keV from ^{251}Cm β^- decay. For levels only observed in ^{255}Es α decay, energies are from Eα.

‡ From ^{251}Cm β^- decay (1978Lo13), unless only observed in ^{255}Es α decay.

Band(A): π3/2$^-$[521].

@ Band(B): π7/2$^+$[633].

& Seq.(C): π1/2$^-$[530].

a Seq.(D): π1/2$^-$[521].

b From ^{251}Cm β decay, log *ft* values exclude J$\geq$5/2. Aside from the 978.4 keV state, J$^{\pi}$ and configuration assignments are largely based on analogy with the level scheme observed in ^{249}Cm β decay to ^{249}Bk as discussed in 1978Lo13.

From ENSDF

Adopted Levels, Gammas (continued)

$\gamma(^{251}$Bk)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f
32.5	$(5/2^-)$	32.6	100	0	$(3/2^-)$	542.6	$(1/2^-)$	542.7	100	0	$(3/2^-)$
269.1	$(5/2^+)$	233.6	100	35.5	$(7/2^+)$	562.5	$(3/2^-)$	530.0	100 *7*	32.5	$(5/2^-)$
		269.1‡		0	$(3/2^-)$			562.5	63 *20*	0	$(3/2^-)$
311.7	$(1/2^+)$	311.7	100	0	$(3/2^-)$	978.4	$(1/2^-,3/2^-)$	415.9	16 *7*	562.5	$(3/2^-)$
422.3	$(3/2^-)$	389.7	100 *15*	32.5	$(5/2^-)$			435.8	15 *5*	542.6	$(1/2^-)$
		422.3	56 *7*	0	$(3/2^-)$			945.9	15 *8*	32.5	$(5/2^-)$
438.2	$(1/2^-)$	438.2	100	0	$(3/2^-)$			978.2	100 *13*	0	$(3/2^-)$

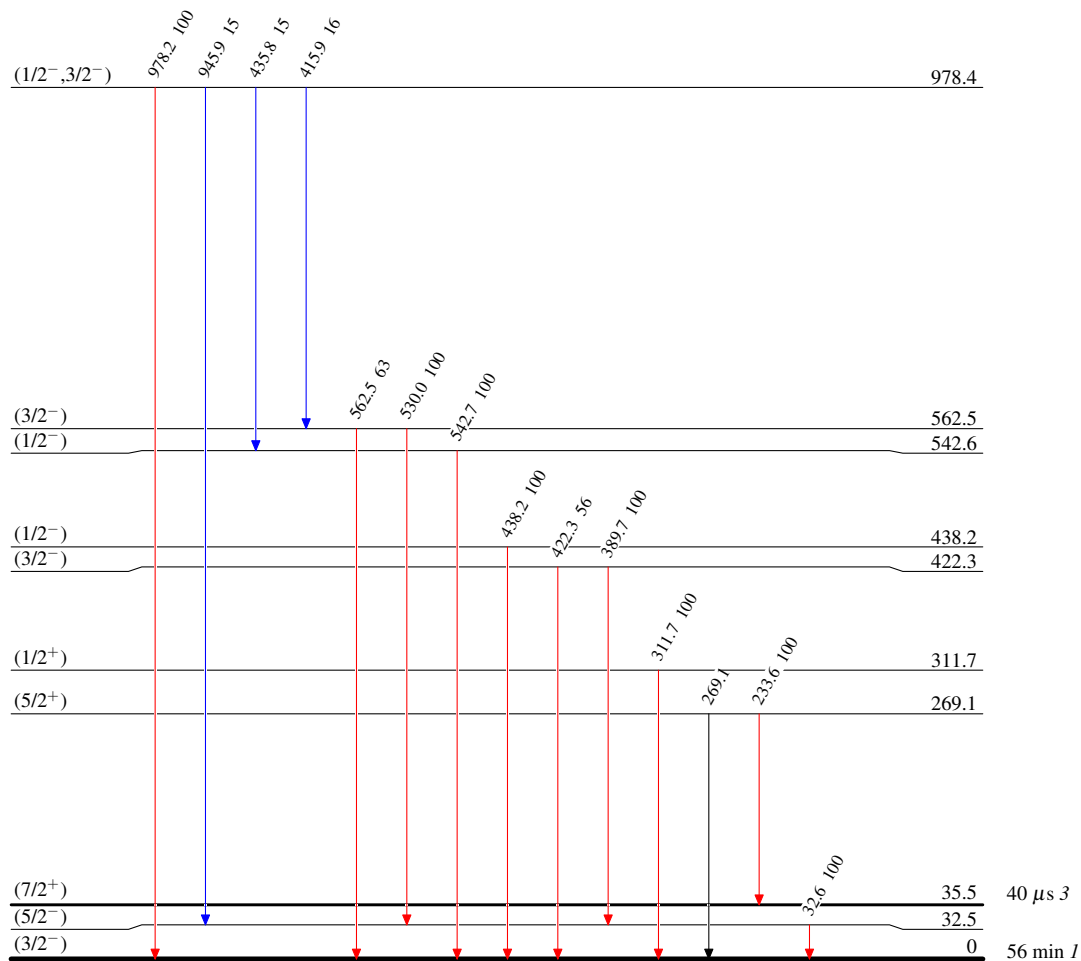† From ^{251}Cm β^- decay, except where noted.
‡ From ^{255}Es α decay.

Adopted Levels, Gammas

<u>Level Scheme</u>

Intensities: Type not specified

Legend

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

978.2 100
945.9 15
435.8 15
415.9 16

562.5 63
530.0 100
542.7 100

438.2 100
422.3 56
389.7 100

311.7 100
269.1
233.6 100

326 100

$(1/2^-,3/2^-)$ 978.4

$(3/2^-)$ 562.5
$(1/2^-)$ 542.6

$(1/2^-)$ 438.2
$(3/2^-)$ 422.3

$(1/2^+)$ 311.7
$(5/2^+)$ 269.1

$(7/2^+)$ 35.5   40 μs 3
$(5/2^-)$ 32.5
$(3/2^-)$ 0   56 min 1

$^{251}_{97}$Bk$_{154}$

Adopted Levels, Gammas

Seq.(D): $\pi 1/2^-$ [521]

(3/2$^-$)　　562.5

(1/2$^-$)　　542.6

Seq.(C): $\pi 1/2^-$ [530]

(1/2$^-$)　　438.2

(3/2$^-$)　　422.3

Band(B): $\pi 7/2^+$ [633]

(11/2$^+$)　　123

(9/2$^+$)　　72

Band(A): $\pi 3/2^-$ [521]

(7/2$^+$)　　35.5

(5/2$^-$)　　32.5

33

(3/2$^-$)　　0

$^{251}_{97}$Bk$_{154}$