$^{109}_{46}$Pd (Continued)

981.755 *10*, 5/2$^+$, *[ACDEFG]* γ_{426}***555.614*** *13* (†$_\gamma$41 *7*) γ_{327}***654.892*** *16* (†$_\gamma$43 *9*) γ_{291}***690.300*** *26* (†$_\gamma$100 *10*) γ_{276}***705.433*** *47* (†$_\gamma$18 *7*)
1006 *4*, *[F]*
1053.628 *20*, 3/2$^+$, *[CDEFG]* γ_{327}***726.740*** *24* (†$_\gamma$100 *10*) γ_{266}***787.314*** *34* (†$_\gamma$42 *9*)
1065.8 *5*, 1/2$^+$, *[CEG]*
1091.0 *5*, 5/2$^+$, *[CDEFG]*
1111.8 *5*, 1/2,3/2, *[CE]*
1134.696 *10*, 1/2,3/2, *[CEFG]* γ_{673}***461.194*** *7* (†$_\gamma$100 *10*) γ_{605}***530.202*** *10* (†$_\gamma$20 *3*)
1147.7 *5*, 3/2$^+$, *[CEFG]*
1176 *4*, 5/2$^-$,7/2$^-$, *[F]*
1232.795 *50*, 1/2$^+$, *[CEFG]* γ_{434}***799.265*** *51* (†$_\gamma$65 *8*) γ_{266}***966.439*** *24* (†$_\gamma$100 *10*)
1241 *5*, 5/2$^-$,7/2$^-$, *[F]*
1243.9 *5*, 1/2,3/2, *[CEG]*
1269.5 *5*, 5/2$^+$,3/2$^+$, *[CDEFG]*
1308 *4*, *[F]*
1318.0 *5*, *[A]* γ_{276}***1041.7*** *5* (†$_\gamma$100 *25*) γ_0***1318*** *1* (†$_\gamma$100 *50*)
1328.4 *5*, 5/2, *[CDEFG]*
1329 *5*, (1/2$^-$,3/2$^-$), *[F]*
1347.7 *5*, 1/2$^+$, *[CDEFG]*
1359.413 *14*, 1/2,3/2, *[CE]* γ_{1135}***224.717*** *7* (†$_\gamma$2.2 *4*) γ_{673}***685.909*** *24* (†$_\gamma$85 *9*) γ_{605}***754.908*** *22* (†$_\gamma$100 *10*) γ_{340}***1019.868*** *27* (†$_\gamma$47 *5*)
1371.1 *5*, 5/2$^+$, *[CDEG]*
1399.0 *5*, 1/2,3/2, *[CDE]*
1448 *4*, 3/2$^+$,5/2$^+$, *[DFG]*
1478.7 *5*, 1/2$^+$, *[CFG]*
1484.9 *5*, 1/2,3/2,5/2$^+$, *[CF]*
1499 *4*, *[F]*
1537.3 *5*, 1/2$^+$, *[CG]*
1540.3 *5*, 3/2, *[CDF]*
1601.7 *5*, (1/2$^+$), *[CG]*
1615.8 *5*, 1/2,3/2,5/2, *[C]*
1623.9 *5*, 1/2,3/2,5/2, *[CDG]*
1644.6 *5*, (3/2$^+$), *[CFG]*
1647.8 *5*, 1/2,3/2,5/2, *[CDG]*
1656 *4*(?), (1/2$^+$), *[G]*
1664 *4*, *[F]*
1683.5 *5*, 1/2$^+$, *[CF]*
1692 *4*, 1/2$^+$, *[G]*
1710.2 *5*, 1/2,3/2, *[C]*
1737 *4*, *[F]*
1773 *4*, 5/2$^-$,7/2$^-$, *[F]*
1785 *4*(?), 1/2$^+$, *[CFG]*
1791 *4*, *[G]*
1800 *4*, 1/2$^+$, *[F]*
1819 *4*, *[F]*
1836 *4*, 5/2$^-$,7/2$^-$, *[CF]*
1846 *4*, *[F]*
1848 *4*, 1/2$^+$, *[G]*
1863 *4*, (5/2$^-$,7/2$^-$), *[F]*
1877 *4*, 1/2$^-$,3/2$^-$, *[F]*
1878 *4*, 3/2$^+$,5/2$^+$, *[G]*
1915 *4*, 1/2$^-$,3/2$^-$, *[CF]*
1925 *4*, 1/2$^-$,3/2$^-$, *[FG]*
1941 *4*, 5/2$^-$,7/2$^-$, *[F]*
1954 *4*, *[F]*
1972 *4*, 5/2$^-$,7/2$^-$, *[F]*
1977 *4*, 1/2$^-$,3/2$^-$, *[G]*
1999 *4*, *[CG]*
2014 *4*, 1/2$^+$, *[G]*
2021 *4*, 1/2$^-$,3/2$^-$, *[CF]*
2053 *4*, *[F]*
2091 *4*, 3/2$^+$,5/2$^+$, *[CF]*
2101 *4*, (3/2$^+$,5/2$^+$), *[G]*
2117 *4*, 1/2$^-$,3/2$^-$, *[F]*
2120 *4*, 1/2$^+$, *[CG]*
2135 *4*, (1/2$^-$,3/2$^-$), *[F]*
2160 *4*, 1/2$^-$,3/2$^-$, *[CF]*
2174 *4*, 3/2$^+$,5/2$^+$, *[G]*
2188 *4*, 1/2$^+$, *[G]*
2209 *4*, 5/2$^-$,7/2$^-$, *[F]*
2240 *4*, (3/2$^+$,5/2$^+$), *[CG]*
2245 *4*, 1/2$^-$,3/2$^-$, *[F]*
2259 *4*, 1/2$^-$,3/2$^-$, *[F]*
2280 *4*, 3/2$^+$,5/2$^+$, *[F]*
2282 *4*, 1/2$^+$, *[G]*
2295 *4*, 1/2$^-$,3/2$^-$, *[G]*
2301 *4*, (1/2$^-$,3/2$^-$), *[F]*
2320 *4*, 3/2$^+$,5/2$^+$, *[G]*
2346 *4*, (5/2$^-$,7/2$^-$), *[F]*
2357 *4*, (1/2$^-$,3/2$^-$), *[F]*
2371 *4*, 5/2$^-$,7/2$^-$, *[F]*
2372 *4*, 3/2$^+$,5/2$^+$, *[G]*
2380 *4*, 1/2$^+$, *[G]*
2391 *4*, 5/2$^-$,7/2$^-$, *[F]*
2415 *4*, 1/2$^-$,3/2$^-$, *[CF]*
2465 *4*, 5/2$^-$,7/2$^-$, *[F]*
2473 *4*, 1/2$^-$,3/2$^-$, *[FG]*
2493 *4*, (5/2$^-$,7/2$^-$), *[F]*
2522 *4*, 3/2$^+$,5/2$^+$, *[F]*
2541 *4*, *[F]*

γ from ^{109}Pd (4.696 m) IT decay
< for Iγ% multiply by 1.0>
188.9 *1* (†$_\gamma$55.9) E3.

γ(^{109}*Ag*) from ^{109}Pd (13.7012 h) β$^-$ decay
< for Iγ% multiply by 0.000244 7>
44.7 *6* (†$_\gamma$4.5 *5*) M1+E2: δ=0.30 *12*, ***88.04*** *5* (†$_\gamma$1.48×10^4 *14*) E3, ***103.9*** *4* (†$_\gamma$3.8 *8*) M1+E2: δ=0.04 *2*, ***134.2*** *2* (†$_\gamma$5.4 *11*) M1+E2, ***145.1*** *2* (†$_\gamma$4.6 *8*) M1+E2, ***286.3*** *5* (†$_\gamma$0.58 *15*), ***309.1*** *5* (†$_\gamma$20 *6*) E1, ***311.4*** *1* (†$_\gamma$131 *12*) M1+E2: δ=0.20 *1*, ***390.6*** *2* (†$_\gamma$3.8 *8*) M1+E2: δ=0.241 *16*, ***395.6*** *3* (†$_\gamma$0.7 *3*), ***413.0*** *4* (†$_\gamma$27 *4*) E1+M2: δ=−0.249 *15*, ***415.2*** *3* (†$_\gamma$44 *4*) E2, ***423.9*** *2* (†$_\gamma$3.9 *8*) E1+M2: δ=−0.27 *4*, ***447.6*** *2* (†$_\gamma$3.4 *8*) M1+E2: δ=0.16 *4*, ***454.3*** *3* (†$_\gamma$2.2 *9*), ***496.9*** *2* (†$_\gamma$0.31), ***551.4*** *4* (†$_\gamma$2.5 *6*) M1+E2: δ=0.28 *4*, ***558.1*** *2* (†$_\gamma$10.0 *12*) E1+M2: δ=−0.26 *4*, ***602.5*** *1* (†$_\gamma$32.7 *19*), ***636.3*** *1* (†$_\gamma$40.9 *19*), ***647.3*** *1* (†$_\gamma$100), ***701.9*** *2* (†$_\gamma$12.7 *12*) M1+E2, ***707.0*** *2* (†$_\gamma$6.5 *8*), ***724.4*** *3* (†$_\gamma$0.77 *19*), ***736.7*** *2* (†$_\gamma$6.9 *8*), ***778.3*** *5* (†$_\gamma$6.2 *19*), ***781.4*** *2* (†$_\gamma$46 *5*), ***822.9*** *4* (†$_\gamma$0.77 *12*), ***862.5*** *4* (†$_\gamma$0.54 *12*), ***966.2*** *3* (†$_\gamma$0.37 *12*), ***1010.0*** *3* (†$_\gamma$0.25 *8*).

$^{109}_{47}$Ag

%: 48.161 *7*
Δ: −88719 *3* **S$_n$:** 9187 *6* **S$_p$:** 6486.9 *20*
σ_γ(to 117.6): 4.7 *2* b , σ_γ(to 0): 86 *3* b

Populating Reactions and Decay Modes

A ^{109}Pd β$^-$ decay (13.7012 h) (53Av25, 53Nu04, 54Mo38, 57Ma16, 57Wa05, 59St28, 62Br15, 62Ec02, 68BaZY, 68Be22, 68BeZV, 68Gr02, 69Sc12, 70Ba37, 70Ro14, 70RoZS, 72Ja01, 73Co10, 73Ra10, 75El10, 77Bo04, 77Gi11, 78Pr08, 82Br19, 83Ch42, 84ShZL)
B ^{109}Ag IT decay (39.6 s) (51Ka46, 57St87, 58Sc03, 59St28, 64We09, 67Na18, 68Be22, 69Sc12)
C ^{109}Cd EC decay (47Br05, 50Co60, 53Br73, 53De26, 54Be41, 54Mo38, 54Wa15, 57Wa05, 64Bo12, 65Le06, 65Mo06, 65Se08, 66Du01, 66En05, 67Ab07, 67DiZZ, 67Li10, 67Mi11, 67Pi05, 67Sc22, 68Ea01, 68Fo03, 68Fu05, 68Go25, 68GoZY, 68Ha52, 69Fi05, 70Go39, 70Gr13, 70Re15, 72Ca16, 73Le29, 76Dr07, 78He21, 78Mo22, 79Pl04, 82HoZF, 82WaZZ, 92ScZZ)
D ^{107}Ag(t,p) (77An01)
E ^{108}Pd(^{3}He,d) (73Au07)
F ^{109}Ag(γ,γ) (69Bo29)
G ^{109}Ag(p,p') (70Fo01, 70Ro14)
H ^{109}Ag(α,α') (60Cr05, 68St17)
I Coulomb excitation (55Mc51, 58Mc02, 67Bl08, 69Ro03, 70Ro14, 70RoZS, 72Th16, 73Co10, 74Er05, 74Mi02, 89Lo08)
J ^{110}Cd(d,^{3}He) (76Va25)
K ^{112}Cd(p,α) (66WeZZ, 77SmZX)

Levels and γ-ray branchings:

0, 1/2$^-$, stable, *[ABCDEFGHIJK]*, μ= −0.130563 *23*
88.0341 *11*, 7/2$^+$, 39.6 *2* s, *[ABCIK]*, %IT=100, μ=+4.400 *6*, Q=(+)1.02 *12* γ_0***88.04*** *5* (†$_\gamma$100) E3
132.74 *11*, 9/2$^+$,7/2$^+$, 2.6 *12* ns, *[AEIJK]* γ_{88}***44.7*** *2* (†$_\gamma$100) M1+E2: δ=0.30 *12*
311.38 *8*, 3/2$^-$, 5.9 *7* ps, *[ADEFGHIJK]*, μ=+0.99 *15*, Q≈−0.7 γ_0***311.4*** *1* (†$_\gamma$100) M1+E2: δ=0.2 *1*
415.21 *16*, 5/2$^-$, 32.6 *16* ps, *[ADEFGHIK]*, μ=+0.90 *13*, Q≈−0.3 γ_{311}***103.9*** *4* (†$_\gamma$8 *1*) M1+E2: δ=0.04 *2* γ_0***415.2*** *3* (†$_\gamma$100 *10*) E2
420 *10*, (7/2$^+$,9/2$^+$), *[J]*
701.91 *15*, 3/2$^-$, 0.5 *2* ps, *[ADGIJK]* γ_{415}***286.3*** *5* (†$_\gamma$4.6 *12*) γ_{311}***390.6*** *2* (†$_\gamma$30 *6*) M1+E2: δ=0.241 *16* γ_0***701.9*** *2* (†$_\gamma$100 *9*) M1+E2: δ=0.029 *7*
706 *5*, 1/2$^+$, *[E]*
707.00 *17*, *[A]* γ_{311}***395.6*** *3* (†$_\gamma$11 *5*) γ_0***707.0*** *2* (†$_\gamma$100 *12*)
724.35 *10*, (3/2)$^+$, 3.2 *8* ns, *[A]* γ_{415}***309.1*** *5* (†$_\gamma$49 *15*) E1 γ_{311}***413.0*** *4* (†$_\gamma$66 *10*) E1+M2: δ=−0.249 *15* γ_{88}***636.3*** *1* (†$_\gamma$100 *5*) γ_0***724.3*** *1* (†$_\gamma$1.9 *5*)
735.29 *9*, 5/2$^+$, *[AEJ]* γ_{311}***423.9*** *2* (†$_\gamma$3.9 *8*) E1+M2: δ=−0.27 *4* γ_{133}***602.5*** *1* (†$_\gamma$32.7 *19*) γ_{88}***647.3*** *1* (†$_\gamma$100)
789 *11* (?), *[K]*
862.76 *20*, 5/2$^-$, 1.3 *4* ps, *[ADGIK]* γ_{415}***447.6*** *2* (†$_\gamma$100 *24*) M1+E2: δ=0.16 *4* γ_{311}***551.4*** *4* (†$_\gamma$74 *18*) M1+E2: δ=0.28 *4* γ_0***862.5*** *4* (†$_\gamma$16 *4*) E2
869.47 *11*, 5/2$^+$, *[AEH]* γ_{735}***134.2*** *2* M1+E2 γ_{724}***145.1*** *2* (†$_\gamma$10 *2*) M1+E2 γ_{415}***454.3*** *3* (†$_\gamma$5 *2*) γ_{311}***558.1*** *2* (†$_\gamma$21.7 *26*) E1+M2: δ=−0.26 *4* γ_{133}***736.7*** *2* (†$_\gamma$15 *2*) γ_{88}***781.4*** *2* (†$_\gamma$100 *11*)
870 *10*, (5/2$^-$,7/2$^-$), *[J]*
890 *10*, (7/2$^+$,9/2$^+$), *[J]*
911.0 *4*, 7/2$^+$, *[ADE]* γ_{133}***778.3*** *5* (†$_\gamma$100 *31*) γ_{88}***822.9*** *4* (†$_\gamma$32 *4*)
912.1, 7/2$^-$, *[AGHIK]* γ_{415}***497.2*** *4* (†$_\gamma$100 *5*) γ_{311}***601.1*** *7* (†$_\gamma$25 *5*)
1090.6 *5*, 9/2(−), *[DG]* γ_{415}***675.5*** *5* (†$_\gamma$100)
1098.5 *2*, (5/2,7/2), *[A]* γ_{133}***966.2*** *3* (†$_\gamma$100 *32*) γ_{88}***1010.0*** *3* (†$_\gamma$68 *22*)
1200 *10*, (7/2$^+$,9/2$^+$), *[EFJK]*
1260 *5*, 1/2$^-$, *[DEGHJ]*
1310 *10*, (1/2$^-$,3/2$^-$), *[EJ]*
1324.2 *7*, (3/2)$^-$, 0.31 *9* ps, *[DGIK]* γ_{311}***1012.9*** *10* (†$_\gamma$100 *5*) M1+E2: δ=−0.09 *3* γ_0***1324.2*** *5* (†$_\gamma$16 *4*)
1430 *10*, 1/2$^+$, *[EF]*
1490 *5*, 3/2$^+$,5/2$^+$, *[E]*
1500 *5*, 3/2$^-$, *[DEFHJK]*
1524 *5*, (3/2,5/2)$^-$, *[DK]*
1570 (?), *[K]*
1599 *5*, *[DEG]*
1613 *5*, 1/2$^-$, *[D]*
1658 *10*, 1/2$^+$, *[E]*
1675 (?), *[F]*
1736 *5*, (3/2,5/2)$^-$, *[DE]*
1792 *5*, (7/2,9/2)$^-$, *[D]*
1815 *5*, (3/2,5/2)$^-$, *[D]*
1839 *5*, 3/2$^+$,5/2$^+$, *[E]*
1844 *5*, (3/2,5/2)$^-$, *[DK]*
1860 *10*, (7/2$^+$,9/2$^+$), *[J]*
1891 *5*, (7/2,9/2)$^-$, *[DK]*
1950 *5*, (7/2,9/2)$^-$, *[D]*
1970 *10*, 3/2$^+$,5/2$^+$, *[E]*
1993 *5*, (3/2,5/2)$^-$, *[DE]*
2043 *11*, *[K]*
2062 *10*, (7/2,9/2)$^-$, *[DE]*
2093 *10*, (3/2,5/2)$^-$, *[D]*
2124 *10*, (5/2,7/2)$^+$, *[DEGHK]*
2185 *10*, *[D]*
2199 *10*, *[DE]*
2222 *10*, *[DGK]*
2256 *10*, (9/2,11/2)$^+$, *[D]*