Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	B. Singh, J. K. Tuli, E. Browne	NDS 170, 499 (2020)	8-Oct-2020

Q(β^-)=−2100 *70*; S(n)=7480 *SY*; S(p)=3950 *50*; Q(α)=5630 *50* 2017Wa10
Estimated ΔS(n))=110 (2017Wa10).
S(2n)=13820 *70*, S(2p)=10050 *50* (2017Wa10).
1950Ma14: production and identification of ^{233}Np in ^{233}U(d,2n) and ^{235}U(d,4n) reactions followed by chemical separation.
Theoretical studies: consult the NSR database at www.nndc.bnl.gov for 13 references dealing with theoretical calculations about decay modes and half-lives, and eight for nuclear structure.
Additional information 1.

^{233}Np Levels

Cross Reference (XREF) Flags

A ^{233}Pu ε decay (20.9 min)
B ^{237}Am α decay (73.6 min)

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0[†]	(5/2$^+$)	36.2 min *1*	AB	%ε=100; %$\alpha\le$0.0007 (1950Ma14) %α: ε(K)/(α)=1.5×10^5 was obtained by 1950Ma14 from α and L x ray+K x ray counts per minute. No α decay was observed by 1958Le73 who set an upper limit of 0.003%. J$^\pi$: analogy to other neptunium isotopes suggests π5/2[642] state. T$_{1/2}$: measurement of 1973We08. Other measurement: 35 min *3* (1950Ma14).
34.4[†] *3*	(7/2$^+$)		A	J$^\pi$: proposed by 1973Ja06 in ^{233}Pu ε decay. Assignment should be considered tentative. It is also possible that this level corresponds to ≈ 50-keV level populated in ^{237}Am α decay and has the 5/2$^-$, π5/2[523] configuration.
≈50	5/2$^{(-)}$		B	J$^\pi$: favored α decay from 5/2$^{(-)}$ g.s. of ^{237}Am; π5/2[523] state.
512.5 *4*			A	
534.7 *4*			A	
558.7 *4*			A	
583.4 *5*			A	
725.9 *5*			A	
770.0 *6*			A	
830.9 *3*			A	
991.8 *4*			A	
1012.4 *4*			A	
1035.3 *5*			A	
1062.6 *5*			A	
1243.3 *6*			A	

[†] Possible Member of π5/2[642] band.

Adopted Levels, Gammas (continued)

$\gamma(^{233}Np)$

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	E_i(level)	E_γ †	I_γ †	E_f	J_f^π
34.4	$(7/2^+)$	(34.4)		0.0	$(5/2^+)$	991.8	221.7 *4*	51 *6*	770.0	
512.5		478.3 *3*	100 *13*	34.4	$(7/2^+)$		457.4 *3*	44 *10*	534.7	
		512.4 *3*	93 *21*	0.0	$(5/2^+)$		991.7 *3*	100 *10*	0.0	$(5/2^+)$
534.7		500.3 *3*	43 *4*	34.4	$(7/2^+)$	1012.4	978.1 *3*	48 *9*	34.4	$(7/2^+)$
		534.8 *3*	100 *4*	0.0	$(5/2^+)$		1012.3 *3*	100 *10*	0.0	$(5/2^+)$
558.7		524.4 *3*	48 *8*	34.4	$(7/2^+)$	1035.3	1000.5 *3*	100 *22*	34.4	$(7/2^+)$
		558.8 *3*	100 *10*	0.0	$(5/2^+)$		1035.4 *5*	32 *9*	0.0	$(5/2^+)$
583.4		583.3 *4*	100	0.0	$(5/2^+)$	1062.6	504.0 *3*	100 *12*	558.7	
725.9		191.0 *3*	100 *14*	534.7			1028.4 *5*	32 *9*	34.4	$(7/2^+)$
		726.2 *4*	69 *11*	0.0	$(5/2^+)$	1243.3	180.8 *4*	50 *11*	1062.6	
770.0		235.4 *3*	100	534.7			207.4 *3*	100 *9*	1035.3	
830.9		247.4 *4*	65 *18*	583.4			473.2 *4*	30 *7*	770.0	
		830.9 *3*	100 *12*	0.0	$(5/2^+)$					

† From ^{233}Pu ε decay.

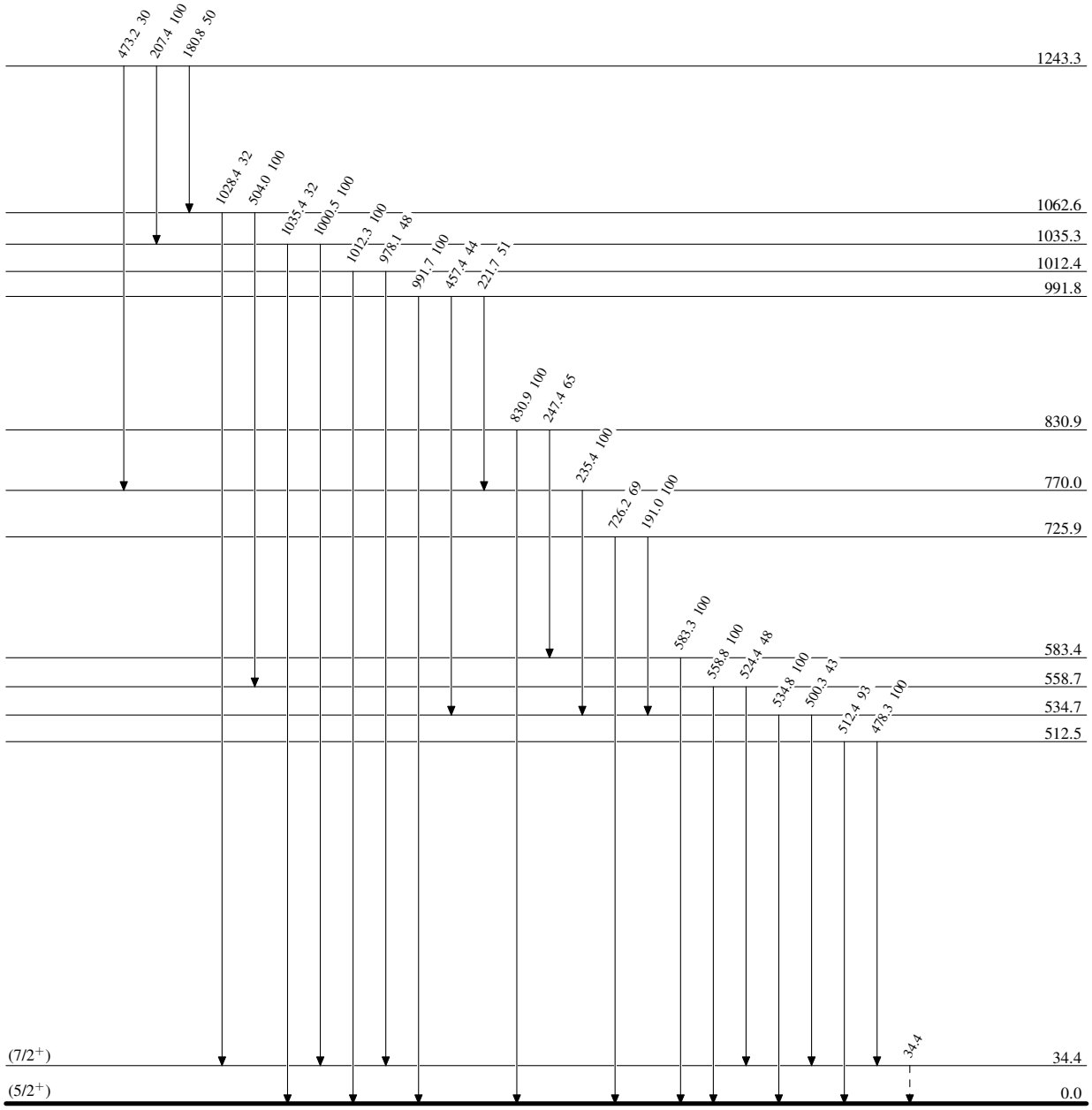
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{233}_{93}Np_{140}$