Coulomb excitation

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 108, 681 (2007)	1-Jun-2006

Additional information 1.

See 1981Se07 for calculated B(E2) values (from J to J+2) for excitations of g.s. band members up to J≈30; see 1981Ma35 for calculations of B(E2) values for excitation of 2^+ levels at 43 and 851 keV. See also 1982Gu05 for B(E2; 0^+ to 2^+) calculations.

See 1971Fo17, 1973Be44, 1977Mi11 for deduced $\beta(2)$, $\beta(4)$ deformation parameters and discussions. See 1981Ko09 for deduced $\beta(2)$, $\beta(4)$, $\beta(6)$ deformation parameters and multipole moments.

^{234}U(α,α') E=2.2 MeV	s ce	(1961Re02)
^{234}U(d,d′)		(1965Fr11)
^{234}U(α,α') E=16-19 MeV	s α'	(1974Mc15,1973Be44,1971Fo17)
^{234}U($\alpha,\alpha'\gamma$) E=19 MeV		(2001Ga55)
^{234}U(Kr,Kr′γ) E=370, 450 MeV	semi γ	(1977BeXT)
^{234}U(^{208}Pb,^{208}Pb′γ) E=5.3 MeV/nucleon		(1980Ow01,1982Ow01)

^{234}U Levels

E(level)	J^π †	$T_{1/2}$	Comments
0.0‡	0^+		
43.498‡ *1*	2^+	230 ps *8*	B(E2)↑=10.90 *10* (1973Be44) Other measured values: B(E2)=11.4 *17* (1961Re02), 9.7 *8* (1965Fr11), 10.3 *3* (1971Fo17). $T_{1/2}$: calculated by the evaluators from B(E2)=10.90 *10* and α(43.5γ)=724. $T_{1/2}$=0.252 ns *7* was measured in ^{238}Pu α decay by Ag(t) (1970To08).
143.352‡ *3*	4^+		B(E4)↑=1.96 *56* (1973Be44)
296.072‡ *4*	6^+		
497.04‡ *3*	8^+		
741.2‡ *5*	10^+		
849.3#	3^-		B(E3)↑≤0.59 *7* (1974Mc15) 849.3- and 851.7-keV levels were not resolved.
851.7@	2^+	≥1.74 ps	B(E2)↑≤0.098 *13* (1974Mc15) $T_{1/2}$: calculated by the evaluators from B(E2) value and Iγ(851γ)/(sum of I(γ+ce)′s from level)=0.27.
926.9&	2^+	1.38 ps *17*	B(E2)↑=0.123 *13* (1974Mc15) $T_{1/2}$: calculated by the evaluators from B(E2) value and Iγ(926γ)/(sum of I(γ+ce)′s from level)=0.415 *23*.
1023[a]	3^-		B(E3)↑=0.22 *5* (1974Mc15)
1023.8‡ *7*	12^+		
1312	3^-		B(E3)↑=0.22 *7* (1974Mc15)
1340.8‡	14^+		
1688.0‡	16^+		
2063.0‡	18^+		
2464.2‡	20^+		
2889.7‡	22^+		
3339‡	24^+		
3808‡	26^+		
4297?‡	(28^+)		

† Adopted values.

‡ Band(A): $K^\pi=0^+$ g.s. band. Level energies for lower members of the band were determined more accurately in the decay studies.

Continued on next page (footnotes at end of table)

Coulomb excitation (continued)

^{234}U Levels (continued)

The level energies with uncertainties are from "Adopted Levels" and they have been used to build up the higher spin members of the band.

[#] Band(B): $K^\pi=0^-$ octupole-vibrational band.

[@] Band(C): $K^\pi=0^+$ band.

[&] Band(D): $K^\pi=2^+$ γ-vibrational band.

[a] Band(E): $K^\pi=2^-$ octupole-vibrational band.

$\gamma(^{234}U)$

E_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
43.5	43.498	2^+	0.0	0^+	E2	E_γ: from 1961Re02 (s ce). (Ice(L1)+Ice(L2))/Ice(L3)=1.30 *15*, [Ice(M)+Ice(N)]/Ice(L)=0.33 *4* (1961Re02).
99.86 *1*	143.352	4^+	43.498	2^+		E_γ: from ^{238}Pu α decay. Energy of this transition is not given in 1982Ow01.
152.6	296.072	6^+	143.352	4^+		
200.7	497.04	8^+	296.072	6^+		
244.1	741.2	10^+	497.04	8^+		
282.6	1023.8	12^+	741.2	10^+		
316.8	1340.8	14^+	1023.8	12^+		
347.2	1688.0	16^+	1340.8	14^+		
375.0	2063.0	18^+	1688.0	16^+		
401.2	2464.2	20^+	2063.0	18^+		
425.5	2889.7	22^+	2464.2	20^+		
449	3339	24^+	2889.7	22^+		
469	3808	26^+	3339	24^+		
489[‡]	4297?	(28^+)	3808	26^+		

[†] From 1982Ow01 (semi γ), except where noted.

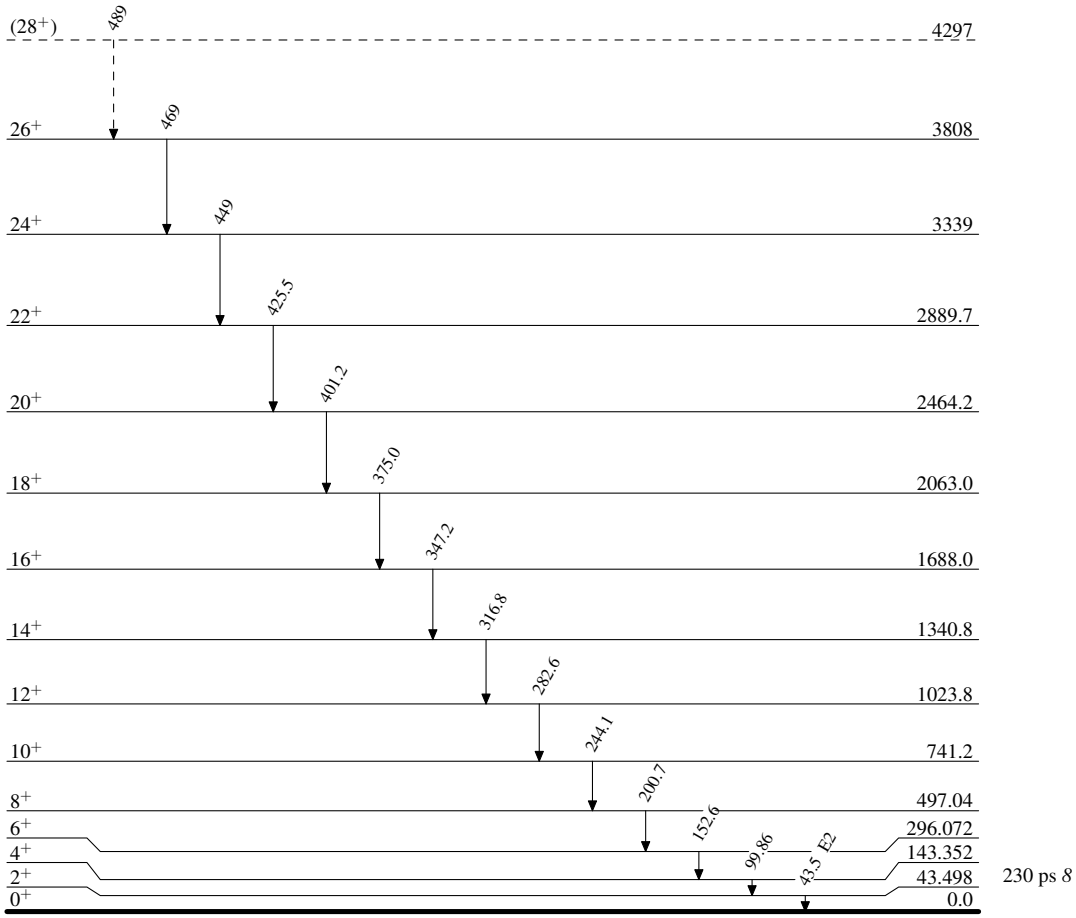
[‡] Placement of transition in the level scheme is uncertain.

Legend

Coulomb excitation

Level Scheme

γ Decay (Uncertain)



$^{234}_{92}U_{142}$

Coulomb excitation