Coulomb excitation 1982Ow01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Shaofei Zhu	NDS 182, 2 (2022).	1-Apr-2022

1982Ow01: 5.3-MeV/A ^{208}Pb beam on ^{236}U target. Detectors: Ge(Li) and position-sensitive gas detector; Measured: Eγ, Iγ; Deduced: B(E2) in g.s. band. See also: 1980Ow01.

Coulomb excitation with light ions: (1961Re02,1965Fr11,1960Du10).

α: Additional information 1.

^{236}U Levels

E(level)†	J$^\pi$#	T$_{1/2}$	Comments
0	0$^+$		
45.2430 *20*	2$^+$	218 ps *4*	B(E2)↑=11.60 *15* B(E2)↑: from 1973Be44; others: 13.1 *20* (1961Re02), 11.62 *23* (1971Fo17). T$_{1/2}$: from B(E2) and α=589 *9* of neutral atoms without being corrected for changes due to high ionic charge.
149.480 *5*	4$^+$	124‡ ps *7*	B(E4)↑=1.7 e^{2}b^4 *6* (1973Be44); positive sign (1975Gu21).
309.788 *6*	6$^+$	58‡ ps *3*	
522.26 *4*	8$^+$	23.9‡ ps *19*	B(E2)↑=6.1 *8* (1982Ow01)
687.47 *7*	1$^-$		
744.1 *8*	3$^-$		B(E3)↑=0.53 *7* (1974Mc15)
782.4 *5*	10$^+$	11.6‡ ps *11*	B(E2)↑=5.0 *4* (1982Ow01)
847.5 *13*	5$^-$		
959	2$^+$		B(E2)↑=0.18 *2* (1974Mc15) E(level),J$^\pi$: from 1974Mc15.
1001.5 *17*	7$^-$		
1040	3$^-$		B(E3)↑=0.31 *8* (1974Mc15) E(level),J$^\pi$: from 1974Mc15.
1085.4 *7*	12$^+$	5.5‡ ps *+18–33*	B(E2)↑=4.1 *6* (1982Ow01)
1150	3$^-$		B(E3)↑=0.16 *6* (1974Mc15) E(level),J$^\pi$: from 1974Mc15.
1200.5 *19*	9$^-$		
1426.4 *9*	14$^+$	2.8 ps *3*	B(E2)↑=4.5 *5* (1982Ow01) T$_{1/2}$: deduced by the evaluator from B(E2) and α=0.129.
1445.5 *22*	11$^-$		
1734.5 *24*	13$^-$		
1801.0 *10*	16$^+$	2.1 ps *2*	B(E2)↑=3.8 *3* (1982Ow01) T$_{1/2}$: deduced by evaluator from B(E2) and α=0.100.
2062 *3*	15$^-$		
2204.0 *12*	18$^+$	1.17 ps *11*	B(E2)↑=4.7 *5* (1982Ow01) T$_{1/2}$: deduced by the evaluators from B(E2) and α=0.081.
2428 *3*	17$^-$		
2631.8 *13*	20$^+$	0.84 ps *12*	B(E2)↑=4.9 *7* (1982Ow01) T$_{1/2}$: deduced by evaluator from B(E2) and α=0.069.
2825?	(19$^-$)		
3081.0 *14*	22$^+$	0.65 ps *15*	B(E2)↑=4.9 *11* (1982Ow01) T$_{1/2}$: deduced by evaluator from B(E2) and α=0.0614.
3550.0 *17*	24$^+$	0.41 ps *8*	B(E2)↑=6.3 *12* (1982Ow01) T$_{1/2}$: deduced by evaluator from B(E2) and α=0.0552.
4039.0 *20*	26$^+$	0.33 ps *9*	B(E2)↑=6.3 *16* (1982Ow01) T$_{1/2}$: deduced by evaluator from B(E2) and α=0.0498.
4549.0 *22*	28$^+$	0.17 ps *7*	B(E2)↑=10 *4* (1982Ow01) T$_{1/2}$: deduced by the evaluators from B(E2) and α=0.0451.
≈5076?	30$^+$		

Continued on next page (footnotes at end of table)

Coulomb excitation 1982Ow01 (continued)

^{236}U Levels (continued)

† From a least-squares fit to γ-ray energies.
‡ Recoil Distance Doppler in Coulomb excitation (1976Gu06).
# From 1982Ow01, unless otherwise noted.

γ(^{236}U)

E_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult. †	α	Comments
45.243‡ *2*	45.2430	2^+	0	0^+	E2	589 *8*	α(L)=429 *6*; α(M)=118.6 *17*; α(N)=32.1 *5*; α(O)=7.36 *10*; α(P)=1.191 *17*; α(Q)=0.00285 *4* Mult.: from L_{1+2}/L_3=1.10 *15*; M+N/L=0.34 *4* (1961Re02).
(56.6‡ *8*)	744.1	3^-	687.47	1^-	[E2]	199 *9*	α(L)=145 *7*; α(M)=40.1 *18*; α(N)=10.9 *5*; α(O)=2.50 *11*; α(P)=0.405 *18*; α(Q)=0.00107 *4*
(103.4‡)	847.5	5^-	744.1	3^-			
104.237‡ *4*	149.480	4^+	45.2430	2^+	E2	10.99 *15*	α(L)=8.00 *11*; α(M)=2.220 *31*; α(N)=0.603 *8*; α(O)=0.1385 *19*; α(P)=0.02268 *32* α(Q)=9.41×10^{-5} *13*
x145 *1*							
154 *1*	1001.5	7^-	847.5	5^-	E2	2.07 *6*	α(K)=0.2156 *32*; α(L)=1.35 *4*; α(M)=0.374 *12*; α(N)=0.1016 *33*; α(O)=0.0234 *8* α(P)=0.00387 *13*; α(Q)=2.62×10^{-5} *6*
160.308‡ *3*	309.788	6^+	149.480	4^+	E2	1.761 *25*	α(K)=0.2079 *29*; α(L)=1.132 *16*; α(M)=0.313 *4*; α(N)=0.0850 *12*; α(O)=0.01958 *27* α(P)=0.00325 *5*; α(Q)=2.327×10^{-5} *33*
199 *1*	1200.5	9^-	1001.5	7^-	E2	0.762 *18*	α(K)=0.1558 *25*; α(L)=0.442 *11*; α(M)=0.1217 *32*; α(N)=0.0330 *9*; α(O)=0.00763 *20* α(P)=0.001275 *33*; α(Q)=1.270×10^{-5} *25*
212.47‡ *4*	522.26	8^+	309.788	6^+	E2	0.599 *8*	α(K)=0.1400 *20*; α(L)=0.335 *5*; α(M)=0.0920 *13*; α(N)=0.02498 *35*; α(O)=0.00577 *8* α(P)=0.000968 *14*; α(Q)=1.068×10^{-5} *15*
245 *1*	1445.5	11^-	1200.5	9^-	E2	0.363 *7*	α(K)=0.1091 *17*; α(L)=0.185 *4*; α(M)=0.0507 *11*; α(N)=0.01377 *30*; α(O)=0.00319 *7* α(P)=0.000538 *12*; α(Q)=7.42×10^{-6} *13*
260.1 *5*	782.4	10^+	522.26	8^+	E2	0.297 *5*	α(K)=0.0979 *14*; α(L)=0.1456 *23*; α(M)=0.0397 *6*; α(N)=0.01078 *17*; α(O)=0.00250 *4* α(P)=0.000423 *7*; α(Q)=6.40×10^{-6} *9* E_γ: weighted average of 260.6 *5* (1976Gu06) and 259.7 *5* (1982Ow01).
289 *1*	1734.5	13^-	1445.5	11^-	E2	0.211 *4*	α(K)=0.0805 *12*; α(L)=0.0959 *19*; α(M)=0.0260 *5*; α(N)=0.00706 *14*; α(O)=0.001641 *32* α(P)=0.000280 *5*; α(Q)=4.97×10^{-6} *8*
x296 *1*							
303.0 *5*	1085.4	12^+	782.4	10^+	E2	0.1826 *27*	α(K)=0.0736 *11*; α(L)=0.0798 *12*; α(M)=0.02163 *33*; α(N)=0.00587 *9*; α(O)=0.001364 *21* α(P)=0.000233 *4*; α(Q)=4.44×10^{-6} *6* E_γ: weighted average of 302.7 *5* (1976Gu06) and 303.4 *5* (1982Ow01).
328 *1*	2062	15^-	1734.5	13^-	E2	0.1439 *24*	α(K)=0.0634 *10*; α(L)=0.0591 *11*; α(M)=0.01593 *29*; α(N)=0.00432 *8*; α(O)=0.001006 *18* α(P)=0.0001729 *31*; α(Q)=3.70×10^{-6} *6*
341.0 *5*	1426.4	14^+	1085.4	12^+	E2	0.1285 *19*	α(K)=0.0589 *8*; α(L)=0.0511 *8*; α(M)=0.01375 *21*; α(N)=0.00373 *6*; α(O)=0.000869 *13* α(P)=0.0001497 *22*; α(Q)=3.38×10^{-6} *5*

Continued on next page (footnotes at end of table)

Coulomb excitation 1982Ow01 (continued)

$\gamma(^{236}U)$ (continued)

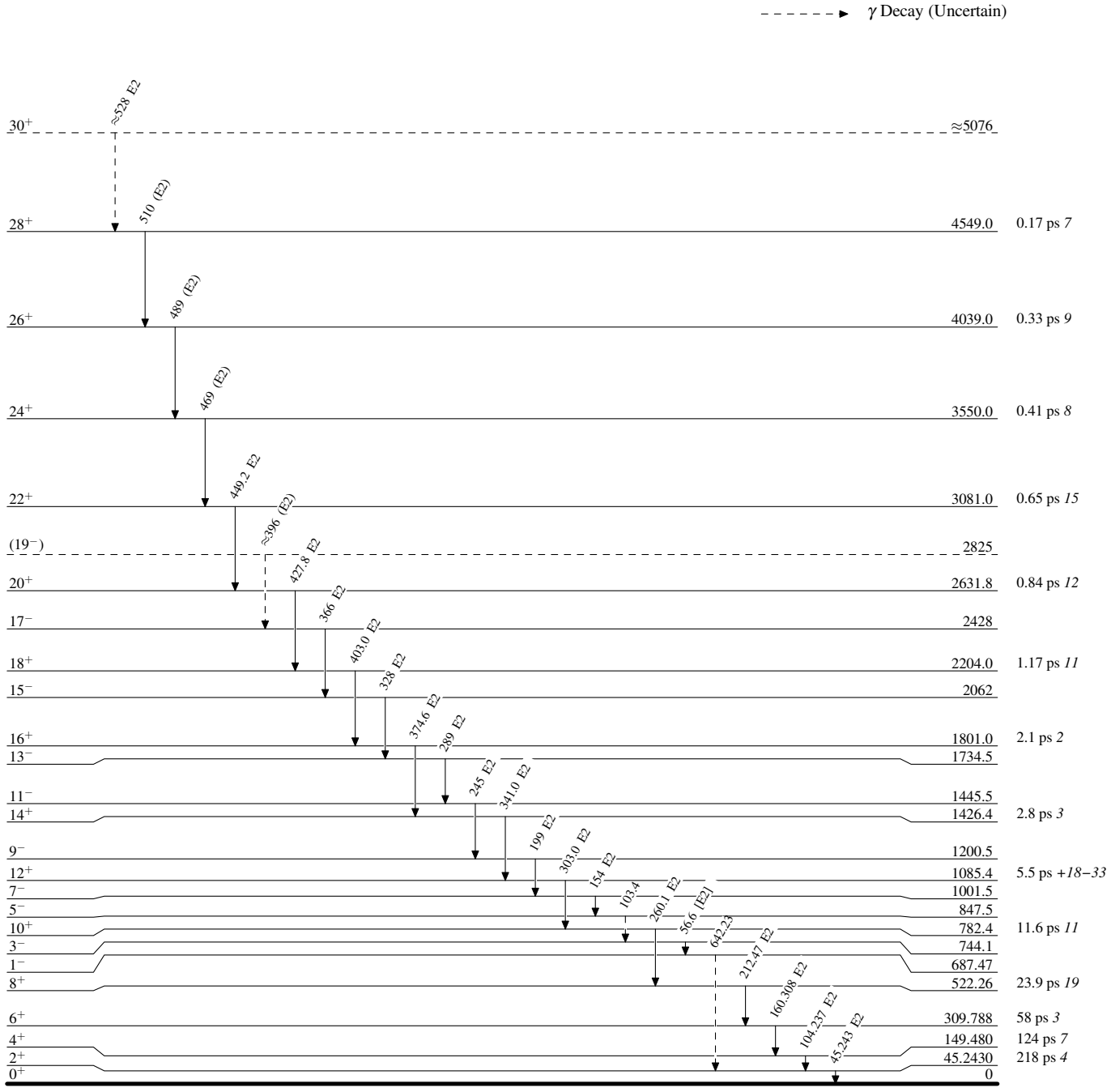
E_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	α	Comments
x352 *1*							
x358 *1*							
366 *1*	2428	17^-	2062	15^-	E2	0.1052 *17*	α(K)=0.0515 *8*; α(L)=0.0394 *7*; α(M)=0.01057 *18*; α(N)=0.00286 *5*; α(O)=0.000669 *12* α(P)=0.0001158 *20*; α(Q)=2.88×10^{-6} *4*
374.6 *5*	1801.0	16^+	1426.4	14^+	E2	0.0987 *14*	α(K)=0.0493 *7*; α(L)=0.0363 *5*; α(M)=0.00971 *14*; α(N)=0.00263 *4*; α(O)=0.000614 *9* α(P)=0.0001066 *16*; α(Q)=2.74×10^{-6} *4*
x379 *1*							
x385 *1*							
≈396#	2825?	(19^-)	2428	17^-	(E2)	0.0849 *12*	α(K)≈0.0444; α(L)≈0.0298; α(M)≈0.00794; α(N)≈0.002152; α(O)≈0.000503 α(P)≈8.77×10^{-5}; α(Q)≈2.422×10^{-6}
403.0 *5*	2204.0	18^+	1801.0	16^+	E2	0.0811 *12*	α(K)=0.0430 *6*; α(L)=0.0280 *4*; α(M)=0.00746 *11*; α(N)=0.002021 *30*; α(O)=0.000473 *7* α(P)=8.25×10^{-5} *12*; α(Q)=2.330×10^{-6} *33*
x412 *1*							E_γ: multiple γ rays.
427.8 *5*	2631.8	20^+	2204.0	18^+	E2	0.0694 *10*	α(K)=0.0385 *5*; α(L)=0.02281 *33*; α(M)=0.00605 *9*; α(N)=0.001638 *24*; α(O)=0.000384 *6* α(P)=6.73×10^{-5} *10*; α(Q)=2.047×10^{-6} *29*
x432 *1*							
449.2 *5*	3081.0	22^+	2631.8	20^+	E2	0.0614 *9*	α(K)=0.0351 *5*; α(L)=0.01935 *28*; α(M)=0.00511 *7*; α(N)=0.001384 *20*; α(O)=0.000325 *5* α(P)=5.72×10^{-5} *8*; α(Q)=1.844×10^{-6} *26*
x451 *1*							
x460 *1*							
469 *1*	3550.0	24^+	3081.0	22^+	(E2)	0.0552 *8*	α(K)=0.0324 *5*; α(L)=0.01678 *26*; α(M)=0.00442 *7*; α(N)=0.001196 *19*; α(O)=0.000281 *4* α(P)=4.96×10^{-5} *8*; α(Q)=1.682×10^{-6} *25*
x475 *1*							
489 *1*	4039.0	26^+	3550.0	24^+	(E2)	0.0498 *7*	α(K)=0.0300 *4*; α(L)=0.01465 *23*; α(M)=0.00385 *6*; α(N)=0.001041 *16*; α(O)=0.000245 *4* α(P)=4.34×10^{-5} *7*; α(Q)=1.541×10^{-6} *23*
x495 *1*							
510 *1*	4549.0	28^+	4039.0	26^+	(E2)	0.0451 *7*	α(K)=0.0278 *4*; α(L)=0.01281 *20*; α(M)=0.00335 *5*; α(N)=0.000907 *14*; α(O)=0.0002137 *33* α(P)=3.80×10^{-5} *6*; α(Q)=1.411×10^{-6} *21*
x520 *1*							
≈528#	≈5076?	30^+	4549.0	28^+	E2	0.0416 *6*	α(K)≈0.0261; α(L)≈0.01149; α(M)≈0.00300; α(N)≈0.000812 α(O)≈0.0001913; α(P)≈3.41×10^{-5}; α(Q)≈1.313×10^{-6}
x550 *1*							
x570 *1*							
(642.23‡ *7*)	687.47	1^-	45.2430	2^+			

† From 1982Ow01, unless otherwise noted.
‡ From Adopted Gammas.
# Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

Legend

Coulomb excitation 1982Ow01

Level Scheme



$^{236}_{92}U_{144}$