# $^{147}_{64}$Gd

**Δ:** –75368 *4* **$S_n$:** 7341 *4* **$S_p$:** 5529 *7*
**$Q_{EC}$:** 2187 *3* **$Q_\alpha$:** 1735.0 *20*

*Nuclear Bands*

*A* $\nu f_{7/2}$+($^{146}$Gd 3$^-$)
*B* SD-1 band (96Th06,93Ha19,91Zu01)
*C* SD-2 band (96Th06,93Ha19,91Zu01)
*D* SD-3 band (96Th06)
*E* SD-4 band (96Th06)
*F* SD-5 band (96Th06)
*G* SD-6 band (96Th06)

*Levels and γ-ray branchings:*

**0**, 7/2$^-$, 38.06 *12* h, %EC+%β$^+$=100, μ=1.02 *9*

**997.1** *1*, 13/2$^+$, 21.4 *11* ns, μ=+0.487 *20*, Q=–0.73 *7* **$\gamma_0$*997.1*** *1* (†$_\gamma$100) E3

**1152.4** *1*, 3/2$^-$, <0.2 ns **$\gamma_0$*1152.4*** *1* (†$_\gamma$100) E2

**1292.31** *14*, (1/2)$^+$, <0.2 ns **$\gamma_{1152}$*139.9*** *1* (†$_\gamma$100 *8*) E1

**1397.01** *10*, 9/2$^-$, 0.35 *21* ps **$\gamma_0$*1397.0*** *1* (†$_\gamma$100 *8*) M1+E2

**1412.01** *18*, 3/2$^+$, <0.2 ns **$\gamma_{1292}$*119.7*** *1* (†$_\gamma$100 *11*) M1

*A* **1628.3** *4*, 7/2$^+$, 0.42 *21* ps **$\gamma_0$*1628.3*** *4* (†$_\gamma$100 *37*) E1

*A* **1643.0** *3*, 9/2$^+$ **$\gamma_0$*1643.0*** *3* (†$_\gamma$100 *10*) E1

*A* **1699.36** *24*, 3/2$^+$ **$\gamma_{1292}$*407.0*** *3* (†$_\gamma$50 *14*) M1+E2 **$\gamma_{1152}$*547.0*** *3* (†$_\gamma$100 *18*) E1

*A* **1701.60** *23*, 11/2$^+$ **$\gamma_{997}$*704.5*** *2* (†$_\gamma$100 *9*) M1

*A* **1759.2** *11*, (1/2)$^+$ **$\gamma_{1412}$*347.2*** *10* (†$_\gamma$100 *37*) M1

**1797.1** *4*, 9/2$^-$, 0.14 *7* ps **$\gamma_0$*1797.1*** *4* (†$_\gamma$100 *11*) M1+E2

**1846.8** *10*, (1/2)$^-$ **$\gamma_{1412}$*434.8*** **$\gamma_{1292}$*554.7*** **$\gamma_{1152}$*694.4*** *10* (†$_\gamma$100 *60*) M1

**1944.1**, 11/2$^-$ **$\gamma_{997}$*947*** (†$_\gamma$20) **$\gamma_0$*1944.1*** (†$_\gamma$100) E2

**2028.9** *10*, 15/2(+) **$\gamma_{997}$*1031.8*** (†$_\gamma$100) (M1+E2)

**2078.4** **$\gamma_0$*2078.4*** (†$_\gamma$100)

**2385.9** *3*, (13/2)$^-$ **$\gamma_{1759}$*609.6*** (†$_\gamma$100 *10*) **$\gamma_{997}$*1388.8*** (†$_\gamma$59 *7*) E1

**2438.91** *23*, (15/2)$^-$ **$\gamma_{997}$*1441.8*** *2* (†$_\gamma$100 *10*) E1

**2488.22** *14*, 17/2$^+$ **$\gamma_{997}$*1491.0*** (†$_\gamma$100) E2

**2489.8** *4* **$\gamma_{1702}$*788.2*** *3* (†$_\gamma$100 *14*)

**2572.27** *16*, 19/2$^-$, 0.37 *8* ns **$\gamma_{2488}$*84.0*** *1* (†$_\gamma$85 *12*) **$\gamma_{997}$*1575.2*** *3* (†$_\gamma$100 *19*) E3

**2625.9** *10* **$\gamma_{997}$*1628.8*** *10* (†$_\gamma$100 *38*)

**2736.0** *5* **$\gamma_{2386}$*350.1*** *4* (†$_\gamma$100 *40*)

**2760.47** *17*, 21/2$^+$, 4.5 *2* ns, μ=+7.6 *12* **$\gamma_{2572}$*188.0*** *2* (†$_\gamma$25 *3*) **$\gamma_{2488}$*272.3*** *1* (†$_\gamma$100 *8*) E2

**2763.81** *17*, (19/2)$^+$ **$\gamma_{2488}$*275.6*** *1* (†$_\gamma$100 *11*) M1

**2941.6** *5* **$\gamma_{2488}$*453.4*** *4* (†$_\gamma$100 *38*)

**2942.7** *3* **$\gamma_{2764}$*178.9*** *4* (†$_\gamma$48 *14*) **$\gamma_{2760}$*182.2*** *3* (†$_\gamma$100 *14*)

**2960.3** *10* **$\gamma_{2488}$*472.1*** *10* (†$_\gamma$100 *67*)

**2971.5**, 9/2$^-$,11/2$^-$ **$\gamma_{1944}$*1027.7*** (†$_\gamma$50) **$\gamma_{1397}$*1574.2*** (†$_\gamma$17) **$\gamma_0$*2971.5*** (†$_\gamma$100)

**3005.6**, 9/2$^-$,11/2$^-$ **$\gamma_{1397}$*1608.0*** (†$_\gamma$100) **$\gamma_0$*3005.6*** (†$_\gamma$100)

**3038.32** *20*, 23/2$^+$ **$\gamma_{2760}$*277.9*** *2* (†$_\gamma$100 *15*) M1+E2

**3082.5** *5* **$\gamma_{2764}$*318.7*** *4* (†$_\gamma$100 *30*)

**3170.0** *5* **$\gamma_{2760}$*409.5*** *4* (†$_\gamma$100 *38*)

**3185.8**, 23/2$^+$ **$\gamma_{2760}$*425.6*** *3* (†$_\gamma$100 *28*) M1(+E2)

**3204.8**, 9/2$^-$,11/2$^-$ **$\gamma_{1944}$*1260.0*** (†$_\gamma$50) **$\gamma_{1797}$*1407.0*** (†$_\gamma$25) **$\gamma_{1397}$*1809.0*** (†$_\gamma$38) **$\gamma_0$*3204.8*** (†$_\gamma$100)

**3227.9** *5* **$\gamma_{2764}$*464.1*** *4* (†$_\gamma$100 *43*)

**3322.7**, 9/2$^-$,11/2$^-$ **$\gamma_0$*3322.7*** (†$_\gamma$100)

**3360.1** *5* **$\gamma_{3038}$*321.8*** *4* (†$_\gamma$100 *38*)

**3399.08** *19*, 25/2$^+$ **$\gamma_{3038}$*360.8*** *1* (†$_\gamma$100) M1+E2: δ=0.18 **$\gamma_{2760}$*638.6*** *1* (†$_\gamma$10)

**3581.97** *21*, 27/2$^-$, 26.8 *7* ns, μ=+11.34 *23*, Q=–1.26 *8* **$\gamma_{3399}$*182.9*** *1* (†$_\gamma$100 *20*) E1 **$\gamma_{3038}$*543.7*** *1* (†$_\gamma$16) **$\gamma_{2760}$*821.3*** *2* (†$_\gamma$5.5)

**3691.94** *21*, 25/2$^-$ **$\gamma_{3582}$*110.0*** *1* M1 **$\gamma_{3186}$*505.3*** *2* **$\gamma_{3038}$*653.6*** *1* (†$_\gamma$≈100)

**3872.9**, 13/2$^-$,11/2$^-$ **$\gamma_{997}$*2875.7*** (†$_\gamma$100)

**4006.94** *23*, 27/2$^-$ **$\gamma_{3582}$*424.8*** *2* (†$_\gamma$100)

**4070.32** *22*, 27/2$^-$ **$\gamma_{3692}$*378.4*** *2* (†$_\gamma$100) M1 **$\gamma_{3399}$*671.3*** *2* (†$_\gamma$20)

**4230.00** *22*, 29/2$^-$ **$\gamma_{4070}$*159.7*** *1* (†$_\gamma$100) M1 **$\gamma_{4007}$*223.0*** *1* (†$_\gamma$29)

**4450.96** *22*, 29/2$^-$ **$\gamma_{4007}$*444.1*** *2* (†$_\gamma$68) E2 **$\gamma_{3582}$*869.0*** *1* (†$_\gamma$100) M1

**4617.92** *22*, 29/2$^+$ **$\gamma_{3582}$*1035.9*** *1* (†$_\gamma$100) E1

**4844.08** *22*, 31/2$^-$ **$\gamma_{4451}$*393.1*** *2* (†$_\gamma$61) **$\gamma_{4230}$*614.0*** *2* (†$_\gamma$100) E2 **$\gamma_{3582}$*1262.0*** *2* (†$_\gamma$60)

**4948.76** *23*, 31/2$^+$ **$\gamma_{4618}$*330.8*** *1* (†$_\gamma$100) M1 **$\gamma_{4451}$*498.1*** *2* (†$_\gamma$14)

**4971.93** *22*, 31/2$^-$ **$\gamma_{3582}$*1390.0*** *1* (†$_\gamma$100) E2

**5265.10** *22*, 31/2$^-$ **$\gamma_{4844}$*421.0*** *1* (†$_\gamma$49) M1(+E2) **$\gamma_{4451}$*814.1*** *1* (†$_\gamma$34) M1,(E2) **$\gamma_{3582}$*1683.2*** *2* (†$_\gamma$100) E2

**5382.32** *22*, 33/2$^-$ $\gamma_{5265}$***117.2*** *1* (†$_\gamma$100) M1 $\gamma_{4972}$***410.6*** *2* (†$_\gamma$13) $\gamma_{4949}$***433.8*** *3* (†$_\gamma$≈9) $\gamma_{4844}$***538.1*** *2* (†$_\gamma$27) $\gamma_{4230}$***1152.3*** *1* (†$_\gamma$50) E2

**5557.1** *4*, 35/2$^+$ $\gamma_{4949}$***608.4*** *3* (†$_\gamma$100) E2

**5583.05** *25*, 35/2$^-$ $\gamma_{5382}$***200.7*** *2* (†$_\gamma$100) M1 $\gamma_{4972}$***611.1*** *2* (†$_\gamma$23) E2

**5923.2** *3*, 37/2$^-$ $\gamma_{5583}$***340.1*** *1* (†$_\gamma$100) M1

**6236.1** *3*, (35/2$^+$) $\gamma_{4949}$***1287.3*** *2* (†$_\gamma$100)

**6471.4** *3*, 39/2$^-$ $\gamma_{5923}$***548.2*** *1* (†$_\gamma$100) M1+E2

**6541.4** *5*(?), (37/2$^+$) $\gamma_{5557}$***984.3*** *3* (†$_\gamma$100) (M1+E2)

**6621.4** *3*, 39/2$^+$ $\gamma_{6541}$***80.3*** *3*(?) D $\gamma_{5923}$***698.2*** *1* (†$_\gamma$100) E1 $\gamma_{5557}$***1064.4*** *3* (†$_\gamma$67) E2

**6826.5**(?) $\gamma_{6236}$***590.8*** *1*(?) (†$_\gamma$100) (E2)

**6906.7** *3*, 41/2$^+$ $\gamma_{6621}$***285.4*** *2* (†$_\gamma$95) M1+E2 $\gamma_{6471}$***435.3*** *2* (†$_\gamma$100) (E1) $\gamma_{5923}$***984*** *1* (†$_\gamma$19)

**7035.4** *3*, 41/2$^+$ $\gamma_{6827}$***208.3*** *4* (†$_\gamma$≈20) $\gamma_{6621}$***414.0*** *1* (†$_\gamma$100) M1+E2

**7389.3** *4*, 45/2$^+$ $\gamma_{7035}$***353.5*** *3* (†$_\gamma$45) $\gamma_{6907}$***482.5*** *3* (†$_\gamma$≈100) E2

**7665.4**(?), (39/2,41/2) $\gamma_{5923}$***1743*** *1*(?) (†$_\gamma$100)

**7825.4** *4*(?) $\gamma_{5923}$***1902*** *1*(?) (†$_\gamma$100)

**7873.8** *4*, 41/2$^-$ $\gamma_{7665}$***208.6*** *4*(?) (†$_\gamma$63) $\gamma_{7035}$***838.7*** *5* (†$_\gamma$59) E1 $\gamma_{6621}$***1253*** *1*(?) (†$_\gamma$14) $\gamma_{5923}$***1951*** *1* (†$_\gamma$100) Q

**7963.9** *4*(?) $\gamma_{6907}$***1057.3*** *2* (†$_\gamma$100) E1

**7993.9** *4*, 43/2$^-$ $\gamma_{7874}$***120.1*** *1* (†$_\gamma$100) M1 $\gamma_{7825}$***168.5*** *2* (†$_\gamma$22) $\gamma_{7389}$***604.5*** *1* (†$_\gamma$13) $\gamma_{7035}$***959*** (E1) $\gamma_{6907}$***1087.5*** *3* (†$_\gamma$11)

**8153.6** *4*(?), (47/2)$^+$ $\gamma_{7389}$***764.4*** *2* (†$_\gamma$100) M1

**8333.4** *4*, 45/2$^+$ $\gamma_{7994}$***339.0*** *3* (†$_\gamma$100) E1 $\gamma_{7964}$***369.5*** *2* (†$_\gamma$12) E1

**8587.8** *4*, (49/2$^+$), 510 *20* ns, μ=+10.9 *2*, Q=−3.24 *18* $\gamma_{8333}$***254.4*** *1* (†$_\gamma$100) E2 $\gamma_{8154}$***434.5*** *3* (†$_\gamma$6) $\gamma_{7994}$***594.3***(?) (†$_\gamma$4) (E3)

**9241**, (51/2) $\gamma_{8588}$***653.0*** (†$_\gamma$100) D(+Q): δ=+0.09 *8*

**9507.0**, (51/2$^+$), <1 ps $\gamma_{8588}$***919.1*** (†$_\gamma$100) M1+E2: δ=+0.65 $^{+16}_{-12}$

**9691.2**, (53/2$^+$), 3.1 *7* ps $\gamma_{8588}$***1103.4*** (†$_\gamma$100) E2

**9879.8**, (53/2$^-$), ≈ 76 ps $\gamma_{9691}$***188.5*** (†$_\gamma$100) (E1) $\gamma_{9507}$***372.7*** (†$_\gamma$60) E1(+M2): δ=−0.05 *4* $\gamma_{9241}$***638.8*** $\gamma_{8588}$***1291.9*** (†$_\gamma$7) E3+M2

**10271.6**, (55/2$^-$) $\gamma_{9691}$***580.4***

**10487.6**, (55/2$^+$) $\gamma_{9691}$***796.3*** (†$_\gamma$100) M1+E2: δ=+0.29 *4* $\gamma_{9241}$***1246.9***

**10688.7**, (57/2$^-$), 10 *3* ps $\gamma_{9880}$***808.9*** (†$_\gamma$100) E2

**10747.2**, (57/2$^+$) $\gamma_{10488}$***259.6*** (†$_\gamma$33) M1 $\gamma_{9691}$***1056.1*** (†$_\gamma$100) E2

**10993.3**, (59/2$^-$), 0.80 *5* ns $\gamma_{10747}$***246.2*** (†$_\gamma$27) E1 $\gamma_{10689}$***304.5*** (†$_\gamma$100) M1+E2: δ=+0.27 *4* $\gamma_{10272}$***721***

**11232.2**, (61/2$^-$), 17 *3* ps $\gamma_{10993}$***238.9*** (†$_\gamma$100) M1 $\gamma_{10689}$***543.6*** (†$_\gamma$14) E2

**11850.7**, (65/2$^-$) $\gamma_{11232}$***618.6*** (†$_\gamma$100) E2

**11930.3**, (61/2) $\gamma_{10993}$***936.8*** (†$_\gamma$100) D(+Q): δ=−0.07 *6*

**12208.6**, (65/2$^-$), ≈ 1.4 ps $\gamma_{11232}$***976.4*** (†$_\gamma$100) E2

**12548.7**, (65/2) $\gamma_{11930}$***618.3*** (†$_\gamma$100) E2

**13104.7**, (67/2,69/2) $\gamma_{12209}$***896.1*** (†$_\gamma$100) E2

**13265.1**, (67/2) $\gamma_{12549}$***716.3*** (†$_\gamma$36) $\gamma_{11851}$***1414.5*** (†$_\gamma$100) D

**13416**, 67/2 $\gamma_{12209}$***1208.0*** (†$_\gamma$100) D

**13446**, (69/2,71/2) $\gamma_{13105}$***341.3***

**13446.5**, (69/2) $\gamma_{13265}$***181.3*** (†$_\gamma$100) $\gamma_{12549}$***897.9*** (†$_\gamma$100) E2

**14433.2**, (71/2) $\gamma_{13446}$***986.7*** (†$_\gamma$100) M1+E2: δ=+0.55 *6*

**14793**(?)

**15174.8**, (73/2) $\gamma_{14433}$***741.6*** (†$_\gamma$100) D

**15390**, (73/2) $\gamma_{15175}$***215.5*** (†$_\gamma$50) D+Q: δ=+0.34 $^{+14}_{-26}$ $\gamma_{14793}$***597.4*** (†$_\gamma$100)

**15691**, (75/2) $\gamma_{15390}$***300.3*** (†$_\gamma$100) D

**16777** $\gamma_{15691}$***1086*** (†$_\gamma$100)

**16937**, (79/2) $\gamma_{15691}$***1246*** (†$_\gamma$100)

*B* **x**, J≈(55/2)

*B* **697.04+x** *5*, J+2 $\gamma_x$***697.04*** *5* (†$_\gamma$0.23 *10*) I$^{(2)}$=82.9, ħω=0.361

*B* **1442.35+x** *8*, J+4 $\gamma_{697+x}$***745.31*** *6* (†$_\gamma$0.77 *10*) I$^{(2)}$=79.6, ħω=0.385

*B* **2237.88+x** *10*, J+6 $\gamma_{1442+x}$***795.53*** *6* (†$_\gamma$0.90 *10*) I$^{(2)}$=77.7, ħω=0.411

*B* **3084.91+x** *12*, J+8 $\gamma_{2238+x}$***847.03*** *6* (†$_\gamma$0.93 *8*) I$^{(2)}$=75.6, ħω=0.437

*B* **3984.86+x** *14*, J+10 $\gamma_{3085+x}$***899.95*** *7* (†$_\gamma$1.06 *8*) I$^{(2)}$=73.5, ħω=0.464

*B* **4939.23+x** *16*, J+12 $\gamma_{3985+x}$***954.36*** *7* (†$_\gamma$1.05 *10*) I$^{(2)}$=72.5, ħω=0.491

*B* **5948.78+x** *17*, J+14 $\gamma_{4939+x}$***1009.55*** *7*
($\dagger_\gamma$1.05 *10*) $I^{(2)}$=*71.8*, ħω=*0.519*

*B* **7014.02+x** *18*, J+16 $\gamma_{5949+x}$***1065.24*** *6*
($\dagger_\gamma$0.89 *10*) $I^{(2)}$=*71.7*, ħω=*0.547*

*B* **8135.05+x** *20*, J+18 $\gamma_{7014+x}$***1121.03*** *7*
($\dagger_\gamma$1.01 *10*) $I^{(2)}$=*73.5*, ħω=*0.574*

*B* **9310.50+x** *21*, J+20 $\gamma_{8135+x}$***1175.45*** *8*
($\dagger_\gamma$1.03 *10*) $I^{(2)}$=*75.5*, ħω=*0.601*

*B* **10538.95+x** *22*, J+22 $\gamma_{9311+x}$***1228.44*** *7*
($\dagger_\gamma$0.73 *7*) $I^{(2)}$=*81.5*, ħω=*0.626*

*B* **11816.48+x** *24*, J+24 $\gamma_{10539+x}$***1277.52*** *9*
($\dagger_\gamma$0.79 *8*) $I^{(2)}$=*87.7*, ħω=*0.650*

*B* **13139.6+x** *3*, J+26 $\gamma_{11816+x}$***1323.14*** *9*
($\dagger_\gamma$0.70 *7*) $I^{(2)}$=*90.8*, ħω=*0.673*

*B* **14506.8+x** *3*, J+28 $\gamma_{13140+x}$***1367.21*** *11*
($\dagger_\gamma$0.49 *8*) $I^{(2)}$=*86.0*, ħω=*0.695*

*B* **15920.6+x** *3*, J+30 $\gamma_{14507+x}$***1413.74*** *11*
($\dagger_\gamma$0.41 *8*) $I^{(2)}$=*80.0*, ħω=*0.719*

*B* **17384.4+x** *4*, J+32 $\gamma_{15921+x}$***1463.77*** *16*
($\dagger_\gamma$0.38 *8*) $I^{(2)}$=*76.1*, ħω=*0.745*

*B* **18900.7+x** *4*, J+34 $\gamma_{17384+x}$***1516.33*** *23*
($\dagger_\gamma$0.20 *10*) $I^{(2)}$=*72.0*, ħω=*0.772*

*B* **20472.6+x** *5*, J+36 $\gamma_{18901+x}$***1571.9*** *3*
$I^{(2)}$=*71.6*, ħω=*0.800*

*B* **22100.4+x** *9*, J+38 $\gamma_{20473+x}$***1627.8*** *7*

*C* **y**, J≈(61/2)

*C* **730.21+y** *12*, J+2 $\gamma_y$***730.21*** *12*
($\dagger_\gamma$0.40 *15*) $I^{(2)}$=*82.1*, ħω=*0.377*

*C* **1509.15+y** *15*, J+4 $\gamma_{730+y}$***778.94*** *8*
($\dagger_\gamma$0.52 *15*) $I^{(2)}$=*81.5*, ħω=*0.402*

*C* **2337.17+y** *17*, J+6 $\gamma_{1509+y}$***828.02*** *8*
($\dagger_\gamma$0.92 *15*) $I^{(2)}$=*80.5*, ħω=*0.426*

*C* **3214.90+y** *18*, J+8 $\gamma_{2337+y}$***877.74*** *7*
($\dagger_\gamma$1.21 *20*) $I^{(2)}$=*78.0*, ħω=*0.452*

*C* **4143.92+y** *20*, J+10 $\gamma_{3215+y}$***929.02*** *7*
($\dagger_\gamma$0.87 *15*) $I^{(2)}$=*76.1*, ħω=*0.478*

*C* **5125.52+y** *21*, J+12 $\gamma_{4144+y}$***981.60*** *8*
($\dagger_\gamma$0.79 *15*) $I^{(2)}$=*74.2*, ħω=*0.504*

*C* **6161.00+y** *23*, J+14 $\gamma_{5126+y}$***1035.49*** *8*
($\dagger_\gamma$1.18 *20*) $I^{(2)}$=*72.8*, ħω=*0.531*

*C* **7251.42+y** *24*, J+16 $\gamma_{6161+y}$***1090.42*** *8*
($\dagger_\gamma$1.01 *20*) $I^{(2)}$=*71.1*, ħω=*0.559*

*C* **8398.1+y** *3*, J+18 $\gamma_{7251+y}$***1146.67*** *8*
($\dagger_\gamma$1.02 *20*) $I^{(2)}$=*70.4*, ħω=*0.588*

*C* **9601.6+y** *3*, J+20 $\gamma_{8398+y}$***1203.52*** *9*
($\dagger_\gamma$0.80 *15*) $I^{(2)}$=*69.1*, ħω=*0.616*

*C* **10863.0+y** *3*, J+22 $\gamma_{9602+y}$***1261.38*** *9*
($\dagger_\gamma$0.84 *15*) $I^{(2)}$=*67.7*, ħω=*0.645*

*C* **12183.4+y** *3*, J+24 $\gamma_{10863+y}$***1320.44*** *10*
($\dagger_\gamma$0.79 *17*) $I^{(2)}$=*67.1*, ħω=*0.675*

*C* **13563.5+y** *4*, J+26 $\gamma_{12183+y}$***1380.04*** *12*
($\dagger_\gamma$0.54 *20*) $I^{(2)}$=*66.9*, ħω=*0.705*

*C* **15003.3+y** *4*, J+28 $\gamma_{13564+y}$***1439.81*** *13*
($\dagger_\gamma$0.31 *20*) $I^{(2)}$=*66.1*, ħω=*0.735*

*C* **16503.6+y** *4*, J+30 $\gamma_{15003+y}$***1500.33*** *16*
($\dagger_\gamma$0.38 *20*) $I^{(2)}$=*65.6*, ħω=*0.765*

*C* **18065.0+y** *5*, J+32 $\gamma_{16504+y}$***1561.34*** *24*
($\dagger_\gamma$0.17 *10*) $I^{(2)}$=*65.1*, ħω=*0.796*

*C* **19687.8+y** *6*, J+34 $\gamma_{18065+y}$***1622.8*** *4*

*D* **z**, J≈(51/2)

*D* **704.8+z** *5*, J+2 $\gamma_z$***704.8*** *5* $I^{(2)}$=*82.8*, ħω=*0.364*

*D* **1457.9+z** *6*, J+4 $\gamma_{705+z}$***753.1*** *2* $I^{(2)}$=*78.9*, ħω=*0.389*

*D* **2261.7+z** *6*, J+6 $\gamma_{1458+z}$***803.8*** *2*
$I^{(2)}$=*75.2*, ħω=*0.415*

*D* **3118.7+z** *6*, J+8 $\gamma_{2262+z}$***857.0*** *1*
$I^{(2)}$=*74.5*, ħω=*0.442*

*D* **4029.4+z** *6*, J+10 $\gamma_{3119+z}$***910.7*** *1*
$I^{(2)}$=*71.8*, ħω=*0.469*

*D* **4995.8+z** *6*, J+12 $\gamma_{4029+z}$***966.4*** *1*
$I^{(2)}$=*71.0*, ħω=*0.497*

*D* **6018.5+z** *6*, J+14 $\gamma_{4996+z}$***1022.7*** *1*
$I^{(2)}$=*69.6*, ħω=*0.526*

*D* **7098.7+z** *7*, J+16 $\gamma_{6019+z}$***1080.2*** *1*
$I^{(2)}$=*69.7*, ħω=*0.554*

*D* **8236.3+z** *7*, J+18 $\gamma_{7099+z}$***1137.6*** *1*
$I^{(2)}$=*69.3*, ħω=*0.583*

*D* **9431.6+z** *7*, J+20 $\gamma_{8236+z}$***1195.3*** *1*
$I^{(2)}$=*69.3*, ħω=*0.612*

*D* **10684.6+z** *7*, J+22 $\gamma_{9432+z}$***1253.0*** *2*
$I^{(2)}$=*69.3*, ħω=*0.641*

*D* **11995.3+z** *7*, J+24 $\gamma_{10685+z}$***1310.7*** *2*
$I^{(2)}$=*70.2*, ħω=*0.670*

*D* **13363.0+z** *8*, J+26 $\gamma_{11995+z}$***1367.7*** *2*
$I^{(2)}$=*72.1*, ħω=*0.698*

*D* **14786.2+z** *8*, J+28 $\gamma_{13363+z}$***1423.2*** *2*
$I^{(2)}$=*73.9*, ħω=*0.725*

*D* **16263.5+z** *8*, J+30 $\gamma_{14786+z}$***1477.3*** *3*
$I^{(2)}$=*88.1*, ħω=*0.750*

*D* **17786.2+z** *9*, J+32 $\gamma_{16264+z}$***1522.7*** *3*
$I^{(2)}$=*-381.0*, ħω=*0.759*

*D* **19298.4+z** *10* (?), J+34
$\gamma_{17786+z}$***1512.2*** *7* (?)

*E* **u**, J≈(61/2)

*E* **741.9+u** *4*, J+2 $\gamma_0$***741.9*** *4* $I^{(2)}$=*91.7*, ħω=*0.382*

*E* **1527.4+u** *6*, J+4 $\gamma_{742+u}$***785.5*** *4*
$I^{(2)}$=*81.8*, ħω=*0.405*

*E* **2361.8+u** *7*, J+6 $\gamma_{1527+u}$***834.4*** *3*
$I^{(2)}$=*81.1*, ħω=*0.430*

*E* **3245.5+u** *7*, J+8 $\gamma_{2362+u}$***883.7*** *3*
$I^{(2)}$=*76.6*, ħω=*0.455*

*E* **4181.4+u** *8*, J+10 $\gamma_{3246+u}$***935.9*** *2*

$I^{(2)}$=75.9, ħω=0.481

E **5170.0+u** 8, J+12 $\gamma_{4181+u}$ **988.6** 2
$I^{(2)}$=74.9, ħω=0.508

E **6212.0+u** 8, J+14 $\gamma_{5170+u}$ **1042.0** 2
$I^{(2)}$=72.9, ħω=0.535

E **7308.9+u** 9, J+16 $\gamma_{6212+u}$ **1096.9** 2
$I^{(2)}$=70.7, ħω=0.563

E **8462.4+u** 9, J+18 $\gamma_{7309+u}$ **1153.5** 2
$I^{(2)}$=71.4, ħω=0.591

E **9671.9+u** 9, J+20 $\gamma_{8462+u}$ **1209.5** 2
$I^{(2)}$=68.7, ħω=0.619

E **10939.6+u** 9, J+22 $\gamma_{9672+u}$ **1267.7** 2
$I^{(2)}$=68.5, ħω=0.648

E **12265.7+u** 10, J+24 $\gamma_{10940+u}$ **1326.1** 3
$I^{(2)}$=68.6, ħω=0.678

E **13650.1+u** 10, J+26 $\gamma_{12266+u}$ **1384.4** 3
$I^{(2)}$=67.6, ħω=0.707

E **15093.7+u** 11, J+28 $\gamma_{13650+u}$ **1443.6** 3
$I^{(2)}$=67.7, ħω=0.737

E **16596.4+u** 12, J+30 $\gamma_{15094+u}$ **1502.7** 5
$I^{(2)}$=65.9, ħω=0.767

E **18159.8+u** 14, J+32 $\gamma_{16596+u}$ **1563.4** 7

F **v**, J≈(71/2)

F **899.5+v** 4, J+2 $\gamma_0$ **899.5** 4 $I^{(2)}$=77.5, ħω=0.463

F **1850.6+v** 5, J+4 $\gamma_{900+v}$ **951.1** 3 $I^{(2)}$=93.2, ħω=0.486

F **2844.6+v** 6, J+6 $\gamma_{1851+v}$ **994.0** 2
$I^{(2)}$=95.0, ħω=0.508

F **3880.7+v** 6, J+8 $\gamma_{2845+v}$ **1036.1** 2
$I^{(2)}$=91.7, ħω=0.529

F **4960.4+v** 7, J+10 $\gamma_{3881+v}$ **1079.7** 3
$I^{(2)}$=87.1, ħω=0.551

F **6086.0+v** 7, J+12 $\gamma_{4960+v}$ **1125.6** 2
$I^{(2)}$=81.8, ħω=0.575

F **7260.5+v** 7, J+14 $\gamma_{6086+v}$ **1174.5** 2
$I^{(2)}$=82.3, ħω=0.599

F **8483.6+v** 8, J+16 $\gamma_{7261+v}$ **1223.1** 3
$I^{(2)}$=80.5, ħω=0.624

F **9756.4+v** 9, J+18 $\gamma_{8484+v}$ **1272.8** 3
$I^{(2)}$=79.5, ħω=0.649

F **11079.5+v** 9, J+20 $\gamma_{9756+v}$ **1323.1** 3
$I^{(2)}$=78.1, ħω=0.674

F **12453.8+v** 10, J+22 $\gamma_{11080+v}$ **1374.3** 3
$I^{(2)}$=74.5, ħω=0.701

F **13881.8+v** 10, J+24 $\gamma_{12454+v}$ **1428.0** 4
$I^{(2)}$=71.3, ħω=0.728

F **15365.9+v** 12, J+26 $\gamma_{13882+v}$ **1484.1** 6

G **w**, J

G **890.8+w** 9, J+2 $\gamma_0$ **890.8** 9 $I^{(2)}$=78.4, ħω=0.458

G **1832.6+w** 10, J+4 $\gamma_{891+w}$ **941.8** 3
$I^{(2)}$=72.9, ħω=0.485

G **2829.3+w** 10, J+6 $\gamma_{1833+w}$ **996.7** 2
$I^{(2)}$=80.3, ħω=0.511

G **3875.8+w** 11, J+8 $\gamma_{2829+w}$ **1046.5** 3
$I^{(2)}$=80.8, ħω=0.536

G **4971.8+w** 11, J+10 $\gamma_{3876+w}$ **1096.0** 2
$I^{(2)}$=84.7, ħω=0.560

G **6115.0+w** 11, J+12 $\gamma_{4972+w}$ **1143.2** 2
$I^{(2)}$=84.4, ħω=0.583

G **7305.6+w** 11, J+14 $\gamma_{6115+w}$ **1190.6** 2
$I^{(2)}$=85.3, ħω=0.607

G **8543.1+w** 12, J+16 $\gamma_{7306+w}$ **1237.5** 3
$I^{(2)}$=84.4, ħω=0.631

G **9828.0+w** 12, J+18 $\gamma_{8543+w}$ **1284.9** 3
$I^{(2)}$=81.0, ħω=0.655

G **11162.3+w** 12, J+20 $\gamma_{9828+w}$ **1334.3** 3
$I^{(2)}$=79.2, ħω=0.680

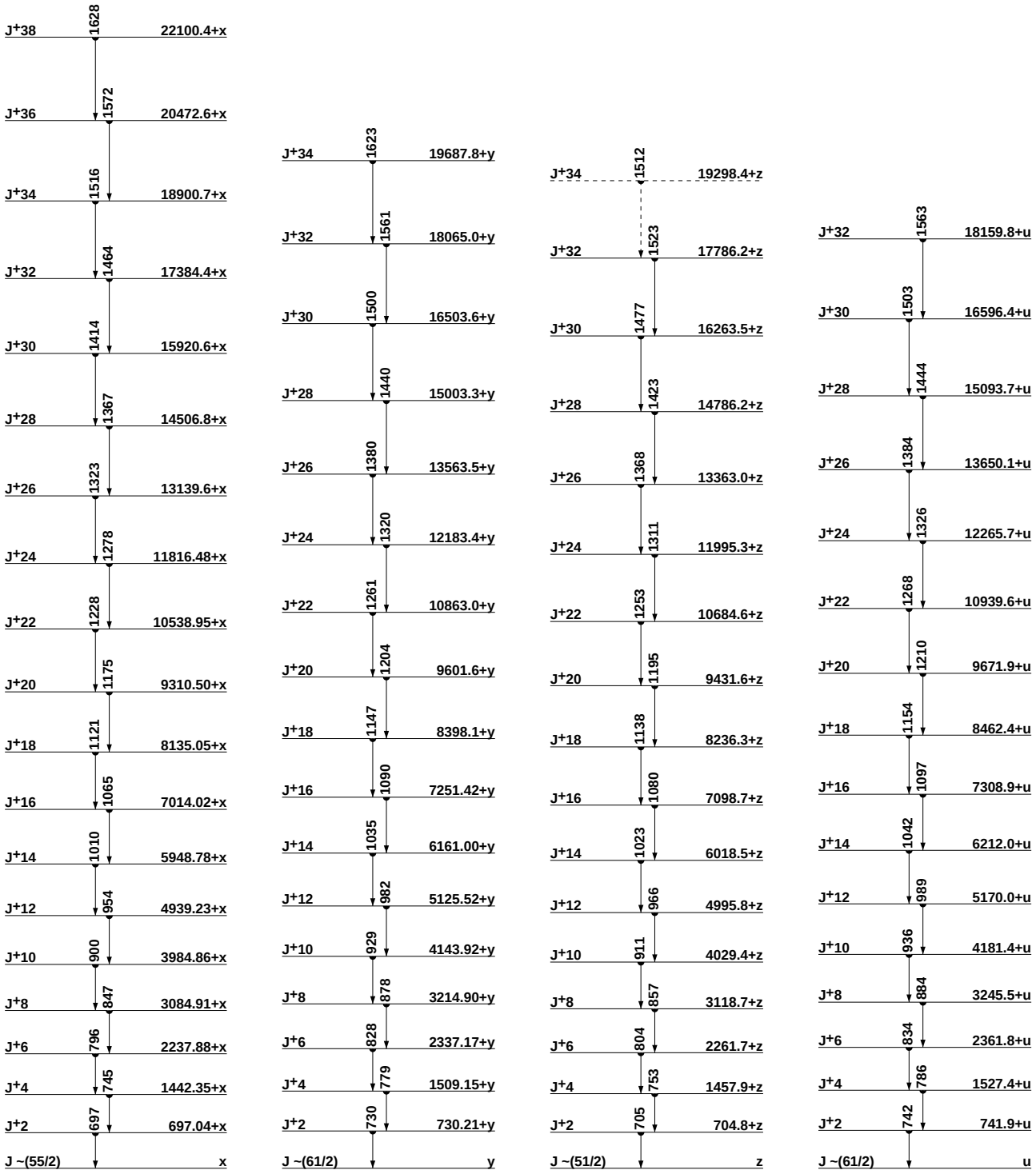
G **12547.1+w** 13, J+22 $\gamma_{11162+w}$ **1384.8** 3
$I^{(2)}$=78.7, ħω=0.705

G **13982.7+w** 13, J+24 $\gamma_{12547+w}$ **1435.6** 4
$I^{(2)}$=74.8, ħω=0.731

G **15471.8+w** 14, J+26 $\gamma_{13983+w}$ **1489.1** 4
$I^{(2)}$=75.2, ħω=0.758

G **17014.1+w** 15, J+28 $\gamma_{15472+w}$ **1542.3** 6
$I^{(2)}$=73.9, ħω=0.785

G **18610.5+w** 18, J+30 $\gamma_{17014+w}$ **1596.4** 10



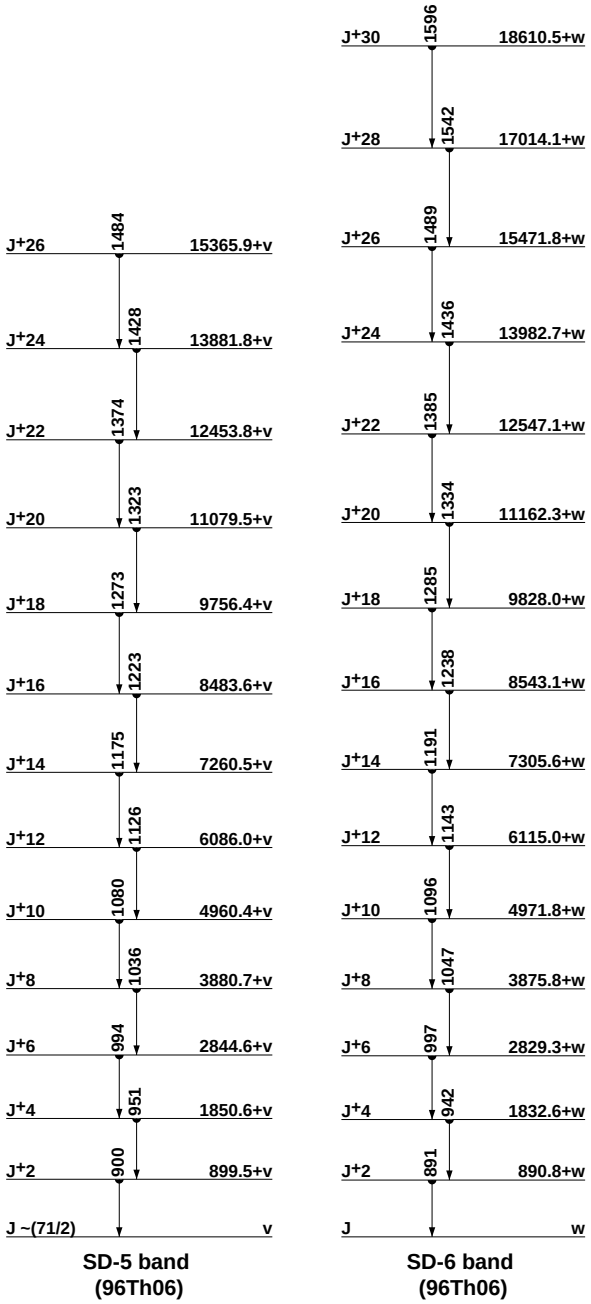

SD-1 band
(96Th06,93Ha19,91Zu01)

SD-2 band
(96Th06,93Ha19,91Zu01)

SD-3 band
(96Th06)

SD-4 band
(96Th06)

$^{147}_{64}$Gd




SD-5 band
(96Th06)

SD-6 band
(96Th06)

$^{147}_{64}$Gd