$^{239}_{94}$Pu

Δ: 48583.5 *20* **S_n:** 5646.5 *3* **S_p:** 6156.2 *6*
Q_α: 5244.50 *23*
σ_f^0: 748.1 *20* b , **σ_γ^0:** 269 *3* b

Nuclear Bands

A 1/2[631]
B 1/2[631]+0⁻
C 5/2[622]
D 7/2[743]
E 7/2[624]
F 1/2[761]
G 1/2[620]
H 7/2[613]?
I 3/2[622]?
J 5/2[633] Fission Isomer band
K Fission isomer

Levels and γ-ray branchings:

A **0**, 1/2⁺, 24110 *30* y, μ=+0.203 *4*, %α=100, %SF=3.1×10⁻¹⁰ *6*

A **7.861** *2*, 3/2⁺, 36 *3* ps, Q=−2.319 *7*
γ_0***7.861*** *2* (†$_\gamma$100) M1+E2: δ=0.055 *2*

A **57.276** *2*, 5/2⁺, 101 *5* ps, Q=−3.345 *13*
γ_8***49.415*** *2* (†$_\gamma$85 *9*) M1+E2: δ=0.50 *3*
γ_0***57.276*** *2* (†$_\gamma$100 *6*) E2

A **75.706** *3*, 7/2⁺, 83 *8* ps, Q=−3.826 *26*
γ_{57}***18.430*** *2* (†$_\gamma$<20) γ_8***67.846*** *2* (†$_\gamma$100 *25*) E2

A **163.76** *2*, 9/2⁺, 73 *4* ps γ_{76}***88.05*** *2* (†$_\gamma$12 *4*) M1+E2: δ=0.50 *10* γ_{57}***106.48*** *2* (†$_\gamma$100 *16*) E2

A **192.81** *10*, 11/2⁺ γ_{76}***117.1*** *1* (†$_\gamma$100) E2

C **285.460** *2*, 5/2⁺, 1.12 *5* ns, μ=−1.25 *29*
γ_{76}***209.753*** *2* (†$_\gamma$23.7 *3*) M1(+E2): δ=−0.004 $^{+1}_{-24}$ γ_{57}***228.183*** *1* (†$_\gamma$78.0 *13*) M1(+E2): δ=+0.001 $^{+9}_{-1}$
γ_8***277.599*** *1* (†$_\gamma$100.0 *15*) M1+E2: δ=+0.165 *2* γ_0***285.460*** *2* (†$_\gamma$5.4 *1*) E2

A **318.1** *1*, 13/2⁺ γ_{164}***154.35*** *10* (†$_\gamma$100) E2

C **330.125** *4*, 7/2⁺ γ_{285}***44.665*** *2* (†$_\gamma$100 *8*) M1+E2: δ=0.20 *3* γ_{164}***166.369*** *2* (†$_\gamma$13 *6*) M1 γ_{76}***254.418*** *3* (†$_\gamma$85 *5*) M1+E2: δ=−0.159 *12* γ_{57}***272.848*** *3* (†$_\gamma$60 *4*) M1+E2: δ=+0.165 *9*
γ_8***322.264*** *3* (†$_\gamma$4.0 *12*)

A **358.1** *1*, 15/2⁺ γ_{193}***165.41*** *8* E2

C **387.41** *2*, 9/2⁺ γ_{330}***57.29*** *2* (†$_\gamma$100 *40*) M1(+E2) γ_{285}***101.95*** *2* (†$_\gamma$≈16) E2
γ_{76}***311.70*** *2* (†$_\gamma$34 *4*) (M1+E2)

D **391.586** *3*, 7/2⁻, 193 *4* ns γ_{330}***61.461*** *2* (†$_\gamma$4.7 *1*) E1 γ_{285}***106.125*** *2* (†$_\gamma$100 *2*) E1(+M2): δ=−0.007 *7* γ_{76}***315.879*** *2* (†$_\gamma$5.9 *2*) E1(+M2): δ=+0.008 *7*
γ_{57}***334.309*** *2* (†$_\gamma$7.7 *2*) E1(+M2): δ=+0.006 *4*

D **434** *3*, (9/2⁻)

C **462** *3*, (11/2⁺)

B **469.8** *4*, (1/2⁻) γ_8***461.9*** *4* (†$_\gamma$100 *15*)
γ_0***469.8*** *4* (†$_\gamma$60 *15*)

D **487** *3*, (11/2⁻)

B **492.1** *3*, 3/2⁻ γ_{57}***434.9*** *3* (†$_\gamma$100 *15*) E1(+M2): δ=−0.002 *2* γ_8***484.3*** *3* (†$_\gamma$10 *3*) γ_0***492.1*** *3* (†$_\gamma$60 *15*)

B **505.5** *2*, (5/2⁻) γ_{76}***429.8*** *2* (†$_\gamma$100 *15*)
γ_{57}***448.2*** *2* (†$_\gamma$7 *2*) γ_8***497.8*** *2* (†$_\gamma$88 *18*)

E **511.838** *13*, 7/2⁺ γ_{387}***124.434*** *8* (†$_\gamma$3.0 *3*) M1(+E2): δ<0.26 γ_{330}***181.711*** *7* (†$_\gamma$31 *2*) M1+E2: δ=−0.150 *7*
γ_{285}***226.378*** *8* (†$_\gamma$100 *7*) M1+E2: δ=+0.133 *6* γ_{76}***436.136*** *14* (†$_\gamma$0.24 *3*) γ_{57}***454.565*** *12* (†$_\gamma$0.36 *4*)
γ_8***503.977*** *12* (†$_\gamma$0.42 *4*)

A **519.2** *1*, 17/2⁺ γ_{318}***201.07*** *8* (†$_\gamma$100) E2
538 *3*

B **556.1** *5*, (7/2⁻) γ_{164}***392.4*** *5* (†$_\gamma$100 *20*)
γ_{57}***498.8*** *5* (†$_\gamma$≈70)

E **565**, (9/2⁺)

A **570.1** *1*, 19/2⁺ γ_{358}***212.01*** *8* (†$_\gamma$100) E2

B **583** *3*, (9/2⁻)

D **620**, (15/2⁻)

E **634**, 11/2⁺

B **659** *3*, (11/2⁻)
716
752.5 *5*, 1/2⁺,3/2
756 *5*
763 *3*

A **764.7** *2*, (21/2⁺) γ_{519}***245.5*** *1* (E2)
779 *3*
798.2 *5*, 1/2,3/2
805.1 *5*, 1/2,3/2
813 *3*
825.5 *10*, 1/2,3/2

A **826.9** *2*, (23/2⁺) γ_{570}***256.8*** *1* (E2)
854 *2*
888.0 *5*, 1/2,3/2
900 *2*
915 *3*
933.3 *10*, 1/2,3/2
948 *3*

F **990**, (3/2⁻)

F **1017**, (1/2⁻)
1027 *2*

F **1038**, (7/2⁻)

A **1052.9** *3*, (25/2⁺) γ_{765}***288.2*** *1* (†$_\gamma$100) (E2)
1062 *2*
1099.9 *5*, 1/2,3/2

F **1100**, (5/2⁻)

A **1126.6** *3*, (27/2⁺) γ_{827}***299.7*** *2* (†$_\gamma$100) (E2)

F **1137**, (11/2⁻)

1174

G **1214**, (1/2$^+$)

G **1233**, (3/2$^+$)

H **1233**, (9/2$^-$)

G **1261**, (5/2$^+$)

I **1261**, (3/2$^+$)

I **1289**, (5/2$^+$)

G **1311**, (7/2$^+$)

I **1342**, (7/2$^+$)

G **1359**, (9/2$^+$)

A **1381.7** *4*, (29/2$^+$) γ_{1053}***328.8*** *3* (†$_\gamma$100)

1390

I **1409**, (9/2$^+$)

1437

1465

A **1466.6** *4*, (31/2$^+$) γ_{1127}***340.0*** *2* (†$_\gamma$100)
(E2)

1488

A **1749.0** *5*, (33/2$^+$) γ_{1382}***367.3*** *4* (†$_\gamma$100)
(E2)

A **1845.6** *6*, (35/2$^+$) γ_{1467}***379.0*** *4* (†$_\gamma$100)
(E2)

A **2152.5** *7*, (37/2$^+$) γ_{1749}***403.5*** *4* (†$_\gamma$100)
(E2)

A **2261.1** *7*, (39/2$^+$) γ_{1846}***415.5*** *4* (†$_\gamma$100)
(E2)

A **2590.3** *8*, (41/2$^+$) γ_{2153}***437.8*** *4* (†$_\gamma$100)
(E2)

A **2712.0** *8*, (43/2$^+$) γ_{2261}***450.9*** *4* (†$_\gamma$100)
(E2)

A **3060.5** *9*, (45/2$^+$) γ_{2590}***470.2*** *4* (†$_\gamma$100)
E2

J **3100** *200*, (5/2$^+$), 7.5 *10* μs, %SF≤100

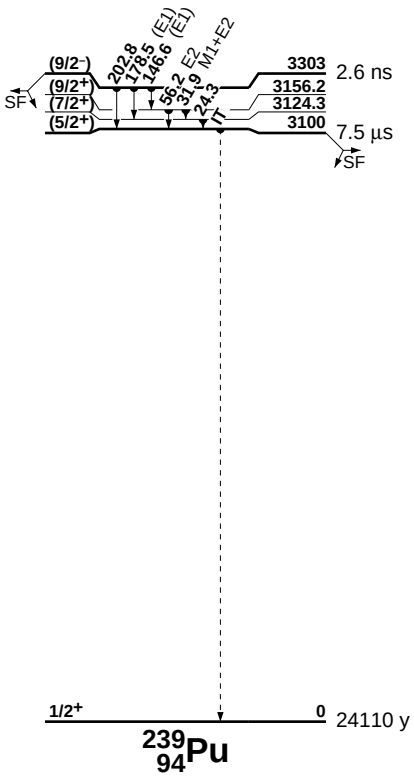
J **3124.3**, (7/2$^+$) γ_{3100+e}***24.3*** (†$_{\gamma+e}$73 *15*)

J **3156.2**, (9/2$^+$) γ_{3124}***31.9*** (†$_{\gamma+e}$55 *10*)
M1+E2: δ>0.85 γ_{3100+e}***56.2*** (†$_{\gamma+e}$25 *5*)
E2

A **3199.0** *9*, (47/2$^+$) γ_{2712}***487.0*** *4* (†$_\gamma$100)
(E2)

K **3303**, (9/2$^-$), 2.6$^{+40}_{-12}$ ns, %SF≤100
γ_{3156}***146.6*** (†$_{\gamma+e}$91 *20*) (E1)
γ_{3124}***178.5*** (†$_{\gamma+e}$41 *10*) (E1)
γ_{3100+e}***202.8*** (†$_{\gamma+e}$4 *2*)

A **3558.4** *10*, (49/2$^+$) γ_{3061}***497.9*** *4* (†$_\gamma$100)
(E2)


(9/2⁻)
(9/2⁺)
(7/2⁺)
(5/2⁺)
SF
202.8
178.5 (E1)
146.6 (E1)
56.2 E2
31.9 M1+E2
24.3
IT
3303
3156.2
3124.3
3100
2.6 ns
7.5 µs
SF
1/2⁺
0
24110 y
239 94 Pu