$^{237}_{93}$Np

Δ: 44867.5 *20* **S_n:** 6570 *50* **S_p:** 4862.1 *3*
Q_α: 4959.1 *12*
σ_γ^0: 176 *3* b , **σ_f^0:** 0.0215 *24* b

Nuclear Bands

- *A* 5/2[642]
- *B* 5/2[523]
- *C* 1/2[530]
- *D* 1/2[400]
- *E* 3/2[521]
- *F* Band Structure
- *G* Fission isomer

Levels and γ-ray branchings:

A **0.0**, $5/2^+$, 2.144×10^6 *7* y, %α=100, %SF≤2×10^{-10}, μ=+3.14 *4*, Q=+3.886 *6*

A **33.1964** *3*, $7/2^+$, 54 *24* ps γ_0***33.1964*** *3* M1+E2: δ=0.13 *3*

B **59.5412** *1*, $5/2^-$, 67 *2* ns, μ=+1.68 *3*, Q=+3.85 *4* γ_{33}***26.3448*** *2* ($\dagger_\gamma$6.71 *14*) E1 γ_0***59.5412*** *2* ($\dagger_\gamma$100) E1

A **75.92** *4*, $9/2^+$, ≈ 56 ps γ_{33}***42.73*** *5* ($\dagger_\gamma$100 *15*) γ_0***75.8*** *2* ($\dagger_\gamma$≈11)

B **102.96** *2*, $7/2^-$, 80 *40* ps γ_{76}***27.03*** γ_{60}***43.423*** *10* ($\dagger_\gamma$100 *11*) M1+E2: δ=0.41 *2* γ_{33}***69.76*** *3* ($\dagger_\gamma$4.0 *6*) (E1) γ_0***102.98*** *2* ($\dagger_\gamma$26.7 *2*) E1

A **130.00** *3*, $11/2^+$ γ_{76}***54.0*** γ_{33}***96.7***

B **158.51** *2*, $9/2^-$ γ_{103}***55.56*** *2* ($\dagger_\gamma$89 *9*) M1+E2: δ=0.46 *4* γ_{60}***98.97*** *2* ($\dagger_\gamma$100 *2*) E2 γ_{33}***125.30*** *2* ($\dagger_\gamma$20.1 *2*)

A **191.46** *8*, $13/2^+$ γ_{76}***115.5*** *1* ($\dagger_\gamma$100)

B **225.96** *2*, $11/2^-$ γ_{159}***67.45*** *5* ($\dagger_\gamma$42 *10*) (M1+E2): δ=0.46 *12* γ_{103}***123.01*** *2* ($\dagger_\gamma$100 *1*) E2 γ_{76}***150.04*** *3* ($\dagger_\gamma$7.40 *15*)

C **267.54** *2*, $3/2^-$, 5.2 *2* ns γ_{103}***164.61*** *2* ($\dagger_\gamma$8.6 *2*) E2 γ_{60}***208.00*** *1* ($\dagger_\gamma$100 *1*) M1+E2: δ=+0.156 *5* γ_{33}***234.40*** *4* ($\dagger_\gamma$0.097 *10*) M2 γ_0***267.54*** *4* ($\dagger_\gamma$3.36 *10*) E1+M2: δ=0.490 *15*

A **269.9** *5*, $15/2^+$ γ_{130}***139.9*** ($\dagger_\gamma$100)

C **281.35** *2*, $1/2^-$ γ_{268}***13.81*** *2* ($\dagger_\gamma$21.4 *8*) M1+E2: δ=0.0321 *10* γ_{60}***221.80*** *4* ($\dagger_\gamma$100 *4*) E2

B **305.06** *4*, $13/2^-$ γ_{159}***146.55*** *3* ($\dagger_\gamma$100 *2*) E2 γ_{130}***175.07*** *4* ($\dagger_\gamma$3.9 *3*)

316.8 *2* (?) γ_0***316.8*** *2*

C **324.42** *5*, $(7/2^-)$ γ_{159}***165.81*** *6* ($\dagger_\gamma$54.7 *24*) γ_{103}***221.46*** *3* ($\dagger_\gamma$100 *2*) γ_{76}***249.00*** *15* ($\dagger_\gamma$1.3) γ_{60}***264.89*** *6* ($\dagger_\gamma$21.2 *10*) γ_{33}***291.30*** *20* ($\dagger_\gamma$7.3 *8*)

D **332.36** *3*, $1/2^+$, <1.0 ns γ_{281}***51.01*** *3* ($\dagger_\gamma$93.4 *16*) E1 γ_{268}***64.83*** *2* ($\dagger_\gamma$100 *2*) E1 γ_0***332.36*** *4* ($\dagger_\gamma$26.6 *8*) E2

A **348.5** *5*, $17/2^+$ γ_{191}***157.0*** ($\dagger_\gamma$100)

C **359.7** *1*, $(5/2^-)$ γ_{60}***300.13*** *6*

D **368.59** *3*, $5/2^+$ γ_{76}***292.77*** *6* ($\dagger_\gamma$2.86 *11*) γ_{60}***309.1*** *3* ($\dagger_\gamma$0.28) γ_{33}***335.38*** *3* ($\dagger_\gamma$100 *1*) M1+E2: δ=0.46 *17* γ_0***368.59*** *4* ($\dagger_\gamma$43.7 *2*) M1(+E2): δ<0.31

D **370.93** *3*, $3/2^+$ γ_{332}***38.54*** *3* (M1+E2) γ_{33}***337.7*** *2* ($\dagger_\gamma$8.3 *5*) (E2) γ_0***370.94*** *3* ($\dagger_\gamma$100 *1*) M1+E2: δ=0.43 $^{+7}_{-21}$

B **395.52** *5*, $15/2^-$ γ_{226}***169.56*** *3* ($\dagger_\gamma$100 *2*) E2 γ_{191}***204.06*** *6* ($\dagger_\gamma$1.68 *11*)

C **434.12** *16*, $(11/2^-)$ γ_{324}***109.70*** *7* ($\dagger_\gamma$74) γ_{305}***129.2*** γ_{159}***275.77*** *8* ($\dagger_\gamma$100 *7*) γ_{130}***304.21*** *20* ($\dagger_\gamma$15 *4*) γ_{76}***358.25*** *20* ($\dagger_\gamma$18 *4*)

D **452.53** *5*, $9/2^+$ γ_{191}***260.80*** *15* ($\dagger_\gamma$0.87 *14*) γ_{130}***322.52*** *3* ($\dagger_\gamma$110 *1*) (M1+E2): δ≈0.6 γ_{76}***376.65*** *3* ($\dagger_\gamma$100 *1*) (M1) γ_{33}***419.33*** *4* ($\dagger_\gamma$20.8 *5*) γ_0***452.6*** *2* ($\dagger_\gamma$1.74 *18*)

A **454.4** *10*, $19/2^+$ γ_{270}***184.5***

D **459.69** *4*, $7/2^+$ γ_{324}***135.3*** γ_{76}***383.81*** *3* ($\dagger_\gamma$100 *2*) γ_{33}***426.47*** *4* ($\dagger_\gamma$87.2 *18*) γ_0***459.68*** *10* ($\dagger_\gamma$12.8 *11*)

C **485.96** *12*, $(9/2^-)$ γ_{324}***161.54*** *10* ($\dagger_\gamma$100) γ_{226}***260.80*** *15*

B **497.02** *6*, $17/2^-$ γ_{305}***191.96*** *4* ($\dagger_\gamma$100)

E **514.19** *6*, $(3/2^-)$ γ_{360}***154.27*** *20* ($\dagger_\gamma$11.7) γ_{281}***232.81*** *5* ($\dagger_\gamma$100 *7*) γ_{268}***246.73*** *10* ($\dagger_\gamma$52 *7*) γ_{60}***454.66*** *8* ($\dagger_\gamma$211 *7*) γ_0***514.0*** *5* ($\dagger_\gamma$57 *7*)

E **545.59** *16*, $(5/2^-)$ γ_{281}***264.89*** *6* γ_{268}***278.04*** *15* ($\dagger_\gamma$38) γ_{33}***512.5*** *3* ($\dagger_\gamma$100 *20*) γ_0***545.4*** *3* ($\dagger_\gamma$64)

A **547.0** *10*, $21/2^+$ γ_{349}***198.5***

E **590.28** *15*, $(7/2^-)$ γ_{268}***322.52*** *3* γ_{103}***487.3*** *3* ($\dagger_\gamma$15.4) γ_0***590.28*** *15* ($\dagger_\gamma$100 *7*)

D **592.3** *10*, $13/2^+$ γ_{453}***139.44*** *8* ($\dagger_\gamma$100 *21*) γ_{434}***159.26*** *20* ($\dagger_\gamma$26 *10*) γ_{396}***197.0*** *2* ($\dagger_\gamma$9.2) γ_{191}***401*** *3* ($\dagger_\gamma$9.2) γ_{130}***463.22*** *20* ($\dagger_\gamma$19)

D **598.0** *2*, $11/2^+$ γ_{460}***138.5*** γ_{191}***406.35*** *15* ($\dagger_\gamma$50 *8*) γ_{130}***468.12*** *15* ($\dagger_\gamma$100 *8*) γ_{76}***522.06*** *15* ($\dagger_\gamma$31 *11*)

618 *2*

E **646.1** *2*, $(9/2^-)$ γ_{159}***487.3*** *3* γ_{60}***586.59*** *20* ($\dagger_\gamma$100)

666.2 *2*, $(5/2^+,7/2^-)$ γ_{268}***398.64*** *15* ($\dagger_\gamma$160) γ_{76}***590.28*** *15* γ_{33}***632.93*** *15* ($\dagger_\gamma$100) γ_0***666.5*** *3* ($\dagger_\gamma$39)

A **684.4** *12*, $23/2^+$ γ_{547}***137.6*** γ_{454}***230.0***

E **709** *3*, $(11/2^-)$

F **721.95** *5*, $5/2^-$ γ_{268}***454.66*** *8*

γ_{159}***563.05*** *30* ($\dagger_\gamma$0.20) γ_{103}***619.01*** *2* ($\dagger_\gamma$16.3 *2*) γ_{60}***662.40*** *2* ($\dagger_\gamma$100 *1*) E0+M1+E2 γ_{33}***688.72*** *4* ($\dagger_\gamma$8.9 *2*) γ_{0}***722.01*** *3* ($\dagger_\gamma$53.8 *3*)

F **756.00** *10*, 7/2$^-$ γ_{159}***597.48*** *8* ($\dagger_\gamma$19.7 *8*) γ_{103}***653.02*** *4* ($\dagger_\gamma$100 *3*) γ_{76}***680.10*** *10* ($\dagger_\gamma$8.3 *5*) γ_{60}***696.60*** *5* ($\dagger_\gamma$14.2 *5*) γ_{33}***722.01*** *3* γ_{0}***755.90*** *5* ($\dagger_\gamma$20.2 *7*)

758 *6*

770.57 *5* γ_{324}***446.43*** *15* ($\dagger_\gamma$6.1 *2*) γ_{33}***737.34*** *5* ($\dagger_\gamma$100 *3*) γ_{0}***770.57*** *10* ($\dagger_\gamma$59 *3*)

A **787.1** *12*, 25/2$^+$ γ_{547}***240.1***

F **800.00** *10*, 9/2$^-$ γ_{226}***573.94*** *20* ($\dagger_\gamma$18 *3*) γ_{159}***641.47*** *5* ($\dagger_\gamma$100 *5*) γ_{130}***669.83*** *20* ($\dagger_\gamma$5.4 *17*) γ_{103}***696.60*** *5* γ_{33}***767.00*** *10* ($\dagger_\gamma$70.4 *22*)

805.8 *2*, (7/2$^+$,9/2$^+$) γ_{130}***676.03*** *30* ($\dagger_\gamma$24 *5*) γ_{76}***729.72*** *15* ($\dagger_\gamma$50 *6*) γ_{33}***772.4*** *3* ($\dagger_\gamma$100 *6*) γ_{0}***806.3*** *3* ($\dagger_\gamma$11.7)

823 *3*

F **853.36** *20*, 11/2$^-$ γ_{324}***529.17*** *20* ($\dagger_\gamma$82) γ_{226}***627.18*** *20* ($\dagger_\gamma$100 *31*)

861.7 *5*, (5/2$^+$,7/2) γ_{76}***786.00*** *15* ($\dagger_\gamma$46) γ_{60}***801.94*** *20* ($\dagger_\gamma$100) γ_{33}***828.5*** ($\dagger_\gamma$18 *5*) γ_{0}***862.7*** *5* ($\dagger_\gamma$39 *5*)

906 *2*

914 *4*

920.9 *5* γ_{60}***860.7*** *5* ($\dagger_\gamma$37 *12*) γ_{33}***887.3*** *3* ($\dagger_\gamma$100 *23*) γ_{0}***921.5*** *3* ($\dagger_\gamma$86 *19*)

945.3 *2*, 11/2,13/2, 0.71 *4* µs, %IT=100 γ_{305}***640.4*** *3* ($\dagger_\gamma$33 *7*) γ_{270}***675.6*** *4* ($\dagger_\gamma$5.4 *11*) γ_{226}***719.2*** *2* ($\dagger_\gamma$41 *9*) γ_{191}***753.6*** *2* ($\dagger_\gamma$48 *10*) γ_{159}***786.8*** *2* ($\dagger_\gamma$45 *9*) γ_{130}***815.3*** *2* ($\dagger_\gamma$100 *20*)

946 *2*

A **959.6** *15*, 27/2$^+$ γ_{787}***172.6*** γ_{684}***275.1***

961 *3*

963 *2*

984 *2*

1013 *3*

1020 *3*

1030 *3*

1040 *4*

1066 *3*

A **1068.3** *13*, 29/2$^+$ γ_{787}***281.2***

1072 *6*

1112 *4*

A **1278.8** *14*, 31/2$^+$ γ_{1068}***210.5*** γ_{960}***319***

A **1389**, 33/2$^+$ γ_{1068}***321***

A **1639**, 35/2$^+$ γ_{1389}***249.4*** γ_{1279}***361***

A **1749**, 37/2$^+$ γ_{1389}***360***

A **2041**, 39/2$^+$ γ_{1749}***292.7*** γ_{1639}***401.1***

A **2146**, 41/2$^+$ γ_{1749}***396.9***

A **2480**, 43/2$^+$ γ_{2146}***334.8*** γ_{2041}***439.0***

A **2578**, 45/2$^+$ γ_{2146}***431.9***

G **2800** *400*, 45 *5* ns, %SF>0, %IT>0

A **2955**, 47/2$^+$ γ_{2578}***378.2*** γ_{2480}***475.3***

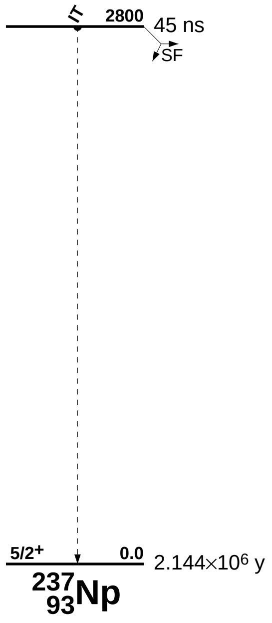
A **3043**, 49/2$^+$ γ_{2578}***465.5***

A **3464**, 51/2$^+$ γ_{2955}***508.6***

A **3541**, 53/2$^+$

A **4004**, 55/2$^+$ γ_{3464}***540.1***

A **4069**, 57/2$^+$ γ_{3541}***527.5***


IT
2800
45 ns
SF
5/2+
0.0
2.144×10⁶ y
237
93
Np