$^{193}_{81}$Tl

Δ: (−27430) **S_n:** (9600) **S_p:** (2700)
Q_{EC}: (3640) **Q_α:** (3800)

Nuclear Bands

A 9/2[505]
B 13/2[606]?
C SD-1 band (90Fe07,96Bo02)
D SD-2 band (90Fe07,96Bo02)
E SD-3 band (96Bo02,96WiAA)
F SD-4 band (96Bo02,96WiAA)
G SD-5 band (96Bo02,96WiAA)

Levels and γ-ray branchings:

0, 1/2(+), 21.6 *8* m, %EC+%β+=100, μ=+1.5912 *22*
365.2, 3/2(+) **γ_0*365.2*** (†$_\gamma$100)
M1+E2: δ=1.6 $^{+5}_{-3}$

A **365.2+x**, (9/2−), 2.11 *15* m, %IT=75, %EC+%β+=25, μ=+3.9482 *39*, Q=−2.20 *2* ***γ<13***

A **757.4+x**, (11/2−) **γ_{365+x}*392.2*** (†$_\gamma$100)
(M1+E2): δ=0.8 $^{+4}_{-3}$
1037.7+x **γ_{365+x}*672.5*** (†$_\gamma$100)

A **1081.5+x**, (13/2−) **γ_{757+x}*324.0*** (†$_\gamma$63 *6*)
γ_{365+x}*716.4* (†$_\gamma$100 *7*) (E2)
1163.9+x **γ_{757+x}*406.4*** (†$_\gamma$100)
1350.4+x **γ_{1082+x}*268.9*** (†$_\gamma$100)
1423.6+x **γ_{757+x}*666.2*** (†$_\gamma$100)

B **1493.3+x**, (13/2+) **γ_{757+x}*735.8*** (†$_\gamma$100)
E1+M2: δ=0.18 *7*

A **1512.6+x**, (15/2−) **γ_{1082+x}*431.3*** (†$_\gamma$53 *4*)
(M1+E2): δ=0.3 *3* **γ_{757+x}*755.1*** (†$_\gamma$100 *11*) (E2)
1552.7+x (?) **γ_{1350+x}*202.3*** *3* (?) (†$_\gamma$100)
1558.3+x **γ_{1350+x}*207.9*** (†$_\gamma$100)

A **1833.4+x**, (17/2−) **γ_{1513+x}*320.9*** *3* (†$_\gamma$39 *5*) (M1) **γ_{1082+x}*751.7*** (†$_\gamma$100 *13*) (E2)
1870.9+x **γ_{757+x}*1113.5*** (†$_\gamma$100)

B **1899.6+x** (?), (15/2+) **γ_{1493+x}*406.4*** (?) (†$_\gamma$100)
1960.0+x **γ_{1493+x}*466.8*** (†$_\gamma$100)

B **2025.5+x** (?), (17/2+) **γ_{1900+x}*125.9*** (?) (†$_\gamma$100)

B **2492.3+x** (?), (19/2+) **γ_{2026+x}*466.8*** (?) (†$_\gamma$100)

B **2653.9+x** (?), (21/2+) **γ_{2492+x}*161.6*** (?) (†$_\gamma$100)

D **y**, J≈(17/2+)
C **98.4+y**, J+1
D **206.6+y**, J+2 **γ_{98+y}*108.0*** *3* **γ_y*206.6*** *3*
$I^{(2)}$=98.3, ħω=0.113

C **325.6+y**, J+3 **γ_{207+y}*118.9*** *3* **γ_{98+y}*227.3*** *3* (†$_\gamma$0.98 *10*) $I^{(1)}$=24.2, $I^{(2)}$=98.5, ħω=0.124

D **454.0+y**, J+4 **γ_{326+y}*128.3*** *3* **γ_{207+y}*247.3*** *3* (†$_\gamma$0.39 *6*) $I^{(2)}$=99.0, ħω=0.134

C **593.4+y**, J+5 **γ_{454+y}*139.2*** *3* (M1) **γ_{326+y}*267.9*** *3* (†$_\gamma$1.13 *23*) $I^{(1)}$=34.7, $I^{(2)}$=99.3, ħω=0.144

D **741.6+y**, J+6 **γ_{593+y}*148.2*** *3* (M1) **γ_{454+y}*287.7*** *3* (†$_\gamma$0.45 *5*) $I^{(2)}$=100.8, ħω=0.154

C **901.6+y**, J+7 **γ_{742+y}*160.1*** *3* (M1) **γ_{593+y}*308.2*** *3* (†$_\gamma$0.86 *9*) $I^{(1)}$=42.7, $I^{(2)}$=100.5, ħω=0.164

D **1069.0+y**, J+8 **γ_{902+y}*167.4*** *3* (M1) **γ_{742+y}*327.4*** *3* (†$_\gamma$0.53 *5*) $I^{(2)}$=102.6, ħω=0.173

C **1249.6+y**, J+9 **γ_{1069+y}*180.6*** *3* (M1) **γ_{902+y}*348.0*** *3* (†$_\gamma$1.01 *11*) $I^{(1)}$=49.0, $I^{(2)}$=102.6, ħω=0.184

D **1435.3+y**, J+10 **γ_{1250+y}*185.8*** *3* (M1) **γ_{1069+y}*366.4*** *3* (†$_\gamma$1.15 *23*) $I^{(2)}$=102.8, ħω=0.193

C **1636.7+y**, J+11 **γ_{1435+y}*201.4*** *3* (M1) **γ_{1250+y}*387.0*** *3* (†$_\gamma$1.4 *4*) $I^{(1)}$=54.2, $I^{(2)}$=104.2, ħω=0.203

D **1840.4+y**, J+12 **γ_{1637+y}*203.5*** *3* **γ_{1435+y}*405.3*** *4* (†$_\gamma$0.93 *19*) $I^{(2)}$=106.4, ħω=0.212

C **2062.0+y**, J+13 **γ_{1840+y}*221.5*** *3* **γ_{1637+y}*425.4*** *3* (†$_\gamma$1.22 *12*) $I^{(1)}$=58.5, $I^{(2)}$=104.4, ħω=0.222

D **2283.3+y**, J+14 **γ_{1840+y}*442.9*** *3* $I^{(2)}$=108.7, ħω=0.231

C **2525.7+y**, J+15 **γ_{2062+y}*463.7*** *3* (†$_\gamma$1.60 *16*) $I^{(1)}$=62.2, $I^{(2)}$=107.0, ħω=0.241

D **2763.0+y**, J+16 **γ_{2283+y}*479.7*** *3* (†$_\gamma$0.72 *17*) $I^{(2)}$=109.9, ħω=0.249

C **3026.8+y**, J+17 **γ_{2526+y}*501.1*** *3* $I^{(1)}$=65.5, $I^{(2)}$=109.9, ħω=0.260

D **3279.1+y**, J+18 **γ_{2763+y}*516.1*** *3* (†$_\gamma$1.11 *17*) $I^{(2)}$=112.7, ħω=0.267

C **3564.3+y**, J+19 **γ_{3027+y}*537.5*** *3* (†$_\gamma$1.30 *14*) $I^{(1)}$=68.4, $I^{(2)}$=111.4, ħω=0.278

D **3830.8+y**, J+20 **γ_{3279+y}*551.6*** *3* (†$_\gamma$1.00 *14*) $I^{(2)}$=114.6, ħω=0.285

C **4137.7+y**, J+21 **γ_{3564+y}*573.4*** *3* (†$_\gamma$1.00 *10*) $I^{(1)}$=71.1, $I^{(2)}$=113.0, ħω=0.296

D **4417.3+y**, J+22 **γ_{3831+y}*586.5*** *3* (†$_\gamma$0.84 *17*) $I^{(2)}$=118.3, ħω=0.302

C **4746.5+y**, J+23 **γ_{4138+y}*608.8*** *3* (†$_\gamma$0.96 *10*) $I^{(1)}$=73.4, $I^{(2)}$=114.3, ħω=0.313

D **5037.6+y**, J+24 **γ_{4417+y}*620.3*** *3* (†$_\gamma$0.81 *13*) $I^{(2)}$=120.1, ħω=0.318

C **5390.3+y**, J+25 γ_{4747+y}***643.8*** *3*
($\dagger_\gamma$1.09 *22*) $I^{(1)}$=*75.6*, $I^{(2)}$=*114.6*, ħω=*0.331*

D **5691.2+y**, J+26 γ_{5038+y}***653.6*** *4*
($\dagger_\gamma$0.42 *11*) $I^{(2)}$=*123.1*, ħω=*0.335*

C **6069.0+y**, J+27 γ_{5390+y}***678.7*** *4*
($\dagger_\gamma$0.75 *14*) $I^{(1)}$=*77.6*, $I^{(2)}$=*115.9*, ħω=*0.348*

D **6377.3+y**, J+28 γ_{5691+y}***686.1*** *4*
($\dagger_\gamma$0.46 *11*) $I^{(2)}$=*122.7*, ħω=*0.351*

C **6782.2+y**, J+29 γ_{6069+y}***713.2*** *5* $I^{(1)}$=*79.4*, $I^{(2)}$=*116.6*, ħω=*0.365*

D **7096.0+y**, J+30 γ_{6377+y}***718.7*** *5*
$I^{(2)}$=*122.7*, ħω=*0.368*

C **7529.7+y**, J+31 γ_{6782+y}***747.5*** *5* $I^{(1)}$=*81.1*, $I^{(2)}$=*116.3*, ħω=*0.382*

D **7847.3+y**, J+32 γ_{7096+y}***751.3*** *5*
$I^{(2)}$=*124.6*, ħω=*0.384*

C **8311.6+y**, J+33 γ_{7530+y}***781.9*** *5*

D **8630.7+y**, J+34 γ_{7847+y}***783.4*** *5*

E **z**, J

E **187.7+z**, J+2 γ_z***187.7*** *3* $I^{(2)}$=*93.2*, ħω=*0.105*

E **418.3+z**, J+4 γ_{188+z}***230.6*** *2* $I^{(2)}$=*95.0*, ħω=*0.126*

E **691.0+z**, J+6 γ_{418+z}***272.7*** *2* $I^{(2)}$=*96.6*, ħω=*0.147*

E **1005.1+z**, J+8 γ_{691+z}***314.1*** *2* $I^{(2)}$=*97.8*, ħω=*0.167*

E **1360.1+z**, J+10 γ_{1005+z}***355.0*** *2*
$I^{(2)}$=*99.8*, ħω=*0.188*

E **1755.2+z**, J+12 γ_{1360+z}***395.1*** *2*
$I^{(2)}$=*101.5*, ħω=*0.207*

E **2189.7+z**, J+14 γ_{1755+z}***434.5*** *2*
$I^{(2)}$=*104.2*, ħω=*0.227*

E **2662.6+z**, J+16 γ_{2190+z}***472.9*** *2*
$I^{(2)}$=*106.7*, ħω=*0.246*

E **3173.0+z**, J+18 γ_{2663+z}***510.4*** *2*
$I^{(2)}$=*108.7*, ħω=*0.264*

E **3720.2+z**, J+20 γ_{3173+z}***547.2*** *2*
$I^{(2)}$=*110.5*, ħω=*0.283*

E **4303.6+z**, J+22 γ_{3720+z}***583.4*** *2*
$I^{(2)}$=*114.0*, ħω=*0.300*

E **4922.1+z**, J+24 γ_{4304+z}***618.5*** *3*
$I^{(2)}$=*115.3*, ħω=*0.318*

E **5575.3+z**, J+26 γ_{4922+z}***653.2*** *3*
$I^{(2)}$=*119.8*, ħω=*0.335*

E **6261.9+z**, J+28 γ_{5575+z}***686.6*** *3*
$I^{(2)}$=*148.1*, ħω=*0.350*

E **6975.5+z**, J+30 γ_{6262+z}***713.6*** *4*
$I^{(2)}$=*201.0*, ħω=*0.362*

E **7709.0+z**, J+32 γ_{6976+z}***733.5*** *10*

F **u**, J

F **250.6+u**, J+2 γ_0***250.6*** *2* $I^{(2)}$=*96.2*, ħω=*0.136*

F **542.8+u**, J+4 γ_{251+u}***292.2*** *2* $I^{(2)}$=*99.3*, ħω=*0.156*

F **875.3+u**, J+6 γ_{543+u}***332.5*** *2* $I^{(2)}$=*98.8*, ħω=*0.176*

F **1248.3+u**, J+8 γ_{875+u}***373.0*** *2* $I^{(2)}$=*102.6*, ħω=*0.196*

F **1660.3+u**, J+10 γ_{1248+u}***412.0*** *2*
$I^{(2)}$=*103.6*, ħω=*0.216*

F **2110.9+u**, J+12 γ_{1660+u}***450.6*** *2*
$I^{(2)}$=*107.0*, ħω=*0.235*

F **2598.9+u**, J+14 γ_{2111+u}***488.0*** *2*
$I^{(2)}$=*107.2*, ħω=*0.253*

F **3124.2+u**, J+16 γ_{2599+u}***525.3*** *2*
$I^{(2)}$=*109.9*, ħω=*0.272*

F **3685.9+u**, J+18 γ_{3124+u}***561.7*** *2*
$I^{(2)}$=*113.3*, ħω=*0.290*

F **4282.9+u**, J+20 γ_{3686+u}***597.0*** *2*
$I^{(2)}$=*115.3*, ħω=*0.307*

F **4914.6+u**, J+22 γ_{4283+u}***631.7*** *2*
$I^{(2)}$=*115.6*, ħω=*0.324*

F **5580.9+u**, J+24 γ_{4915+u}***666.3*** *2*
$I^{(2)}$=*103.9*, ħω=*0.343*

F **6285.7+u**, J+26 γ_{5581+u}***704.8*** *3*
$I^{(2)}$=*95.9*, ħω=*0.363*

F **7032.2+u**, J+28 γ_{6286+u}***746.5*** *5*

G **v**, J

G **231.0+v**, J+2 γ_0***231.0*** *7* $I^{(2)}$=*101.3*, ħω=*0.125*

G **501.5+v**, J+4 γ_{231+v}***270.5*** *4* $I^{(2)}$=*93.2*, ħω=*0.146*

G **814.9+v**, J+6 γ_{502+v}***313.4*** *4* $I^{(2)}$=*98.5*, ħω=*0.167*

G **1168.9+v**, J+8 γ_{815+v}***354.0*** *4* $I^{(2)}$=*102.6*, ħω=*0.187*

G **1561.9+v**, J+10 γ_{1169+v}***393.0*** *4*
$I^{(2)}$=*102.3*, ħω=*0.206*

G **1994.0+v**, J+12 γ_{1562+v}***432.1*** *4*
$I^{(2)}$=*105.5*, ħω=*0.226*

G **2464.0+v**, J+14 γ_{1994+v}***470.0*** *4*
$I^{(2)}$=*107.5*, ħω=*0.244*

G **2971.2+v**, J+16 γ_{2464+v}***507.2*** *4*
$I^{(2)}$=*109.9*, ħω=*0.263*

G **3514.8+v**, J+18 γ_{2971+v}***543.6*** *4*
$I^{(2)}$=*111.1*, ħω=*0.281*

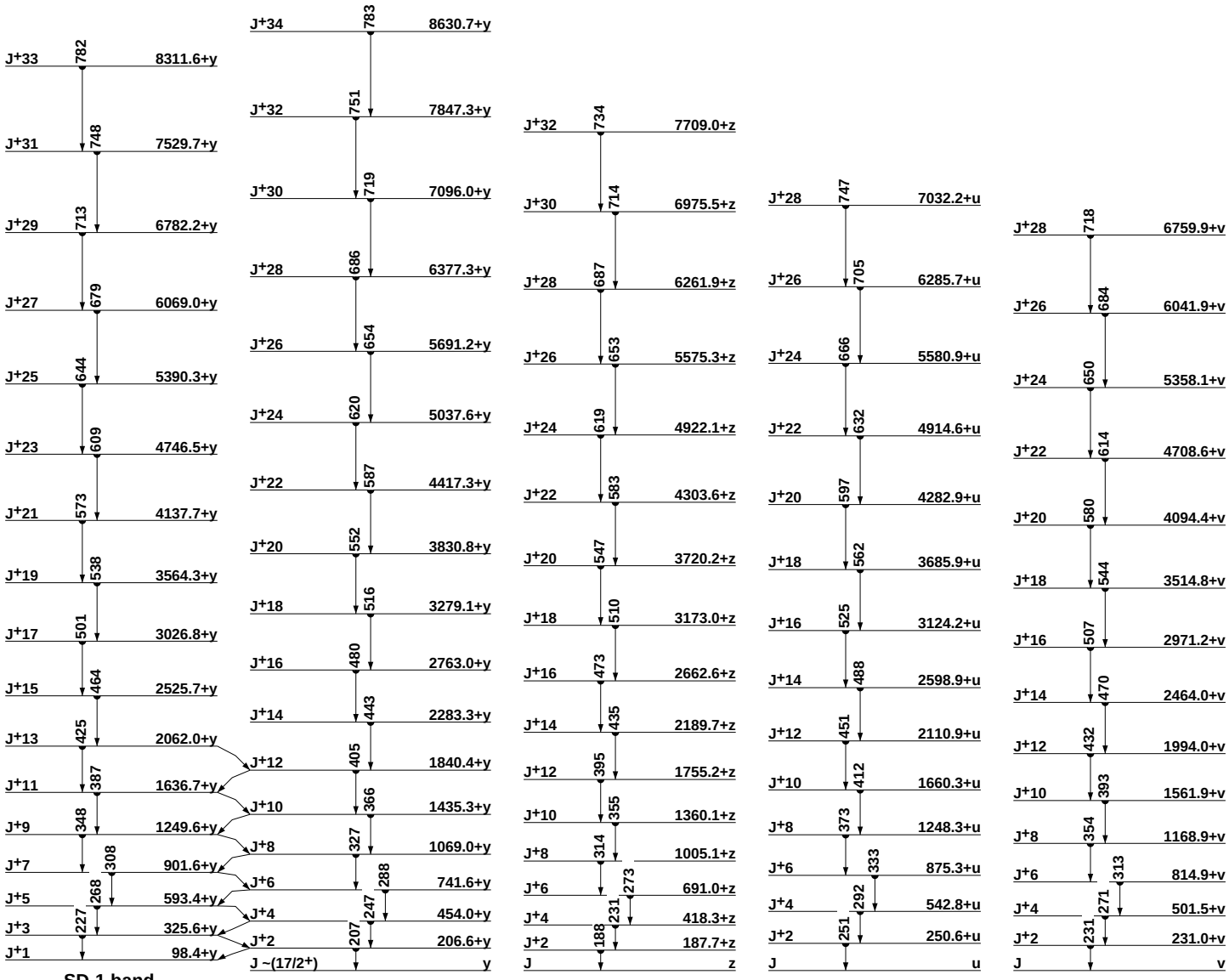
G **4094.4+v**, J+20 γ_{3515+v}***579.6*** *4*
$I^{(2)}$=*115.6*, ħω=*0.298*

G **4708.6+v**, J+22 γ_{4094+v}***614.2*** *4*
$I^{(2)}$=*113.3*, ħω=*0.316*

G **5358.1+v**, J+24 γ_{4709+v}***649.5*** *4*
$I^{(2)}$=*116.6*, ħω=*0.333*

G **6041.9+v**, J+26 γ_{5358+v}***683.8*** *4*
$I^{(2)}$=*117.0*, ħω=*0.350*

G **6759.9+v**, J+28 γ_{6042+v} ***718.0*** *4*


J+33 782 8311.6+y
J+31 748 7529.7+y
J+29 713 6782.2+y
J+27 679 6069.0+y
J+25 644 5390.3+y
J+23 609 4746.5+y
J+21 573 4137.7+y
J+19 538 3564.3+y
J+17 501 3026.8+y
J+15 464 2525.7+y
J+13 425 2062.0+y
J+11 387 1636.7+y
J+9 348 1249.6+y
J+7 308 901.6+y
J+5 268 593.4+y
J+3 227 325.6+y
J+1 98.4+y
SD-1 band
(90Fe07,96Bo02)
J+34 783 8630.7+y
J+32 751 7847.3+y
J+30 719 7096.0+y
J+28 686 6377.3+y
J+26 654 5691.2+y
J+24 620 5037.6+y
J+22 587 4417.3+y
J+20 552 3830.8+y
J+18 516 3279.1+y
J+16 480 2763.0+y
J+14 443 2283.3+y
J+12 405 1840.4+y
J+10 366 1435.3+y
J+8 327 1069.0+y
J+6 288 741.6+y
J+4 247 454.0+y
J+2 207 206.6+y
J ~(17/2+) y
SD-2 band
(90Fe07,96Bo02)
J+32 734 7709.0+z
J+30 714 6975.5+z
J+28 687 6261.9+z
J+26 653 5575.3+z
J+24 619 4922.1+z
J+22 583 4303.6+z
J+20 547 3720.2+z
J+18 510 3173.0+z
J+16 473 2662.6+z
J+14 435 2189.7+z
J+12 395 1755.2+z
J+10 355 1360.1+z
J+8 314 1005.1+z
J+6 273 691.0+z
J+4 231 418.3+z
J+2 188 187.7+z
J z
SD-3 band
(96Bo02,96WiAA)
J+28 747 7032.2+u
J+26 705 6285.7+u
J+24 666 5580.9+u
J+22 632 4914.6+u
J+20 597 4282.9+u
J+18 562 3685.9+u
J+16 525 3124.2+u
J+14 488 2598.9+u
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J+8 373 1248.3+u
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J+4 292 542.8+u
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J u
SD-4 band
(96Bo02,96WiAA)
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J+22 614 4708.6+v
J+20 580 4094.4+v
J+18 544 3514.8+v
J+16 507 2971.2+v
J+14 470 2464.0+v
J+12 432 1994.0+v
J+10 393 1561.9+v
J+8 354 1168.9+v
J+6 313 814.9+v
J+4 271 501.5+v
J+2 231 231.0+v
J v
SD-5 band
(96Bo02,96WiAA)

$^{193}_{81}$Tl