$^{135}_{60}$Nd

Δ: (–76160) **S_n:** (8400) **S_p:** (4900)
Q_{EC}: (4750) **Q_α:** (1100)

Nuclear Bands

A 9/2[514], α=+1/2 (87Pi05)
B 9/2[514], α=-1/2 (87Pi05)
C SD band
(87Be57,87Wa18)(95De40,97Ni04)
D 3-QP?

Levels and γ-ray branchings:

A **0**, 9/2(⁻), 12.4 *6* m, %EC+%β^+=100, μ=–0.78 *3*, Q=+1.9 *5*
65.0 *2*, (1/2⁺), 5.5 *5* m, %EC+%β^+=100
193.7 *2*, (3/2⁺) γ_{65}***128.8*** *2* (†$_\gamma$100)
B **198.75** *13*, (11/2⁻), 35 *5* ps, μ=–0.50 *31*
γ_0***198.82*** *14* (†$_\gamma$100)
(M1+E2): δ=–0.22 *7*
273.1 *2*, (3/2,5/2) γ_{65}***208.1*** *2* (†$_\gamma$100)
328.1 *2*, (1/2⁺) γ_{194}***135.5*** *5* (†$_\gamma$≈4)
γ_{65}***262.9*** *2* (†$_\gamma$100 *30*)
347.1 *2*, (1/2,3/2,5/2) γ_{65}***282.1*** *2* (†$_\gamma$100)
371.2 *2*, (5/2⁺) γ_{273}***98.1*** *2* (†$_\gamma$23 *6*)
γ_{194}***177.4*** *3* (†$_\gamma$17 *3*) γ_{65}***306.2*** *2* (†$_\gamma$100 *14*)
463.7 *2*(?), (5/2⁺) γ_{328}***135.5*** *5* (†$_\gamma$≈4)
γ_{273}***190.6*** *5* (†$_\gamma$≈5) γ_{194}***270.0*** *2* (†$_\gamma$100 *35*) γ_{65}***398.7*** *2* (†$_\gamma$88 *22*)
493.2 *2*, (7/2,9/2,11/2) γ_0***493.2*** *2* (†$_\gamma$100)
A **560.49** *14*, (13/2⁻) γ_{199}***361.88*** *15* (†$_\gamma$100 *1*) D+Q: δ=–0.9 *6* γ_0***560.35*** *20* (†$_\gamma$61 *1*) (Q)
565.0 *3* γ_{199}***366.22*** *25* γ_0***564.2*** *3*(?)
588.1 *3*, (3/2⁺,5/2⁺) γ_{194}***394.2*** *3* (†$_\gamma$100 *50*) γ_{65}***523.3*** *3* (†$_\gamma$90 *30*)
602.9 *3*, (3/2⁺,5/2⁺) γ_{194}***409.2*** *2* (†$_\gamma$100)
663.8 *7*(?) γ_{199}***465.0*** *6*(?) (†$_\gamma$100)
671.8 *2* γ_{347}***324.6*** *2* (†$_\gamma$100 *30*) γ_{273}***398.7*** *2* (†$_\gamma$≈20)
713.0 *2*, (7/2⁺) γ_{493}***219.9*** *3* (†$_\gamma$20 *10*) γ_{464}***249.3*** *3* (†$_\gamma$37 *10*) γ_{371}***341.9*** *2* (†$_\gamma$67 *17*) γ_{273}***439.9*** *4* (†$_\gamma$23 *10*) γ_{199}***514.0*** γ_0***713.0*** *2* (†$_\gamma$100 *17*)
717.0 *5* γ_{199}***518.3*** *4* (†$_\gamma$100)
744.3 *4* γ_{273}***471.2*** *3* (†$_\gamma$100)
B **792.9** *2*, (15/2⁻) γ_{560}***232.61*** *20* (†$_\gamma$25 *2*) D+Q: δ=–0.13 *7* γ_{199}***594.00*** *25* (†$_\gamma$100 *2*) (Q)
826.2 *10*(?) γ_{199}***627.5***
1109.8 *5*(?) γ_{199}***911.0*** *4*(?) (†$_\gamma$100)
1176.8 *2* γ_{713}***463.8*** *2* (†$_\gamma$100 *8*) γ_{199}***978.2*** *2* (†$_\gamma$63 *8*) γ_0***1176.7*** *3* (†$_\gamma$52 *8*)
1181.8 *7*(?) γ_{664}***518.04*** *20* (†$_\gamma$100)
1215.0 *2* γ_{199}***1016.2*** *2* (†$_\gamma$100)
A **1269.4** *2*, (17/2⁻) γ_{793}***476.70*** *25* (†$_\gamma$75 *8*) D(+Q): δ=–0.09 *11* γ_{560}***708.80*** *25* (†$_\gamma$100 *8*) Q
1357.7 *5* γ_{713}***644.8*** γ_{199}***1159.0*** *5*
1463.6 *5*(?) γ_{793}***670.7*** *4*(?) (†$_\gamma$100)
1469.3 *5*(?) γ_{793}***676.4*** *4*(?) (†$_\gamma$100)
B **1520.0** *3*, (19/2⁻) γ_{1269}***250.5*** *5* (†$_\gamma$11 *1*) D+Q: δ=–0.19 *8* γ_{793}***727.00*** *25* (†$_\gamma$100 *1*) Q
1776.4 *7*, (15/2⁺)
D **1954.0** *4*, (17/2⁺) γ_{1776}***178*** *1* γ_{793}***1161.1*** *25* (†$_\gamma$100 *2*)
A **2105.3** *3*, (21/2⁻) γ_{1520}***585.38*** *25* (†$_\gamma$38 *9*) D(+Q): δ=0.00 *6* γ_{1269}***836.00*** *25* (†$_\gamma$100 *24*) (Q)
2122.6 *6*(?) γ_{1520}***602.6*** *5*(?) (†$_\gamma$100)
D **2157.8** *4*, (19/2⁺) γ_{1954}***203.85*** *25* (†$_\gamma$95 *11*) γ_{1776}***381*** *1* γ_{1269}***888.4*** *3* (†$_\gamma$100 *13*)
2209.8 *8*(?), (17/2) γ_{1269}***940*** *1*(?)
2259.4 *6*, (17/2) γ_{1776}***483*** *1*(?) γ_{1520}***739*** *1*(?) γ_{793}***1466*** *1*(?)
D **2350.0** *4*, (21/2⁺) γ_{2158}***192.24*** *20* (†$_\gamma$100 *3*) D(+Q): δ=–0.03 *3* γ_{1954}***396*** *1*
B **2375.4** *3*, (23/2⁻) γ_{2105}***270.5*** *5* (†$_\gamma$≈5) γ_{1520}***855.20*** *25* (†$_\gamma$100 *1*) (Q)
2496.2 *4*(?) γ_{2375}***120.76*** *20*(?) (†$_\gamma$100)
2533.1 *8*, (23/2) γ_{1520}***1013*** *1*(?)
D **2557.5** *4*, (23/2⁺) γ_{2350}***207.45*** *25* (†$_\gamma$100 *14*) γ_{2158}***400*** *1*
2703.4 *4*, (21/2⁺) γ_{1520}***1183.7*** *4* (†$_\gamma$100) (D)
2775.1 *5*, (21/2⁺) γ_{2259}***515*** *1*(?) γ_{2210}***565*** *1*(?) γ_{2158}***618*** *1* (†$_\gamma$100 *20*) (D)
2795.1 *5*, (21/2⁺) γ_{1520}***1275*** *1*(?)
D **2800.7** *4*, (25/2⁺) γ_{2558}***243.20*** *20* (†$_\gamma$100 *17*) D+Q: δ=–0.06 *4* γ_{2350}***450*** *1*(?)
A **2940.3** *4*, (25/2⁻) γ_{2496}***444.2*** *4*(?) (†$_\gamma$18 *1*) γ_{2375}***564.79*** *20* (†$_\gamma$77 *12*) D(+Q): δ=–0.02 *7* γ_{2105}***835.2*** *4* (†$_\gamma$100 *13*) (Q)
D **3101.8** *5*, (27/2⁺) γ_{2801}***301.13*** *20* (†$_\gamma$100) (D)
B **3110.3** *4*, (27/2⁻) γ_{2940}***170.05*** *20* (†$_\gamma$100 *6*) D(+Q): δ=+0.01 *4* γ_{2375}***734.6*** *4* (†$_\gamma$17 *11*) (Q)
C **3324.1** *4*, (25/2⁺), 1.7 *6* ps γ_{2801}***523.5*** *4* (†$_\gamma$0.06 *2*) γ_{2795}***529.0*** *4* (†$_\gamma$0.10 *2*) (E2)
γ_{2775}***548.9*** *4* (†$_\gamma$0.14 *3*) (E2)
γ_{2703}***621.0*** *4* (†$_\gamma$0.13 *3*) (E2)
γ_{2558}***766.5*** *4* (†$_\gamma$0.10 *2*) (D)
γ_{2375}***949*** *1* (†$_\gamma$0.12 *2*) (D)

3340.2 *5*, (25/2$^+$) γ_{2533}***807*** *1* (?)
γ_{2375}***964.6*** *4* ($\dagger_\gamma$100 *29*) (D)
3345.9 *5* (?) γ_{3110}***235.6*** *3* (?) ($\dagger_\gamma$100)

A **3358.2** *4*, (29/2$^-$) γ_{3110}***247.74*** *25*
($\dagger_\gamma$100 *14*) D+Q: δ=–0.08 *4*
γ_{2940}***418.0*** *5* ($\dagger_\gamma$21 *4*)

D **3470.9** *5*, (29/2$^+$) γ_{3102}***369.12*** *25* ($\dagger_\gamma$100)
D+Q: δ=–0.16 *6*

B **3649.5** *5*, (31/2$^-$) γ_{3358}***291.34*** *20*
($\dagger_\gamma$100 *1*) D+Q: δ=–0.12 *4* γ_{3110}***539.5*** *3*
($\dagger_\gamma$13 *3*)

D **3860.8** *5*, (31/2$^+$) γ_{3471}***389.93*** *25*
($\dagger_\gamma$67 *15*) D+Q: δ=+0.11 *3* γ_{3102}***759.0*** *3*
($\dagger_\gamma$100 *4*) (Q)

C **3869.4** *4*, (29/2$^+$), 1.0 *4* ps γ_{3340}***529.0*** *4*
($\dagger_\gamma$0.10 *2*) (E2) γ_{3324}***545.40*** *25*
($\dagger_\gamma$0.77 *8*) E2 $I^{(1)}$*=50.6,* $I^{(2)}$*=70.8,*
ħω=0.287

A **4007.7** *5*, (33/2$^-$) γ_{3650}***358.22*** *25*
($\dagger_\gamma$100 *14*) D(+Q): δ=–0.02 *13*
γ_{3358}***649.2*** *3* ($\dagger_\gamma$23 *8*)

B **4414.0** *6*, (35/2$^-$) γ_{4008}***406.5*** *5* ($\dagger_\gamma$100 *19*)
D+Q: δ=–0.25 *15* γ_{3650}***764.9*** *5*
($\dagger_\gamma$46 *24*)
4416.7 *5* γ_{4008}***408.5*** *5* ($\dagger_\gamma$100 *31*)
γ_{3650}***767.4*** *3* ($\dagger_\gamma$76 *4*)

C **4471.3** *5*, (33/2$^+$), 0.44$^{+26}_{-8}$ ps
γ_{3869}***601.90*** *25* ($\dagger_\gamma$1.00) E2 $I^{(1)}$*=51.7,*
$I^{(2)}$*=54.1, ħω=0.319*

A **4852.3** *6*, (37/2$^-$) γ_{4414}***438.6*** *5* ($\dagger_\gamma$100 *33*)
D+Q: δ=–0.26 *15* γ_{4008}***844.2*** *4*
($\dagger_\gamma$81 *40*)

C **5147.2** *6*, (37/2$^+$), 0.21$^{+14}_{-6}$ ps
γ_{4471}***675.90*** *25* ($\dagger_\gamma$0.80 *8*) $I^{(1)}$*=52.0,*
$I^{(2)}$*=55.2, ħω=0.356*

B **5330.4** *6* (?), (39/2$^-$) γ_{4852}***478.0*** *5* (?)
($\dagger_\gamma$100 *76*) γ_{4414}***916.5*** *4* (?) ($\dagger_\gamma$82 *65*)

C **5895.5** *6*, (41/2$^+$), <0.15 ps
γ_{5147}***748.30*** *25* ($\dagger_\gamma$0.75 *8*) $I^{(1)}$*=52.4,*
$I^{(2)}$*=58.5, ħω=0.391*

C **6712.2** *7*, (45/2$^+$) γ_{5896}***816.70*** *25*
($\dagger_\gamma$0.65 *7*) $I^{(1)}$*=53.0,* $I^{(2)}$*=61.8,*
ħω=0.425

C **7593.6** *7*, (49/2$^+$) γ_{6712}***881.40*** *25*
($\dagger_\gamma$0.66 *7*) $I^{(1)}$*=53.6,* $I^{(2)}$*=62.4,*
ħω=0.457

C **8539.1** *8*, (53/2$^+$) γ_{7594}***945.50*** *25*
($\dagger_\gamma$0.55 *7*) $I^{(1)}$*=54.2,* $I^{(2)}$*=61.8,*
ħω=0.489

C **9549.3** *8*, (57/2$^+$) γ_{8539}***1010.20*** *25*
($\dagger_\gamma$0.42 *6*) $I^{(1)}$*=54.6,* $I^{(2)}$*=60.1,*
ħω=0.522

C **10626.1** *9*, (61/2$^+$) γ_{9549}***1076.80*** *25*
($\dagger_\gamma$0.33 *6*) $I^{(1)}$*=54.9,* $I^{(2)}$*=58.7,*
ħω=0.555

C **11771.1** *9*, (65/2$^+$) γ_{10626}***1145.00*** *25*
($\dagger_\gamma$0.25 *6*) $I^{(1)}$*=55.1,* $I^{(2)}$*=57.4,*
ħω=0.590

C **12985.8** *9*, (69/2$^+$) γ_{11771}***1214.70*** *25*
($\dagger_\gamma$0.16 *5*) $I^{(1)}$*=55.2,* $I^{(2)}$*=55.0,*
ħω=0.626

C **14273.2** *10*, (73/2$^+$) γ_{12986}***1287.40*** *25*
($\dagger_\gamma$0.09 *4*) $I^{(1)}$*=55.1,* $I^{(2)}$*=53.6,*
ħω=0.662

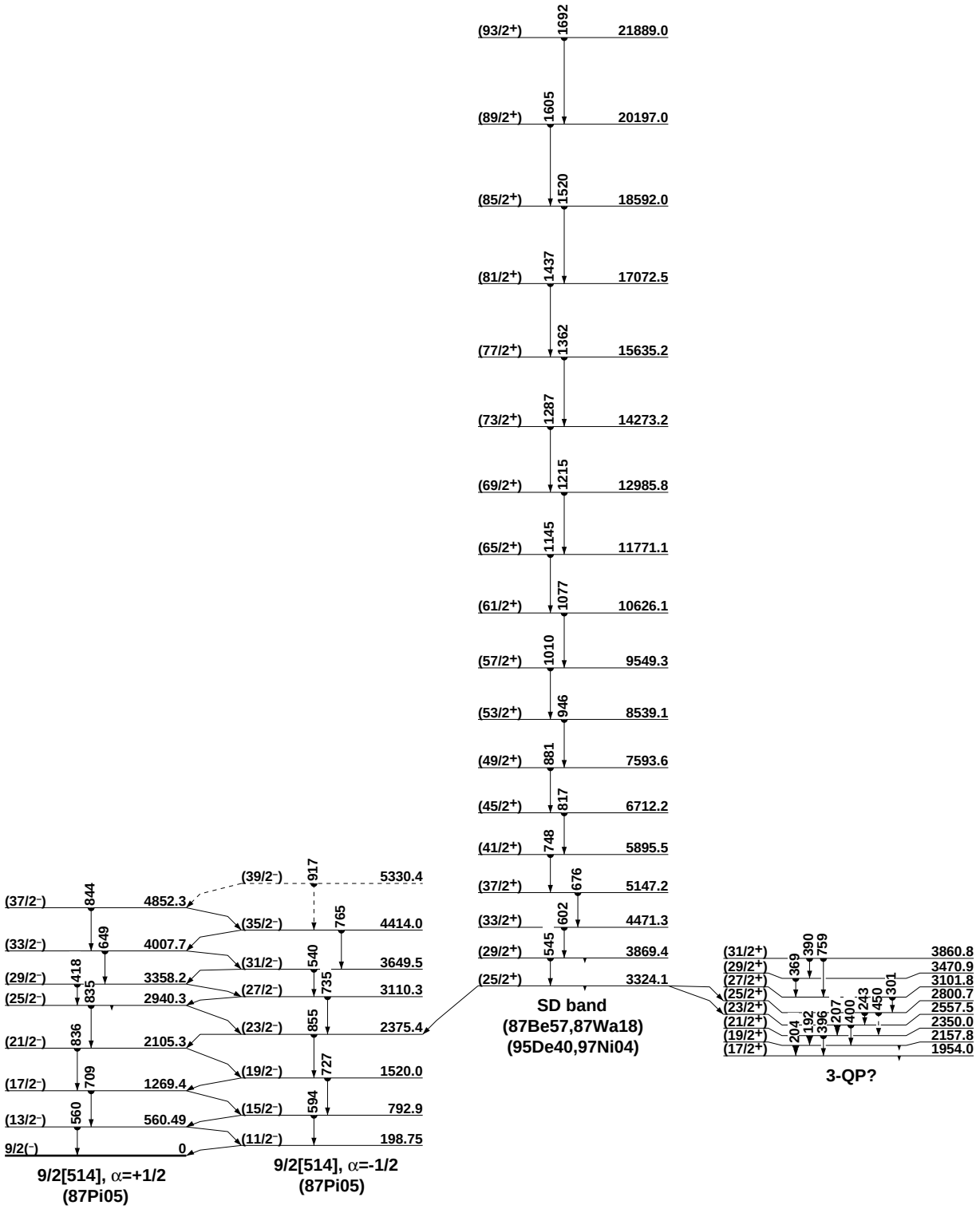
C **15635.2** *15*, (77/2$^+$) γ_{14273}***1362*** *1*
($\dagger_\gamma$<0.1) $I^{(1)}$*=55.0,* $I^{(2)}$*=53.2, ħω=0.700*

C **17072.5** *15*, (81/2$^+$) γ_{15635}***1437.2*** *4*
$I^{(1)}$*=54.8,* $I^{(2)}$*=48.6, ħω=0.739*

C **18592.0** *15*, (85/2$^+$) γ_{17073}***1519.5*** *5*
$I^{(1)}$*=54.4,* $I^{(2)}$*=46.8, ħω=0.781*

C **20197.0** *20*, (89/2$^+$) γ_{18592}***1605.0*** *7*
$I^{(1)}$*=54.0,* $I^{(2)}$*=46.0, ħω=0.824*

C **21889.0** *20*, (93/2$^+$) γ_{20197}***1692.0*** *10*


(93/2+) 21889.0
(89/2+) 20197.0
(85/2+) 18592.0
(81/2+) 17072.5
(77/2+) 15635.2
(73/2+) 14273.2
(69/2+) 12985.8
(65/2+) 11771.1
(61/2+) 10626.1
(57/2+) 9549.3
(53/2+) 8539.1
(49/2+) 7593.6
(45/2+) 6712.2
(41/2+) 5895.5
(37/2+) 5147.2
(33/2+) 4471.3
(29/2+) 3869.4
(25/2+) 3324.1
1692
1605
1520
1437
1362
1287
1215
1145
1077
1010
946
881
817
748
676
602
545
SD band
(87Be57,87Wa18)
(95De40,97Ni04)
(31/2+) 3860.8
(29/2+) 3470.9
(27/2+) 3101.8
(25/2+) 2800.7
(23/2+) 2557.5
(21/2+) 2350.0
(19/2+) 2157.8
(17/2+) 1954.0
369
390
759
243
450
301
207
400
204
192
396
3-QP?
(39/2−) 5330.4
917
(37/2−) 4852.3
844
(35/2−) 4414.0
765
(33/2−) 4007.7
649
(31/2−) 3649.5
540
(29/2−) 3358.2
418
835
(27/2−) 3110.3
735
(25/2−) 2940.3
(23/2−) 2375.4
855
(21/2−) 2105.3
836
(19/2−) 1520.0
727
(17/2−) 1269.4
709
(15/2−) 792.9
594
(13/2−) 560.49
560
(11/2−) 198.75
9/2(−) 0
9/2[514], α=+1/2
(87Pi05)
9/2[514], α=-1/2
(87Pi05)

$^{135}_{60}$Nd