# $^{240}_{94}$Pu

**Δ:** 50121.3 *19* **$S_n$:** 6533.5 *5* **$S_p$:** 6472.9 *9*
**$Q_\alpha$:** 5255.78 *15*
**$\sigma^0_\gamma$:** 289.5 *14* b , **$\sigma_f$:** 0.06 *3* b

*Nuclear Bands*

- *A* Fission isomer band
- *B* GS band
- *C* Band Structure
- *D* Band Structure
- *E* Band Structure
- *F* ν1/2[631]+ν5/2[622]
- *G* Band Structure
- *H* Band Structure
- *I* Band Structure
- *J* π5/2[642]+π5/2[523]
- *K* π5/2[642]-π5/2[523]
- *L* Band Structure

*Levels and γ-ray branchings:*

*B* **0**, $0^+$, 6564 *11* y, %α=100, %SF=5.7×$10^{-6}$ *2*

*B* **42.824** *8*, $2^+$, 164 *5* ps $\gamma_{0}$***42.824*** *8* (†$_\gamma$100) E2

*B* **141.690** *15*, $4^+$ $\gamma_{43}$***98.860*** *13* (†$_\gamma$100) E2

*B* **294.319** *24*, $6^+$ $\gamma_{142}$***152.630*** *20* (†$_\gamma$100) E2

*B* **497.52** *21*, $8^+$ $\gamma_{294}$***203.2*** *2* (†$_\gamma$100)

*C* **597.34** *4*, $1^-$ $\gamma_{43}$***554.60*** *7* (†$_\gamma$100 *6*) E1 $\gamma_{0}$***597.40*** *7* (†$_\gamma$62 *6*) E1

*C* **648.85** *4*, $3^-$ $\gamma_{142}$***507.20*** *10* (†$_\gamma$100) $\gamma_{43}$***606.10*** *7* (†$_\gamma$97 *5*)

*C* **742.33** *4*, $5^-$, <2 ns $\gamma_{294}$***448.01*** *6* (†$_\gamma$67 *3*) $\gamma_{142}$***600.57*** *6* (†$_\gamma$10 *5*)

*B* **747.8** *3*, $(10^+)$ $\gamma_{498}$***250.3*** *2* (†$_\gamma$100)

*D* **860.71** *7*, $0^+$ $\gamma_{597}$***263.37*** *7* (†$_\gamma$89 *2*) $\gamma_{43}$***817.89*** *10* (†$_\gamma$100) E2 $\gamma_{0}$***860.7*** E0

*D* **900.32** *4*, $2^+$ $\gamma_{649}$***251.47*** *7* (†$_\gamma$73 *3*) $\gamma_{597}$***302.98*** *7* (†$_\gamma$85 *3*) $\gamma_{142}$***758.61*** *8* (†$_\gamma$100 *3*) E2 $\gamma_{43}$***857.48*** *10* (†$_\gamma$42 *2*) $\gamma_{0}$***900.37*** *10* (†$_\gamma$14 *2*)

*E* **938.06** *6*, $(1^-)$ $\gamma_{649}$***289.21*** *10* (†$_\gamma$1.4 *3*) $\gamma_{597}$***340.70*** *10* (†$_\gamma$5.0 *5*) $\gamma_{43}$***895.30*** *10* (†$_\gamma$5 *1*) $\gamma_{0}$***938.02*** *10* (†$_\gamma$100 *4*)

*E* **958.85** *6*, $(2^-)$ $\gamma_{649}$***309.99*** *9* (†$_\gamma$4.3 *4*) $\gamma_{597}$***361.55*** *10* (†$_\gamma$3.5 *6*) $\gamma_{43}$***915.98*** *9* (†$_\gamma$100 *3*)

*D* **992.2** *6*, $(4^+)$ $\gamma_{742}$***249.7*** *10* (†$_\gamma$41 *15*) $\gamma_{649}$***343.7*** *10* (†$_\gamma$100 *10*) $\gamma_{294}$***≈697.8*** (†$_\gamma$71 *16*)

*E* **1001.93** *10*, $(3^-)$ $\gamma_{43}$***959.1*** *1* (†$_\gamma$100)

*F* **1030.53** *5*, $(3)^+$, 1.32 *15* ns $\gamma_{142}$***888.80*** *5* (†$_\gamma$34.3 *5*) E2 $\gamma_{43}$***987.76*** *6* (†$_\gamma$100 *2*) E2

*E* **1037.52** *6*, $(4^-)$ $\gamma_{742}$***295.20*** *10* (†$_\gamma$3.2 *4*) $\gamma_{649}$***388.70*** *10* (†$_\gamma$6.6 *5*) $\gamma_{142}$***895.80*** *10* (†$_\gamma$100 *5*)

*B* **1041.8** *4*, $(12^+)$ $\gamma_{748}$***294.00*** *20* (†$_\gamma$100)

*F* **1076.22** *9*, $(4^+)$ $\gamma_{142}$***934.50*** *10* (†$_\gamma$100 *12*) $\gamma_{43}$***1033.50*** *20* (†$_\gamma$40 *4*)

*G* **1089.45** *10*, $0^+$ $\gamma_{43}$***1046.62*** *10* (†$_\gamma$100)

*E* **1115.53** *6*, $(5^-)$ $\gamma_{649}$***466.70*** *10* (†$_\gamma$4.5 *4*) $\gamma_{294}$***821.20*** *10* (†$_\gamma$4.5 *4*) $\gamma_{142}$***973.90*** *10* (†$_\gamma$100 *5*)

*G* **1131.95** *10*, $(2^+)$ $\gamma_{142}$***989.20*** *10* (†$_\gamma$100 *7*) $\gamma_{43}$***1088.30*** *20* (†$_\gamma$39 *4*) $\gamma_{0}$***1131.00*** *20* (†$_\gamma$75 *6*)

*H* **1136.97** *13*, $(2^+)$ $\gamma_{43}$***1094.20*** *20* (†$_\gamma$100 *15*) $\gamma_{0}$***1137.0*** *4* (†$_\gamma$67 *10*)

*E* **1161.53** *7*, $(6^-)$ $\gamma_{742}$***419.20*** *10* (†$_\gamma$9.8 *8*) $\gamma_{294}$***867.20*** *10* (†$_\gamma$100 *6*)

*H* **1177.50** *10*, $(3^+)$ $\gamma_{1038}$***139.90*** *10* $\gamma_{1002}$***175.40*** *10* $\gamma_{142}$***1036.1*** *3* $\gamma_{43}$***1135.1*** *3*

**1180.4**, $(2^+)$

**1199** *2*

**1223.00** *20*, $(2^+)$ $\gamma_{43}$***1180.20*** *20* (†$_\gamma$100 *8*) $\gamma_{0}$***1223.00*** *20* (†$_\gamma$80 *12*)

*H* **1232.46** *10*, $(4^+)$ $\gamma_{294}$***938.20*** *10* (†$_\gamma$100 *17*) $\gamma_{142}$***1090.50*** *20* (†$_\gamma$44 *9*) $\gamma_{43}$***1190.0*** *10* (†$_\gamma$7 *4*)

*I* **1240.8** *3*, $(2^-)$ $\gamma_{43}$***1198.0*** *3* (†$_\gamma$100)

**1262.0** *3*, $(3^+)$ $\gamma_{142}$***1120.3*** *4* (†$_\gamma$31 *3*) $\gamma_{43}$***1219.2*** *3* (†$_\gamma$100 *6*)

*I* **1282** *2*, $(3^-)$

*J* **1308.74** *5*, $(5^-)$, 165 *10* ns $\gamma_{1162}$***147.20*** *10* (†$_\gamma$4.0 *3*) (M1+E2) $\gamma_{1116}$***193.30*** *10* (†$_\gamma$22.1 *11*) (M1+E2) $\gamma_{1038}$***271.30*** *10* (†$_\gamma$22.5 *11*) (M1+E2) $\gamma_{1002}$***306.80*** *10* (†$_\gamma$1.6 *2*) (M1+E2) $\gamma_{742}$***566.34*** *6* (†$_\gamma$100 *5*) (M1+E2) $\gamma_{294}$***1014.40*** *10* (†$_\gamma$0.83 *22*) $\gamma_{142}$***1167.10*** *10* (†$_\gamma$17.8 *11*)

**1321.10** *10* (?) $\gamma_{0}$***1321.10*** *10* (†$_\gamma$100)

**1337.0** *3*, (3,4) $\gamma_{142}$***1195.5*** *4* (†$_\gamma$100 *20*) $\gamma_{43}$***1294.0*** *3* (†$_\gamma$35 *4*)

*B* **1375.6** *6*, $(14^+)$ $\gamma_{1042}$***333.8*** *4* (†$_\gamma$100)

**1379** *4*

**1407** *3*

*K* **1410.75** *15*, $0^{(-)}$ $\gamma_{597}$***813.41*** *10* (†$_\gamma$100)

**1413.0**, $(^+)$

*K* **1438.45** *8*, $2^{(-)}$ $\gamma_{649}$***789.59*** *10* (†$_\gamma$100 *17*) $\gamma_{597}$***841.11*** *10* (†$_\gamma$83 *9*) $\gamma_{0}$***1438.5*** (†$_\gamma$<0.6)

**1488.17** *7*, $(1^-)$ $\gamma_{43}$***1445.30*** *10* (†$_\gamma$100 *3*) $\gamma_{0}$***1488.20*** *10* (†$_\gamma$53 *3*)

*L* **1525.86** *8*, $(0^+)$ $\gamma_{597}$***928.55*** *10* (†$_\gamma$100 *13*) $\gamma_{43}$***1483.00*** *10* (†$_\gamma$18 *3*)

**1539.67** *6*, $(1^-)$ $\gamma_{959}$***580.70*** *20* (†$_\gamma$0.53 *15*) $\gamma_{649}$***890.60*** *20* (†$_\gamma$1.3 *2*) $\gamma_{597}$***942.39*** *10* (†$_\gamma$7.2 *7*)

$\gamma_{43}$***1496.90*** *10* (†$_\gamma$100 *2*) $\gamma_0$***1539.62*** *9* (†$_\gamma$63.2 *15*)

*L* **1558.87** *5*, ($2^+$) $\gamma_{649}$***910.10*** *10* (†$_\gamma$100 *14*)
$\gamma_{597}$***961.62*** *10* (†$_\gamma$93 *5*)
$\gamma_{142}$***1417.20*** *10* (†$_\gamma$16 *3*)
$\gamma_{43}$***1515.90*** *10* (†$_\gamma$11 *4*) $\gamma_0$***1558.80*** *10* (†$_\gamma$4.3 *14*)

**1574**

**1580**

**1607.72** *15*, ($1^-$) $\gamma_{1089}$***518.2*** *3* (†$_\gamma$11 *4*)
$\gamma_{649}$***959.0*** *2* (†$_\gamma$13 *4*) $\gamma_0$***1607.60*** *20* (†$_\gamma$100 *9*)

**1626.77** *15*, ($1^-$) $\gamma_{43}$***1584.10*** *20* (†$_\gamma$100 *12*) $\gamma_0$***1626.60*** *20* (†$_\gamma$29 *6*)

**1633.37** *8*, ($1^-$) $\gamma_{1137}$***496.7*** *3* (†$_\gamma$6.5 *13*)
$\gamma_{597}$***1036.5*** *3* (†$_\gamma$1.9 *13*)
$\gamma_{43}$***1590.50*** *10* (†$_\gamma$63 *3*) $\gamma_0$***1633.33*** *10* (†$_\gamma$100 *3*)

**1641** *5*

**1675** *2*

**1710.43** *8*, ($2^+$) $\gamma_{1137}$***573.40*** *20* (†$_\gamma$28 *7*)
$\gamma_{649}$***1061.60*** *20* (†$_\gamma$100 *24*)
$\gamma_{597}$***1113.20*** *20* (†$_\gamma$62 *10*)
$\gamma_{142}$***1568.60*** *20* (†$_\gamma$21 *3*)
$\gamma_{43}$***1667.60*** *10* (†$_\gamma$66 *10*) $\gamma_0$***1711.0*** *10* (†$_\gamma$7 *4*)

**1752** *3*

**1775.30** *20*, ($1^-$) $\gamma_{43}$***1732.40*** *20* (†$_\gamma$67 *34*)
$\gamma_0$***1775.30*** *20* (†$_\gamma$100 *33*)

**1784** *3*

**1796.34** *15*, ($1^-$) $\gamma_{1321}$***475.0*** *3* (†$_\gamma$100 *27*)
$\gamma_{1223}$***573.40*** *20* (†$_\gamma$73 *18*)
$\gamma_{959}$***837.60*** *20* (†$_\gamma$73 *27*) $\gamma_0$***1796.2*** *3* (†$_\gamma$27 *9*)

**1808.00** *20*, ($1^-$,$2^+$) $\gamma_{649}$***1159.20*** *20* (†$_\gamma$40 *13*) $\gamma_{597}$***1210.5*** *5* (†$_\gamma$100 *30*)
$\gamma_{43}$***1765.20*** *20* (†$_\gamma$47 *7*) $\gamma_0$***1807.9*** *4* (†$_\gamma$13 *7*)

**1861** *3*

**1902** *3*

**1917.8** *3*, ($1^-$) $\gamma_{43}$***1874.9*** *3* (†$_\gamma$100 *8*)
$\gamma_0$***1918.0*** *10* (†$_\gamma$7 *3*)

**1954.50** *10*, ($2^+$) $\gamma_{649}$***1305.80*** *20* (†$_\gamma$100 *26*) $\gamma_{597}$***1357.20*** *20* (†$_\gamma$57 *13*)
$\gamma_{142}$***1812.80*** *10* (†$_\gamma$22 *9*) $\gamma_{43}$***1911.4*** *3* (†$_\gamma$61 *4*)

**1996.40** *20*, ($1^-$,$2^+$) $\gamma_{597}$***1398.5*** *5* (†$_\gamma$100 *40*) $\gamma_{43}$***1953.60*** *20* (†$_\gamma$46 *10*)
$\gamma_0$***1996.7*** *4* (†$_\gamma$20 *8*)

**2117.60** *20* $\gamma_{43}$***2074.80*** *20* (†$_\gamma$100 *16*)
$\gamma_0$***2117.5*** *10* (†$_\gamma$23 *13*)

**2127.4**, ($^-$)

*A* ≈**2800**, ($0^+$), 3.7 *3* ns, %SF>0

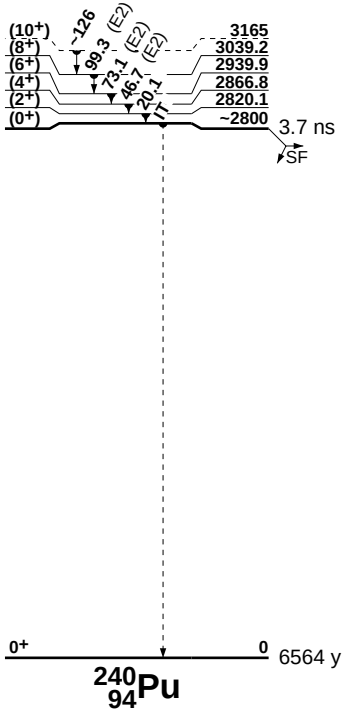
*A* **2820.1**, ($2^+$) $\gamma_{2800}$***20.1*** *$I^{(1)}$=119.8, $I^{(2)}$=150.4, ħω=0.017*

*A* **2866.8**, ($4^+$) $\gamma_{2820}$***46.7*** (E2) *$I^{(1)}$=133.6, $I^{(2)}$=151.5, ħω=0.030*

*A* **2939.9**, ($6^+$) $\gamma_{2867}$***73.1*** (E2) *$I^{(1)}$=139.2, $I^{(2)}$=152.7, ħω=0.043*

*A* **3039.2**, ($8^+$) $\gamma_{2940}$***99.3*** (E2) *$I^{(1)}$=142.0, $I^{(2)}$=149.8, ħω=0.056*

*A* **3165** (?), ($10^+$) $\gamma_{3039}$≈***126***


(10+)
(8+)
(6+)
(4+)
(2+)
(0+)
126
99.3
73.1
46.7
20.1
(E2)
(E2)
(E2)
IT
3165
3039.2
2939.9
2866.8
2820.1
~2800
3.7 ns
SF
0+
0
6564 y
240 94 Pu