$^{237}_{93}Np$

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

Populating Reactions and Decay Modes

A ^{237}U β$^-$ decay (49Me43, 53Wa05, 56Ba39, 57Bu42, 57Ra04, 60As02, 60St18, 60Un01, 63Ak04, 66Bo08, 66El12, 66Ma57, 66Ya05, 68Da24, 68Hr01, 71Cl03, 76GuZN, 80An23, 82Ba56, 82BuZF, 84BaYS, 85He02, 85Wi04, 86LoZT, 90Po14, 90Zh04, 92Ba08)

B ^{237}Pu EC decay (53Ho49, 58Ho02, 62Ve05, 66Bo08, 79El05, 83Ah02)

C ^{241}Am α decay (52As04, 52Be24, 52Be47, 53Bo25, 54No31, 55Ba31, 55Da02, 55Go57, 55Ja01, 55Kr02, 55Tu13, 56Go43, 56Ho38, 57Kr52, 57Ma17, 57Ro20, 59Sa10, 60As02, 62Le11, 63Fl01, 64Ba26, 64Sa31, 64Wo03, 65Be38, 65Mc12, 65Mi06, 66He13, 66Ko06, 66Le13, 66Mi05, 66Ya05, 67Br26, 67Gu08, 67Pa23, 68Ba25, 68Je01, 68Ka09, 68Ma42, 68Ob02, 69KaZR, 69Pe17, 70An13, 70By01, 70Gr36, 70Ne11, 71Cl03, 71El10, 71Ga16, 71Ge11, 71Gr17, 71GuZY, 71Ka48, 71Wa28, 72De34, 72Ko04, 72Mc12, 72Mi23, 73Ch22, 73Lj01, 74Ca16, 74Ga40, 74HeYW, 74So10, 75Le09, 76BaZZ, 76GuZN, 76Pl05, 77Hs02, 77VaZW, 78Ge06, 78Ge17, 78Ov01, 79Ar11, 79Ce04, 80Ka41, 82Lo10, 83Ah02, 83De11, 83Hu04, 84Ah06, 84Ov02, 87Bo25, 87De22, 87Go21, 87Ko07, 88Co07, 88SeZR, 90Gu16, 90In01, 90Po14, 90SeZT, 91BaZS, 91Ry01, 92An03, 92Ba08, 92Bl07, 92De37, 92Fr04, 92Ma16, 93He18, 94Du03)

D ^{236}U(^{3}He,d), ^{236}U(α,t) (70El02)

E ^{237}Np(γ,x), (e,x), (μ,x), (75Al17, 78Wi07, 80Sa15, 80Wi06, 86Al04, 86De38, 88Ar02, 88Da17, 90Ha03, 91Ch35, 91Lj01, 92Ge01, 92Tk01, 93Ho20, 93Oh03)

F ^{237}Np(d,d') (76Th01)

G Coulomb excitation (58Ne03, 80Si16, 83Ku05)

H ^{238}U(p,2nγ) (90St29)

Levels and γ-ray branchings:

0, 5/2$^+$, 2.144×10^6 *7* y, *[ABCFGH]*, %α=100, %SF≤2×10^{-10}, μ=+3.14 *4*, Q=+3.886 *6*

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

59.5412 *1*, 5/2$^-$, 67 *2* ns, *[ABCH]*, μ=+1.68 *3*, Q=+3.85 *4*
γ_{33}***26.3448*** *2* (†γ 6.71 *14*) E1
γ_0***59.5412*** *2* (†γ 100) E1

75.92 *4*, 9/2$^+$, ≈ 56 ps, *[ABCDFGH]*
γ_{33}***42.73*** *5* (†γ 100 *15*)
γ_0***75.8*** *2* (†γ ≈11)

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

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

158.51 *2*, 9/2$^-$, *[BCDFH]*
γ_{103}***55.56*** *2* (†γ 89 *9*) M1+E2: δ=0.46 *4*
γ_{60}***98.97*** *2* (†γ 100 *2*) E2
γ_{33}***125.30*** *2* (†γ 20.1 *2*)

191.46 *8*, 13/2$^+$, *[CDFGH]*
γ_{130}***61.46***
γ_{76}***115.5*** *1* (†γ 100)

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

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

269.9 *5*, 15/2$^+$, *[FGH]*
γ_{130}***139.9*** (†γ 100)

281.35 *2*, 1/2$^-$, *[AC]*
γ_{268}***13.81*** *2* (†γ 21.4 *8*) M1+E2: δ=0.0321 *10*
γ_{60}***221.80*** *4* (†γ 100 *4*) E2

305.06 *4*, 13/2$^-$, *[CH]*
γ_{226}***79.1***
γ_{159}***146.55*** *3* (†γ 100 *2*) E2
γ_{130}***175.07*** *4* (†γ 3.9 *3*)

316.8 *2* (?), *[C]*
γ_0***316.8*** *2*

324.42 *5*, (7/2$^-$), *[CDF]*
γ_{268}***56.8***
γ_{159}***165.81*** *6* (†γ 54.7 *24*)
γ_{103}***221.46*** *3* (†γ 100 *2*)
γ_{76}***249.00*** *15* (†γ 1.3)
γ_{60}***264.89*** *6* (†γ 21.2 *10*)
γ_{33}***291.30*** *20* (†γ 7.3 *8*)

332.36 *3*, 1/2$^+$, <1.0 ns, *[AC]*
γ_{281}***51.01*** *3* (†γ 93.4 *16*) E1
γ_{268}***64.83*** *2* (†γ 100 *2*) E1
γ_0***332.36*** *4* (†γ 26.6 *8*) E2

348.5 *5*, 17/2$^+$, *[DFG]*
γ_{191}***157.0*** (†γ 100)

359.7 *1*, (5/2$^-$), *[CF]*
γ_{268}***92.1***
γ_{60}***300.13*** *6* (?)

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

370.93 *3*, 3/2$^+$, *[AC]*
γ_{369}***2.3***
γ_{332}***38.54*** *3* (M1+E2)
γ_{33}***337.7*** *2* (†γ 8.3 *5*) (E2)
γ_0***370.94*** *3* (†γ 100 *1*) M1+E2: δ=0.43 $^{+7}_{-21}$

395.52 *5*, 15/2$^-$, *[C]*
γ_{226}***169.56*** *3* (†γ 100 *2*) E2
γ_{191}***204.06*** *6* (†γ 1.68 *11*)

(continued on next page)

418 *4* (?), *[C]*

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

444.78 *10* (?), *[C]*
- γ_{324}***120.36*** *8* (?) (†$_\gamma$100)

452.53 *5*, 9/2$^+$, *[CF]*
- γ_{191}***260.80*** *15* (†$_\gamma$0.80 *13*)
- γ_{130}***322.52*** *3* (†$_\gamma$100 *2*) (M1+E2): δ≈0.6
- γ_{76}***376.65*** *3* (†$_\gamma$91 *2*) (M1)
- γ_{33}***419.33*** *4* (†$_\gamma$18.9 *5*)
- γ_{0}***452.6*** *2* (†$_\gamma$1.6 *2*)

454.4 *10*, 19/2$^+$, *[G]*
- γ_{270}***184.5***

459.69 *4*, 7/2$^+$, *[C]*
- γ_{324}***135.3***
- γ_{76}***383.81*** *3* (†$_\gamma$100 *2*)
- γ_{33}***426.47*** *4* (†$_\gamma$87.2 *18*)
- γ_{0}***459.68*** *10* (†$_\gamma$12.8 *11*)

485.96 *12*, (9/2$^-$), *[CD]*
- γ_{324}***161.54*** *10* (†$_\gamma$100)
- γ_{226}***260.80*** *15*

497.02 *6*, 17/2$^-$, *[C]*
- γ_{305}***191.96*** *4* (†$_\gamma$100)

514.19 *6*, (3/2$^-$), *[CDF]*
- γ_{360}***154.27*** *20* (?) (†$_\gamma$6)
- γ_{281}***232.81*** *5* (†$_\gamma$48 *3*)
- γ_{268}***246.73*** *10* (†$_\gamma$25 *3*)
- γ_{60}***454.66*** *8* (†$_\gamma$100 *4*)
- γ_{0}***514.0*** *5* (†$_\gamma$27 *3*)

545.59 *16*, (5/2$^-$), *[CDF]*
- γ_{514}***31.4***
- γ_{281}***264.89*** *6*
- γ_{268}***278.04*** *15* (†$_\gamma$38)
- γ_{33}***512.5*** *3* (†$_\gamma$100 *20*)
- γ_{0}***545.4*** *3* (†$_\gamma$64)

547.0 *10*, 21/2$^+$, *[G]*
- γ_{349}***198.5***

590.28 *15*, (7/2$^-$), *[CDF]*
- γ_{268}***322.52*** *3*
- γ_{103}***487.3*** *3* (†$_\gamma$15.4)
- γ_{0}***590.28*** *15* (†$_\gamma$100 *7*)

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

598.0 *2*, 11/2$^+$, *[C]*
- γ_{460}***138.5***
- γ_{191}***406.35*** *15* (†$_\gamma$50 *8*)
- γ_{130}***468.12*** *15* (†$_\gamma$100 *8*)
- γ_{76}***522.06*** *15* (†$_\gamma$31 *11*)

618 *2*, *[F]*

646.1 *2*, (9/2$^-$), *[CF]*
- γ_{159}***487.3*** *3*
- γ_{60}***586.59*** *20* (†$_\gamma$100)

666.2 *2*, (5/2$^+$,7/2$^-$), *[CF]*
- γ_{268}***398.64*** *15* (?) (†$_\gamma$100)
- γ_{76}***590.28*** *15*
- γ_{33}***632.93*** *15* (†$_\gamma$63 *10*)
- γ_{0}***666.5*** *3* (†$_\gamma$25)

684.4 *12*, 23/2$^+$, *[G]*
- γ_{547}***137.6*** (?)
- γ_{454}***230.0***

709 *3*, (11/2$^-$), *[DF]*

721.95 *5*, 5/2$^-$, *[CF]*
- γ_{268}***454.66*** *8* (?)
- γ_{159}***563.05*** *30* (†$_\gamma$0.20)
- γ_{103}***619.01*** *2* (†$_\gamma$16.3 *2*)
- γ_{60}***662.40*** *2* (†$_\gamma$100 *1*) E0+M1+E2
- γ_{33}***688.72*** *4* (†$_\gamma$8.9 *2*)
- γ_{0}***722.01*** *3* (†$_\gamma$53.8 *3*)

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

758 *6*, *[D]*

770.57 *5*, *[C]*
- γ_{324}***446.43*** *15* (†$_\gamma$6.1 *2*)
- γ_{33}***737.34*** *5* (†$_\gamma$100 *3*)
- γ_{0}***770.57*** *10* (†$_\gamma$59 *3*)

787.1 *12*, 25/2$^+$, *[G]*
- γ_{547}***240.1***

800.00 *10*, 9/2$^-$, *[CF]*
- γ_{722}***78.1***
- γ_{226}***573.94*** *20* (†$_\gamma$18 *3*)
- γ_{159}***641.47*** *5* (†$_\gamma$100 *5*)
- γ_{130}***669.83*** *20* (†$_\gamma$5.4 *17*)
- γ_{103}***696.60*** *5*
- γ_{33}***767.00*** *10* (†$_\gamma$70.4 *22*)

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

823 *3*, *[F]*

853.36 *20*, 11/2$^-$, *[CF]*
- γ_{324}***529.17*** *20* (†$_\gamma$82)
- γ_{226}***627.18*** *20* (†$_\gamma$100 *31*)

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

906 *2*, *[F]*

914 *4*, *[D]*

920.9 *5*, *[CF]*
  γ_{60}***860.7*** *5* (†$_\gamma$37 *12*)
  γ_{33}***887.3*** *3* (†$_\gamma$100 *23*)
  γ_{0}***921.5*** *3* (†$_\gamma$86 *19*)

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

946 *2*, *[F]*

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

961 *3*, *[D]*

963 *2*, *[F]*

984 *2*, *[F]*

1013 *3*, *[F]*

1020 *3*, *[D]*

1030 *3*, *[F]*

1040 *4*, *[F]*

1066 *3*, *[F]*

1068.3 *13*, 29/2$^+$, *[G]*
  γ_{787}***281.2***

1072 *6*, *[D]*

1112 *4*, *[D]*

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

1389, 33/2$^+$, *[G]*
  γ_{1068}***321***

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

1749, 37/2$^+$, *[G]*
  γ_{1389}***360***

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

2146, 41/2$^+$, *[G]*
  γ_{1749}***396.9***

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

2578, 45/2$^+$, *[G]*
  γ_{2146}***431.9***

2800 *400*, 45 *5* ns, %SF=?, %IT=?

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

3043, 49/2$^+$, *[G]*
  γ_{2578}***465.5***

3464, 51/2$^+$, *[G]*
  γ_{2955}***508.6***

3541, 53/2$^+$, *[G]*

4004, 55/2$^+$, *[G]*
  γ_{3464}***540.1***

4069, 57/2$^+$, *[G]*
  γ_{3541}***527.5***

$\gamma(^{233}Pa)$ from ^{237}Np (2.144×10^6 y) α decay

< for Iγ% multiply by 1.0 >

5.5
6.68 *5* (M1)
8.22 *5* (†$_{\gamma+e}$≈9)
9.0
10.7
17.40 *5*
22.6
24.14 *10* (?)
29.374 *20* (†$_\gamma$15.0 *10*) E1
29.6
32.46
36.24 *10*
43.2
46.53 *6* (†$_\gamma$0.11 *1*)
48.96 *10* (?)
54.40 *10*
57.10 *2* (†$_\gamma$0.39 *1*) E2
62.59 *10* (†$_\gamma$0.006 *3*)
63.92 *6* (†$_\gamma$0.012 *2*) (E2)
70.49 *10* (†$_\gamma$0.012 *3*)
74.54 *10* (†$_\gamma$0.011 *3*)
86.477 *10* (†$_\gamma$12.4 *4*) E1
87.99 *3* (†$_\gamma$0.14 *1*)
94.66 *5* (†$_\gamma$0.6 *2*) E1
106.15 *25* (†$_\gamma$0.053 *5*)
108.7 *7* (†$_\gamma$0.068 *15*) M1+E2: δ<0.22
109.10 *10* (?)
115.4 *4* (†$_\gamma$0.0026 *8*)
117.702 *20* (†$_\gamma$0.16 *1*) M1+E2: δ=0.30 *9*
131.101 *25* (†$_\gamma$0.085 *9*) E1
134.285 *20* (†$_\gamma$0.067 *7*)
139.9 *1* (?) (†$_\gamma$≈0.005)
141.74 *10*
143.249 *20* (†$_\gamma$0.43 *2*) M1+E2: δ<0.4
151.414 *20* (†$_\gamma$0.232 *12*) M1+E2: δ=0.69 *20*
153.37 *10* (†$_\gamma$0.0050 *10*)

$^{237}_{93}Np$ (continued)

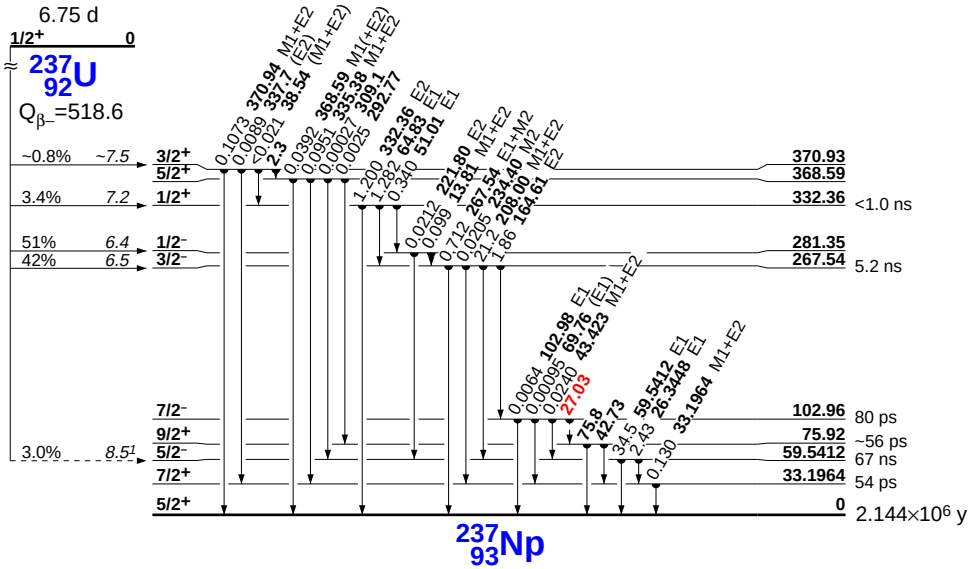
γ(^{233}Pa) from ^{237}Np (2.144×10^{6} y) α decay

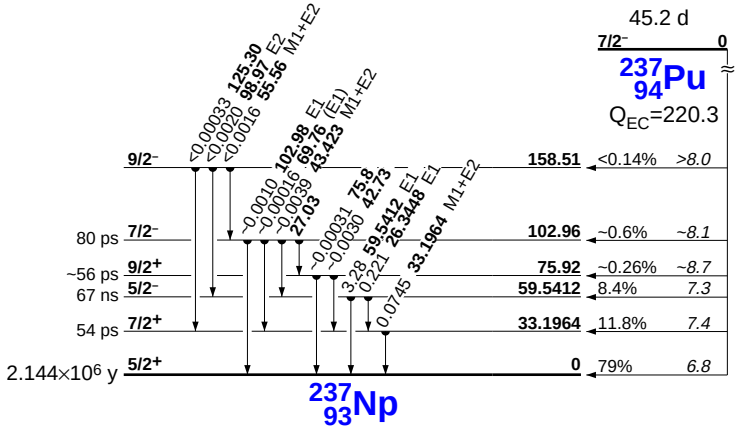
< *for Iγ% multiply by 1.0* **>**

155.239 *20* (†$_{\gamma}$0.092 *9*) E1
162.504 *12* (†$_{\gamma}$0.032 *4*)
169.159 *10* (†$_{\gamma}$0.073 *7*)
170.7 *3*
176.12 *6* (†$_{\gamma}$0.018 *3*)
180.81 *10* (†$_{\gamma}$0.020 *4*)
186.8 *2* (M1+E2)
191.46 *5* (†$_{\gamma}$0.025 *4*)
193.26 *5* (†$_{\gamma}$0.049 *5*)
194.7 *2* (?)
194.95 *3* (†$_{\gamma}$0.184 *10*) E1
196.86 *5* (†$_{\gamma}$0.020 *3*)
199.95
201.62 *5* (†$_{\gamma}$0.044 *5*) E1
202.0 *2* (†$_{\gamma}$0.0048 *19*)
209.19 *5* (†$_{\gamma}$0.016 *2*)
212.29 *5* (†$_{\gamma}$0.155 *10*) E1
214.01 *5* (†$_{\gamma}$0.045 *9*)
219.8 (?)
222.6 *2* (†$_{\gamma}$0.0020 *10*)
229.94 *5* (†$_{\gamma}$0.014 *4*)
237.86 *2* (†$_{\gamma}$0.063 *7*)
248.95 *10* (†$_{\gamma}$0.0050 *14*)
250.5 *3*
257.30 *15*
257.09 *20* (†$_{\gamma}$0.0064 *14*)
262.44 *20* (†$_{\gamma}$0.0068 *14*)
279.65 *20* (†$_{\gamma}$0.002 *2*)

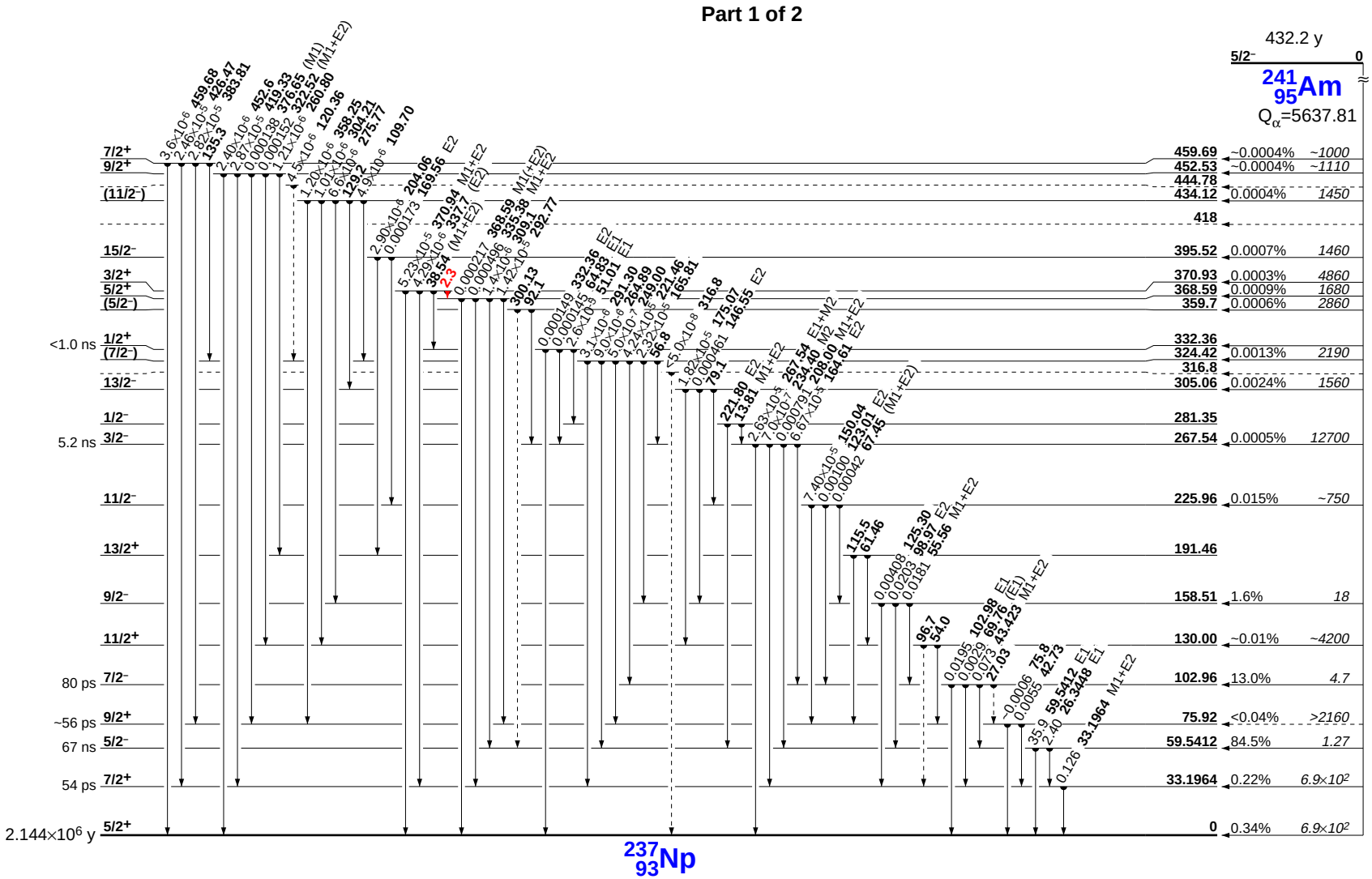
α from ^{237}Np (2.144×10^{6} y) α decay **<** *for Iα% multiply by 1.0* **>**

α_{0}***4873.0*** *20* (†0.44),
α_{7}***4862.8*** *20* (†0.24),
α_{57}***4817.3*** *20* (†2.5 *4*),
α_{70}***4803.3*** *20* (†1.56),
α_{86}***4788.0*** *15* (†47 *9*),
α_{104}***4771.0*** *15* (†25 *6*),
α_{109}***4766.0*** *15* (†8 *3*),
α_{133}***4741.3*** *20* (†0.019),
α_{163}***4712.3*** *20* ,
α_{169}***4708.3*** *20* ,
α_{180}***4694.4*** *20* (†0.48 *20*),
α_{212}***4664.0*** *20* (†3.32 *10*),
α_{238}***4639.4*** *20* (†6.18 *12*),
α_{257}***4620*** (?) ,
α_{280}***4598.6*** *20* (†0.34 *4*),
α_{300}***4581.0*** *20* (†0.40 *4*),
α_{304}***4573.8*** *20* (†0.054),
α_{306}***4572.1*** (?) ,
α_{366}***4514.5*** *20* (†0.04 *2*).


6.75 d
1/2+ 0
237 92U
Qβ−=518.6
~0.8% ~7.5
3.4% 7.2
51% 6.4
42% 6.5
3.0% 8.5[1]
3/2+
5/2+
1/2+
1/2−
3/2−
7/2−
9/2+
5/2−
7/2+
5/2+
370.93
368.59
332.36
281.35
267.54
102.96
75.92
59.5412
33.1964
0
<1.0 ns
5.2 ns
80 ps
~56 ps
67 ns
54 ps
2.144×10^6 y
237 93Np

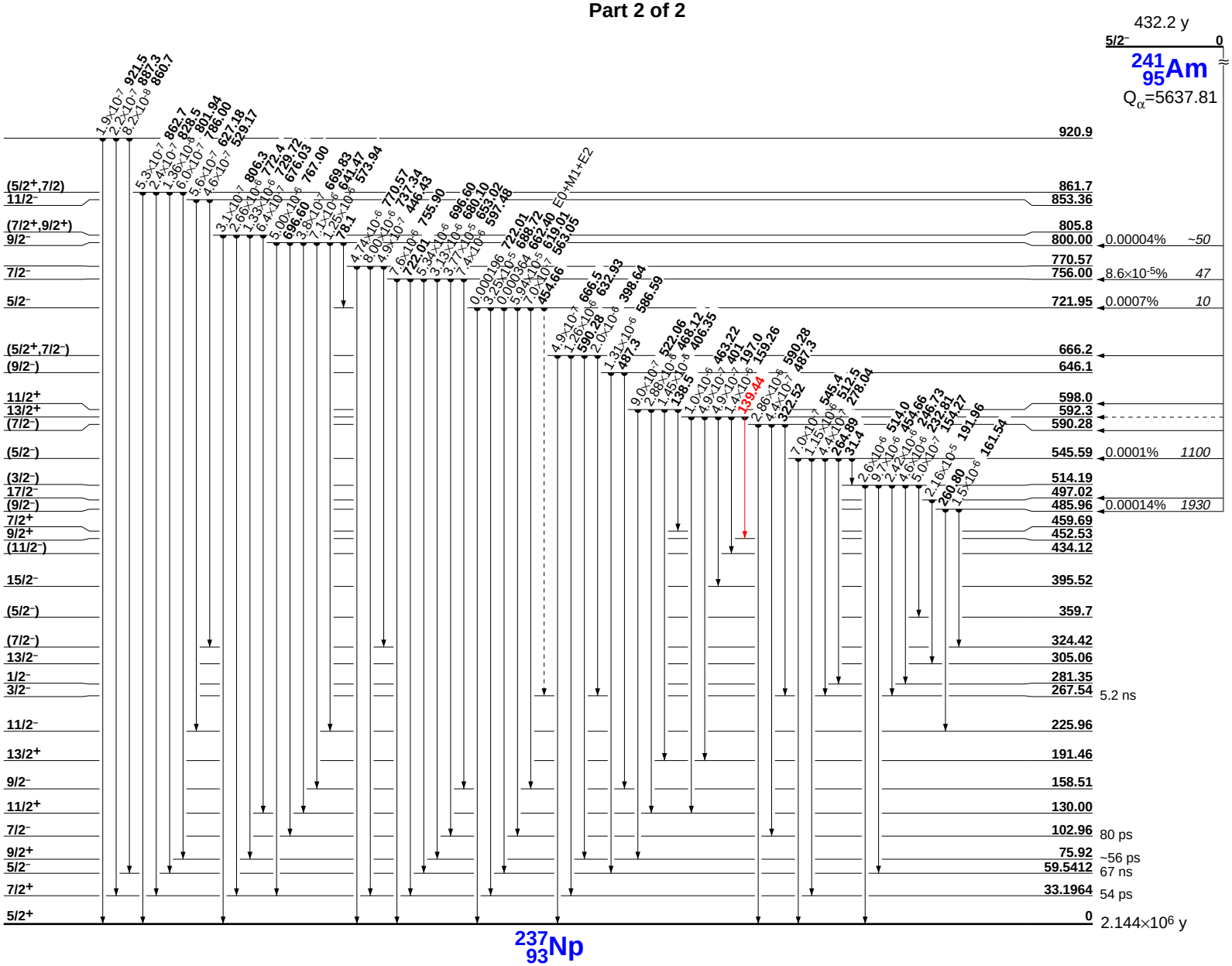

45.2 d
7/2⁻
0
237 94Pu
Q_EC=220.3
9/2⁻
158.51
<0.14%
>8.0
7/2⁻
102.96
~0.6%
~8.1
80 ps
9/2⁺
75.92
~0.26%
~8.7
~56 ps
5/2⁻
59.5412
8.4%
7.3
67 ns
7/2⁺
33.1964
11.8%
7.4
54 ps
5/2⁺
0
79%
6.8
2.144×10⁶ y
237 93Np
<0.00033
125.30
E2
<0.0020
98.97
M1+E2
<0.0016
55.56
102.98
E1
69.76
(E1)
43.423
M1+E2
~0.0010
~0.00016
~0.0039
27.03
~0.00031
~0.030
75.8
42.73
E1
59.5412
E1
26.3448
M1+E2
33.1964
3.28
0.221
0.0745

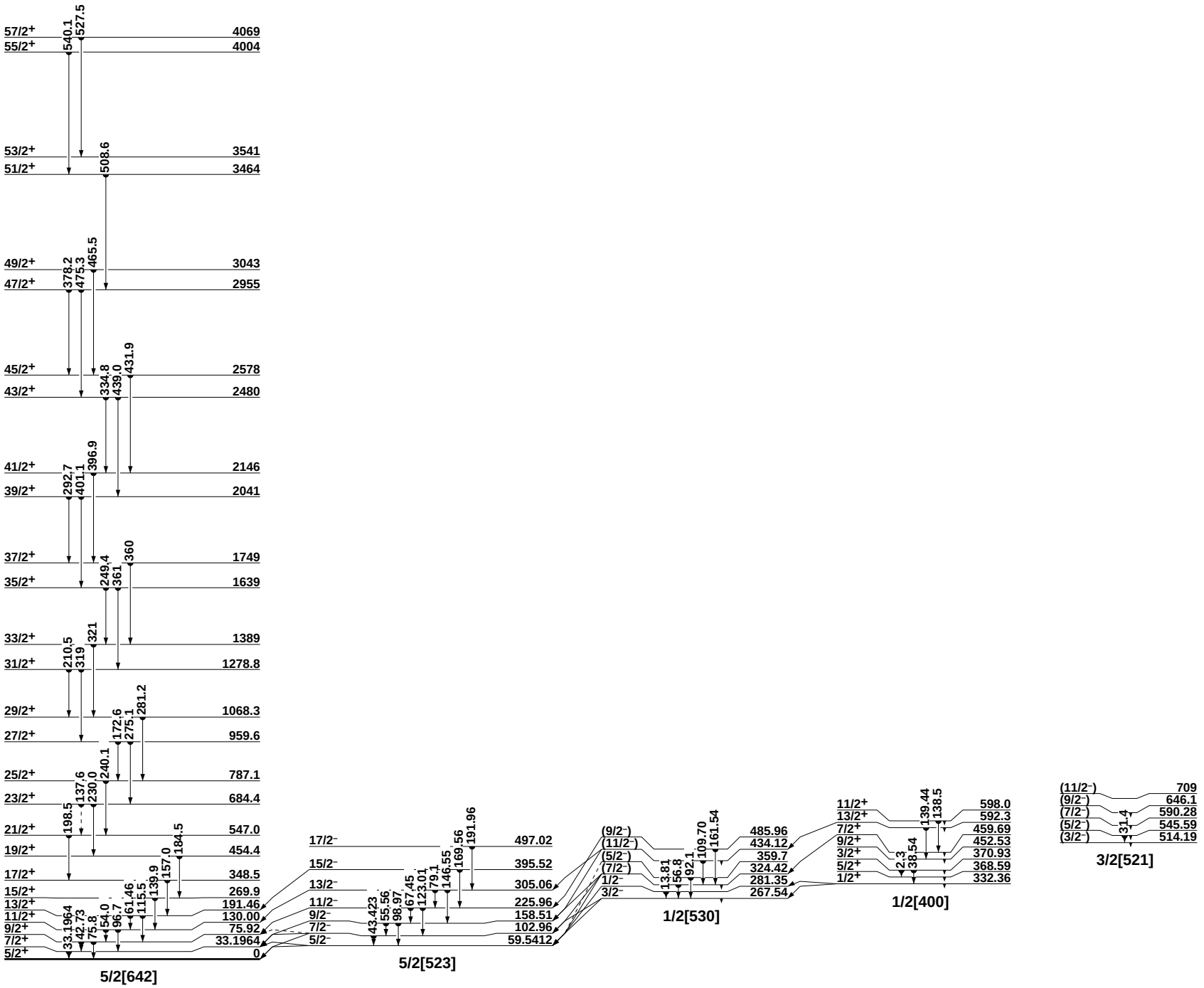
Part 1 of 2



432.2 y
5/2⁻ 0
241 95 Am
Qα=5637.81
7/2+ 459.69 ~0.0004% ~1000
9/2+ 452.53 ~0.0004% ~1110
444.78
(11/2⁻) 434.12 0.0004% 1450
418
15/2⁻ 395.52 0.0007% 1460
3/2+ 370.93 0.0003% 4860
5/2+ 368.59 0.0009% 1680
(5/2⁻) 359.7 0.0006% 2860
<1.0 ns 1/2+ 332.36
(7/2⁻) 324.42 0.0013% 2190
316.8
13/2⁻ 305.06 0.0024% 1560
1/2⁻ 281.35
5.2 ns 3/2⁻ 267.54 0.0005% 12700
11/2⁻ 225.96 0.015% ~750
13/2+ 191.46
9/2⁻ 158.51 1.6% 18
11/2+ 130.00 ~0.01% ~4200
80 ps 7/2⁻ 102.96 13.0% 4.7
~56 ps 9/2+ 75.92 <0.04% >2160
67 ns 5/2⁻ 59.5412 84.5% 1.27
54 ps 7/2+ 33.1964 0.22% 6.9×10²
2.144×10⁶ y 5/2+ 0 0.34% 6.9×10²
237 93 Np

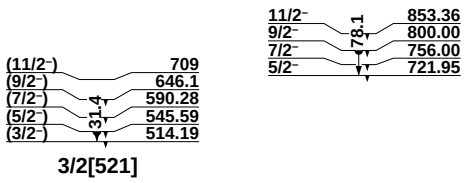
Part 2 of 2


432.2 y
5/2⁻ 0
241 95 Am
Qα=5637.81
237 93 Np
2.144×10⁶ y
920.9
861.7
853.36
805.8
800.00 0.00004% ~50
770.57
756.00 8.6×10-5% 47
721.95 0.0007% 10
666.2
646.1
598.0
592.3
590.28
545.59 0.0001% 1100
514.19
497.02
485.96 0.00014% 1930
459.69
452.53
434.12
395.52
359.7
324.42
305.06
281.35
267.54 5.2 ns
225.96
191.46
158.51
130.00
102.96 80 ps
75.92 ~56 ps
59.5412 67 ns
33.1964 54 ps
0
(5/2+,7/2)
11/2⁻
(7/2+,9/2+)
9/2⁻
7/2⁻
5/2⁻
(5/2+,7/2⁻)
(9/2⁻)
11/2+
13/2+
(7/2⁻)
(5/2⁻)
(3/2⁻)
17/2⁻
(9/2⁻)
7/2+
9/2+
(11/2⁻)
15/2⁻
(5/2⁻)
(7/2⁻)
13/2⁻
1/2⁻
3/2⁻
11/2⁻
13/2+
9/2⁻
11/2+
7/2⁻
9/2+
5/2⁻
7/2+
5/2+
E0+M1+E2
139.44



$^{237}_{93}$Np

Part 1



$^{237}_{93}Np$

Part 2