^{240}U β^- decay (14.1 h) 1981Hs02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, E. Browne	NDS 109, 2439 (2008)	31-Jul-2008

Parent: ^{240}U: E=0; $J^\pi=0^+$; $T_{1/2}$=14.1 h *1*; Q(β^-)=400 *16*; %β^- decay=100.0
1981Hs02: measured Eγ, Iγ, $T_{1/2}$; radio-chemical separation.
Others: 1959Bu20, 1953Kn23, 1948Hy61.

^{240}Np Levels

E(level)†	J^π‡	Comments
0	(5^+)	
0+x	(1^+)	Additional information 1. E(level): x=20 *15* (1981Hs02,2003Au02). 1994VoZZ report observing influence of atomic surroundings on isomeric transition probability in ^{240m}Np.
44.17+x *6*	(1^+)	
61.4+x? *1*		
82.6+x? *1*		
110.7+x? *1*		
111.6+x? *2*		
189.7+x *1*	$(0^-,1)$	
280.0+x? *1*	$(0^-,1)$	
294.8+x? *3*	$(0^-,1)$	
299.8+x *2*	$(0^-,1)$	

† From least-squares fit to Eγ's.
‡ From 'Adopted Levels'.

β^- radiations

E(decay)	E(level)	Iβ^-†‡	Log *ft*†	Comments
(5×10^1@ *5*)	299.8+x	<0.03	>7.1	av Eβ=20.6 *59* Iβ^-: <0.04 (1981Hs02).
(5×10^1@ *5*)	294.8+x?	<0.010	>7.6	av Eβ=22.2 *59*
(6×10^1@ *6*)	280.0+x?	<0.9	>5.9	av Eβ=25.9 *60*
(1.1×10^2@ *11*)	189.7+x	<3.5	>6.2	av Eβ=50.9 *63*
(1.4×10^2#@ *15*)	111.6+x?	<0.17	>7.9	av Eβ=73.6 *66*
(1.4×10^2#@ *15*)	110.7+x?	<2.5	>6.8	av Eβ=73.9 *66*
(1.6×10^2#@ *16*)	82.6+x?	<0.14	>8.2	av Eβ=82.3 *67*
(1.8×10^2@ *18*)	44.17+x	≈25	≈6.1	av Eβ=94.1 *68* Iβ^-: 55 (1981Hs02).
(2.0×10^2@ *20*)	0+x	≈75	≈5.8	av Eβ=107.8 *69* E(decay): 360 *20* (1953Kn23), 360 (1959Bu20). Iβ^-: 38 (1981Hs02).

† Since the multipolarities of transitions are unknown, the β^- feedings given here are based on the assumption of mult=M1 or E1 for all transitions, except that for 44.1γ which is M1(+E2). Corresponding log *ft*'s are deduced using x=20 *15*; and are considered as approximate or lower limits.
‡ Absolute intensity per 100 decays.
# Existence of this branch is questionable.
@ Estimated for a range of levels.

^{240}U β^- decay (14.1 h) 1981Hs02 (continued)

$\gamma(^{240}Np)$

Iγ normalization: Based on absolute intensity per 100 ^{244}Pu α decays (1981Hs02).

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[‡]	Comments
(17.2)		61.4+x?		44.17+x	(1$^+$)				
44.10 *7*	1.05 *5*	44.17+x	(1$^+$)	0+x	(1$^+$)	M1(+E2)	0.07 *7*	59 *10*	α(L)=44 *7*; α(M)=10.9 *20*; α(N+..)=3.8 *7* α(N)=3.0 *6*; α(O)=0.73 *13*; α(P)=0.139 *20*; α(Q)=0.01030 *18* E_γ: from 1969ScZZ. Mult.,δ: from ce data of 1959Bu20. Other: I(E)/I(M1)<0.02 (1964As11). L1/L2/L3=4/1/<0.5 (1959Bu20).
49.1 *2*	0.007 *2*	110.7+x?		61.4+x?					
50.3 *2*	0.005 *1*	111.6+x?		61.4+x?					
66.5 *1*	0.154 *15*	110.7+x?		44.17+x	(1$^+$)				
78.1 *2*	0.004 *1*	189.7+x	(0$^-$,1)	111.6+x?					
82.6 *1*	0.014 *1*	82.6+x?		0+x	(1$^+$)				
128.3 *1*	0.087 *2*	189.7+x	(0$^-$,1)	61.4+x?					
145.4 *1*	0.081 *2*	189.7+x	(0$^-$,1)	44.17+x	(1$^+$)				
[x]167.3 *2*	0.008 *1*								
169.2 *1*	0.115 *8*	280.0+x?	(0$^-$,1)	110.7+x?					
189.7 *1*	0.24 *1*	189.7+x	(0$^-$,1)	0+x	(1$^+$)				
[x]203.9 *2*	0.005 *1*								
212.3 *5*	0.0015 *3*	294.8+x?	(0$^-$,1)	82.6+x?					
255.6 *2*	0.0040 *3*	299.8+x	(0$^-$,1)	44.17+x	(1$^+$)				
280.1 *1*	0.016 *1*	280.0+x?	(0$^-$,1)	0+x	(1$^+$)				
294.8 *3*	0.0019 *4*	294.8+x?	(0$^-$,1)	0+x	(1$^+$)				
299.8 *2*	0.013 *1*	299.8+x	(0$^-$,1)	0+x	(1$^+$)				

[†] Absolute intensity per 100 decays.
[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[x] γ ray not placed in level scheme.

^{240}U β^- decay (14.1 h) 1981Hs02

Decay Scheme

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