$^{145}_{61}$Pm (Continued)

1346.9 *6*, 13/2$^+$, *[CDE]* γ_{837}***510.4*** *4* (†$_\gamma$75 *13*) (M1+E2) γ_{714}***633.3*** *3* (†$_\gamma$100 *13*) E2

1365.9 *6*, *[D]* γ_{837}***529.4*** *3* (†$_\gamma$44 *5*) γ_{714}***652.4*** *4* (†$_\gamma$100 *16*)

1384.9 *7*, 7/2$^-$, *[BD]* γ_{1102}***283.17*** *7* (†$_\gamma$100) M1+E2

1388.5 *8*, *[D]* γ_{714}***674.9*** *5* (†$_\gamma$100)

1397.2 *7*, 13/2$^+$, *[CD]* γ_{1207}***190.35*** *5* (†$_\gamma$82 *8*) M1 γ_{750}***646.8*** *4* (†$_\gamma$100 *12*) E2

1447.9 *7*, 15/2$^-$, *[E]* γ_{795}***653.1*** *1* (†$_\gamma$100 *7*)

1455.7 *8*, *[D]* γ_{714}***742.1*** *5* (†$_\gamma$100)

1489, (3/2$^+$), *[B]*

1493.6 *8*, 13/2$^+$, *[CD]* γ_{837}***657.1*** *5* (†$_\gamma$100) M1

1502.0 *8*, 15/2$^+$, *[DE]* γ_{1347}***155.15*** *4* (†$_\gamma$11.3 *13*) γ_{837}***665.5*** *4* (†$_\gamma$100 *8*) E2

1507, (3/2)$^+$, *[B]*

1558.3 *8*, *[D]* γ_{837}***721.8*** *5* (†$_\gamma$100)

1563, *[B]*

1648.7 *9*, (15/2), *[CD]* γ_{1397}***251.48*** *7* (†$_\gamma$100) D

1716, 1/2$^+$, *[B]*

1753, 1/2$^+$,(11/2)$^-$, *[B]*

1809, (1/2$^+$), *[B]*

1844.8 *7*, 17/2(+), *[E]* γ_{1502}***342.1*** *1* (†$_\gamma$27 *5*)

1849, *[B]*

1978, 1/2$^+$, *[B]*

2008, (3/2)$^+$, *[B]*

2026.1 *7*, 19/2$^-$, *[E]* γ_{1448}***578.2*** *1* (†$_\gamma$84 *6*)

2112, 1/2$^+$, *[B]*

2124.7 *7*, 19/2(+), *[E]* γ_{1845}***279.9*** *1* (†$_\gamma$20.4 *14*) γ_{1502}***622.0*** *1* (†$_\gamma$7.7 *10*)

2168, *[B]*

2190, (3/2$^+$), *[B]*

2210, (3/2$^+$), *[B]*

2282, (3/2)$^+$, *[B]*

2294, (3/2)$^+$, *[B]*

2329, *[B]*

2401, *[B]*

2431, *[B]*

2441.8 *7*, 21/2(+), *[E]* γ_{2125}***317.1*** *1* (†$_\gamma$9.9 *7*) γ_{2026}***415.6*** *1* (†$_\gamma$5.7 *4*)

2448.8 *7*, 23/2$^-$, *[E]* γ_{2026}***422.7*** *1* (†$_\gamma$86 *6*)

2474, *[B]*

2562, *[B]*

2615.3 *7*, 21/2(+), *[E]* γ_{2125}***490.6*** *1* (†$_\gamma$10.2 *6*)

2811.7 *7*, 23/2(+), *[E]* γ_{2615}***196.4*** *1* (†$_\gamma$7.8 *11*) γ_{2449}***362.9*** *1* (†$_\gamma$8.4 *6*) γ_{2442}***369.9*** *1* (†$_\gamma$4.6 *3*)

3052.6 *7*, 27/2$^-$, *[E]* γ_{2449}***603.8*** *1* (†$_\gamma$55 *4*)

3160.0 *7*, 25/2, *[E]* γ_{2812}***348.2*** *1* (†$_\gamma$11 *3*) γ_{2615}***544.7*** *1* (†$_\gamma$2.3 *3*) γ_{2449}***711.2*** *1* (†$_\gamma$6.0 *5*)

3497.4 *7*, 27/2, *[E]* γ_{3160}***337.4*** *1* (†$_\gamma$9.6 *8*) γ_{3053}***444.9*** *1* (†$_\gamma$10.8 *22*)

3665.2 *7*, 27/2, *[E]* γ_{2812}***853.5*** *1* (†$_\gamma$8.3 *14*)

3760.6 *7*, 29/2, *[E]* γ_{3497}***263.2*** *1* (†$_\gamma$11.5 *9*) γ_{3053}***708.0*** *1* (†$_\gamma$31.5 *22*)

4014.0 *7*, 31/2, *[E]* γ_{3761}***253.4*** *1* (†$_\gamma$10.9 *10*) γ_{3497}***516.6*** *1* (†$_\gamma$4.2 *10*)

4086.2 *7*, (29/2), *[E]*

γ(^{145}*Nd*) from ^{145}Pm (17.7 y) EC decay
< *for Iγ% multiply by 0.0185 20* **>**
67.2 *1* (†$_\gamma$29.9 *8*) E2, ***72.4*** *1* (†$_\gamma$100) M1.

α from ^{145}Pm (17.7 y) α decay
< *for Iα% multiply by 2.8×10^{-9}* **>**
α_0***2240*** *40* (†100).

$^{145}_{62}$Sm

Δ: –80661 *3* **S$_n$**: 6757.1 *3* **S$_p$**: 6525 *3*
Q$_{EC}$: 616.7 *24* **Q$_\alpha$**: 1116 *4*
σ_γ: ≈220 b

Populating Reactions and Decay Modes

A ^{145}Eu EC decay (61An04, 66Go08, 66Zh01, 67Dr01, 67Hi05, 67Ob03, 68Ad04, 73Ne01, 75BuZA, 76Be09, 77BaZP, 78VyZX, 82De26, 83BeZF, 83Sc28, 83Va02, 84Me09, 86Ad06)
B ^{149}Gd α decay
C ^{142}Nd(α,nγ) (86TrZW)
D ^{144}Nd(α,3nγ) (75Cl01, 75Kl01, 77Ha04, 91Pi06)
E ^{144}Sm(n,γ) E=Thermal (78WaZM)
F ^{144}Sm(d,p), (d,pγ) (65Ke09, 66Jo02, 67Ch16, 74No05, 75Bo22)
G ^{144}Sm(α,^{3}He) (81Re10)
H ^{144}Sm(^{13}C,^{12}C) (75Th09)
I ^{145}Nd(α,4nγ) (91Pi06)
J ^{146}Sm(pol d,t) (89Ka21)

Levels and γ-ray branchings:

0, 7/2$^-$, 340 *3* d, *[ACDEFGH]*, %EC=100, μ=–1.11 *6*, Q=–0.59 *17*

893.792 *18*, 3/2$^-$, 36 *12* ps, *[ACDEFGH]* γ_0***893.73*** *3* (†$_\gamma$100) E2

1105.02 *18*, 13/2$^+$, 15 *2* ns, *[CDFGI]* γ_0***1105.0*** *2* (†$_\gamma$100) E3

1423.23 *3*, 9/2$^-$, *[ACDFG]* γ_0***1423.19*** *5* (†$_\gamma$100) M1(+E2): δ=+0.48$^{+6}_{-3}$

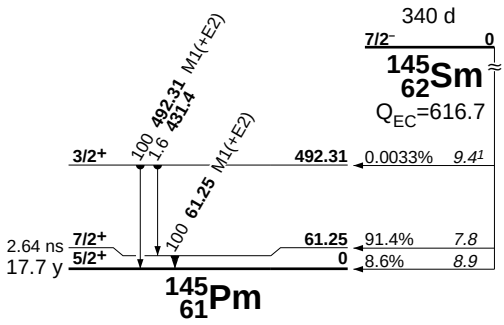
1436.372 *25*, 1/2$^+$, *[ACJ]* γ_{894}***542.57*** *3* (†$_\gamma$100) E1

1538.04 *16*, 11/2$^-$, *[CD]* γ_{1105}***433.0*** *3* (†$_\gamma$22 *9*) γ_0***1538.0*** *2* (†$_\gamma$100 *13*) Q

1547.310 *23*, 3/2$^+$, *[ACJ]* γ_{1436}***110.943*** *24* (†$_\gamma$12.8 *7*) M1+E2: δ=–1.98 *6* γ_{894}***653.512*** *25* (†$_\gamma$100 *5*) E1 γ_0***1547.30*** *8* (†$_\gamma$0.36 *3*) M2+E3: δ=+0.62$^{+12}_{-10}$

1607.28 *3*, 1/2$^-$, *[AEFH]* γ_{894}***713.48*** *5* (†$_\gamma$100) M1

1627.75 *4*, 3/2$^+$, *[ACJ]* γ_{1547}***80.46*** *10* (†$_\gamma$2.4 *2*) γ_{1436}***191.38*** *3* (†$_\gamma$100 *5*) M1+E2: δ=+0.084 *16*



1658.568 *21*, 5/2$^-$, *[AFH]* γ_{894}***764.74*** *4* (†$_\gamma$11.3 *6*) M1+E2: δ=+0.16 *7* γ_0***1658.53*** *5* (†$_\gamma$100 *5*) M1+E2: δ=–2.07 *6*

1706.13 *19*, 9/2$^-$, *[D]* γ_{1538}***168.0*** *3* (†$_\gamma$54 *12*) M1+E2 γ_{1423}***283.1*** *3* (†$_\gamma$27 *4*) γ_0***1706.0*** *3* (†$_\gamma$100 *23*) M1+E2

1729.2 *10*, 1/2$^+$, *[CJ]* γ_{894}***835.4*** (†$_\gamma$100)

1774.0 *4*, (15/2$^+$), *[D]* γ_{1105}***669.0*** *3* (†$_\gamma$100) D+Q

1774.1 *3*, (9/2)$^-$, *[DE]* γ_0***1774.0*** *3* (†$_\gamma$100)

1780.32 *9*, 9/2$^-$, *[AFG]* γ_0***1780.27*** *10* (†$_\gamma$100)

1804.25 *4*, 5/2$^+$, *[ACF]* γ_{1628}***176.62*** *9* (†$_\gamma$0.74 *6*) γ_{1547}***256.89*** *7* (†$_\gamma$2.03 *19*) M1 γ_{894}***910.47*** *11* (†$_\gamma$6.4 *4*) E1 γ_0***1804.26*** *5* (†$_\gamma$100 *5*) E1

1848.1 *3*, 9/2$^+$, *[AC]* γ_0***1848.1*** *3* (†$_\gamma$100)

1857.66 *4*, 7/2$^+$, *[ACF]* γ_{1659}***199.14*** *3* (†$_\gamma$7.6 *8*) γ_{1423}***434.43*** *4* (†$_\gamma$43.4 *24*) E1 γ_0***1857.66*** *5* (†$_\gamma$100 *5*) E1

1876.64 *4*, 7/2$^-$, *[AF]* γ_{1659}***218.11*** *9* (†$_\gamma$0.69 *10*) γ_{1423}***453.42*** *6* (†$_\gamma$2.66 *20*) M1(+E2): δ=+0.03 *12* γ_{894}***982.62*** *16* (†$_\gamma$0.15 *5*) γ_0***1876.67*** *6* (†$_\gamma$100 *5*) M1+E2: δ=–1.29$^{+6}_{-7}$

1972.725 *21*, 3/2$^-$, *[AEFG]* γ_{1659}***314.13*** *3* (†$_\gamma$10.4 *6*) M1(+E2): δ=+0.04$^{+27}_{-29}$ γ_{1628}***344.92*** *10* (†$_\gamma$2.1 *3*) γ_{1607}***365.51*** *5* (†$_\gamma$11.5 *8*) M1+E2: δ=–2.2$^{+7}_{-13}$ γ_{1547}***425.48*** *7* (†$_\gamma$4.2 *3*) E1 γ_{1436}***536.15*** *10* (†$_\gamma$6.0 *14*) γ_{894}***1078.91*** *3* (†$_\gamma$100 *5*) M1+E2: δ=+0.04 *1* γ_0***1972.77*** *4* (†$_\gamma$22.2 *14*) E2

1996.96 *3*, 5/2$^-$, *[AFGH]* γ_{1877}***120.44*** *8* (†$_\gamma$0.24 *9*) γ_{1659}***338.37*** *3* (†$_\gamma$0.75 *5*) M1+E2: δ=+1.9$^{+14}_{-8}$ γ_{1423}***573.55*** *12* (†$_\gamma$0.09 *2*) γ_{894}***1103.12*** *25* (†$_\gamma$0.08 *1*) γ_0***1997.00*** *4* (†$_\gamma$100 *6*) M1+E2: δ=+0.241 *11*

2049.96 *25*, 15/2$^-$, ≈ 3 ns, *[DI]* γ_{1105}***944.9*** *2* (†$_\gamma$100) E1

2110.60 *5*, 5/2$^-$,7/2$^-$,9/2$^-$, *[AF]* γ_0***2110.58*** *5* (†$_\gamma$100) M1

2113.1 *8*, 11/2(+), *[C]* γ_{1538}***575*** γ_{1423}***690***

2133.43 *3*, 3/2$^-$, *[AEFG]* γ_{1973}***160.70*** *6* (†$_\gamma$7.2 *6*) γ_{1659}***474.89*** *10* (†$_\gamma$11.3 *15*) γ_{1607}***526.10*** *4* (†$_\gamma$43.9 *27*) M1+E2: δ=+0.31$^{+10}_{-9}$ γ_{1547}***586.06*** *9* (†$_\gamma$9.3 *15*) γ_{894}***1239.60*** *6* (†$_\gamma$54.9 *30*) M1+E2: δ=–0.61$^{+7}_{-9}$ γ_0***2133.42*** *5* (†$_\gamma$100 *12*) E2

2155.50 *5*, (5/2$^-$,7/2$^-$), *[A]* γ_{1659}***497.3*** *4* (†$_\gamma$3.3 *6*) γ_{894}***1261.9*** *2* (†$_\gamma$3.3 *6*) γ_0***2155.46*** *5* (†$_\gamma$100 *5*) M1

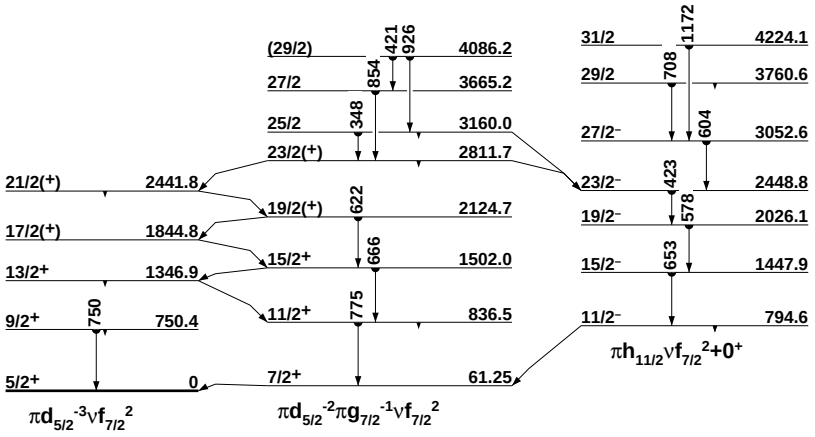
2160.3 *5*, 1/2$^-$, *[EFGH]*

2192.98 *5*, 5/2$^-$,7/2$^-$,9/2$^-$, *[AF]* γ_0***2192.96*** *5* (†$_\gamma$100) M1

2230.0 *3*, 17/2$^-$, *[D]* γ_{2050}***180.0*** *2* (†$_\gamma$100) M1

2276.55 *4*, 5/2$^+$, *[A]* γ_{1547}***729.09*** *14* (†$_\gamma$26 *3*) γ_0***2276.54*** *4* (†$_\gamma$100 *6*) E1(+M2): δ=+0.067 *30*

2292.82 *13*, 9/2$^+$, *[AF]* γ_0***2292.80*** *13* (†$_\gamma$100)

2329.30 *9*, 5/2$^-$,7/2$^-$,3/2$^-$, *[A]* γ_0***2329.28*** *9* (†$_\gamma$100) E2,(M1)

2340.63 *8*, *[A]* γ_{2111}***230.01*** *20* (†$_\gamma$16 *3*) γ_{1780}***560.24*** *13* (†$_\gamma$19 *3*) γ_0***2340.64*** *9* (†$_\gamma$100 *9*)