$^{131}_{58}$Ce

Δ: –79700 *400* **S_n:** (8300) **S_p:** (5300)
Q_{EC}: 4000 *400* **Q_α:** 700 *400*

Nuclear Bands

A $\nu h_{11/2}$

B $\nu g_{7/2}$

C $\nu g_{7/2}\pi h_{11/2}{}^2$

D $\nu h_{11/2}\pi h_{11/2}\pi g_{7/2}$

E $\nu h_{11/2}\pi h_{11/2}{}^2$

F SD-1 band (96Se04,88Lu01)(87Be32,93Pa02)

G SD-2 band (96Se03)

Levels and γ-ray branchings:

B **0**, (7/2$^+$), 10.2 *3* m, %EC+%β$^+$=100
0+x, (1/2$^+$), 5.0 *10* m, %EC+%β$^+$=100
72.82+x *4*, (3/2$^+$) **γ_{0+x}*72.82*** *6* (†$_\gamma$100)

A **162.00** *9*, (9/2$^-$), 70 *5* ns **γ_0*161.9*** *1* (†$_\gamma$100) (E1)

B **257.31** *19*, (9/2$^+$) **γ_0*257.2*** *2* (†$_\gamma$100) (M1,E2)
266.16+x *5* **γ_{73+x}*193.36*** *6* (†$_\gamma$5.6 *5*) **γ_{0+x}*266.13*** *7* (†$_\gamma$100)
279.54+x *5* **γ_{73+x}*206.72*** *6* (†$_\gamma$56 *4*) **γ_{0+x}*279.55*** *7* (†$_\gamma$100 *10*)
285.40+x *5* **γ_{73+x}*212.55*** *7* (†$_\gamma$56 *4*) **γ_{0+x}*285.39*** *7* (†$_\gamma$100 *10*)

A **300.24** *13*, (11/2$^-$) **γ_{162}*138.2*** *1* (†$_\gamma$100) (M1,E2)
324.33+x *6* **γ_{73+x}*251.47*** *7* (†$_\gamma$40.3 *26*) **γ_{0+x}*324.35*** *8* (†$_\gamma$100 *9*)
364.81+x *6* **γ_{285+x}*79.36*** *10* (†$_\gamma$14 *4*) **γ_{73+x}*292.04*** *7* (†$_\gamma$100 *10*) **γ_{0+x}*364.7*** *2* (†$_\gamma$74 *20*)
384.70 *11* **γ_{162}*222.63*** *10* (†$_\gamma$100 *9*) **γ_0*385.0*** *2* (†$_\gamma$45 *14*)
407.82+x *9* **γ_{280+x}*128.2*** *2* (†$_\gamma$5.3 *21*) **γ_{73+x}*334.95*** *10* (†$_\gamma$100 *11*)
440.57 *10* **γ_{162}*278.53*** *16* (†$_\gamma$18 *7*) **γ_0*440.60*** *12* (†$_\gamma$100 *10*)

B **542.70** *24*, (11/2$^+$) **γ_{257}*285.2*** *2* (†$_\gamma$100 *20*) **γ_0*543.5*** *5* (†$_\gamma$91 *9*) (E2)
581.73+x *15* **γ_{266+x}*315.5*** *2* (†$_\gamma$100 *11*) **γ_{0+x}*581.8*** *2* (†$_\gamma$80 *18*)
585.02+x *11* **γ_{280+x}*305.42*** *10* (†$_\gamma$100)
588.94 *15* **γ_{162}*426.94*** *12* (†$_\gamma$100)
599.93 *22* **γ_{300}*299.6*** *3* (†$_\gamma$95 *40*) **γ_{162}*438.0*** *5* (†$_\gamma$≈100)

A **636.85** *25*, (13/2$^-$) **γ_{300}*336.4*** *3* (†$_\gamma$100 *7*) (M1,E2) **γ_{162}*475.3*** *4* (†$_\gamma$27 *4*) (E2)
785.26+x *8* **γ_{408+x}*377.25*** *17* (†$_\gamma$21 *6*) **γ_{365+x}*420.45*** *15* (†$_\gamma$100 *15*) **γ_{73+x}*712.46*** *12* (†$_\gamma$51 *5*) **γ_{0+x}*785.4*** *2* (†$_\gamma$37 *5*)

A **809.8** *3*, (15/2$^-$) **γ_{637}*173.0*** *2* (†$_\gamma$14 *3*) (M1,E2) **γ_{300}*509.4*** *5* (†$_\gamma$100 *17*)
865.59+x *12* **γ_{585+x}*280.42*** *16* (†$_\gamma$100 *40*) **γ_{280+x}*586.15*** *13* (†$_\gamma$72 *14*)

B **866.2** *4*, (13/2$^+$) **γ_{543}*323.4*** *3* (†$_\gamma$18 *4*) (M1,E2) **γ_{257}*609.4*** *6* (†$_\gamma$100 *18*) (E2)
884.17 *20* **γ_{600}*284.2*** *2* (†$_\gamma$100 *40*) **γ_{385}*499.5*** *2* (†$_\gamma$95 *20*)
947.42 *22* **γ_{257}*690.6*** (†$_\gamma$100) **γ_{162}*785.4*** *2* (†$_\gamma$550 *67*)
1054.63+x *8* **γ_{408+x}*646.5*** (†$_\gamma$≈17) **γ_{285+x}*769.21*** *10* (†$_\gamma$92 *8*) **γ_{280+x}*775.12*** *10* (†$_\gamma$100 *8*)
1176.4 *5*, (15/2$^-$) **γ_{810}*367*** **γ_{637}*539.5*** *5* (†$_\gamma$100) (M1,E2)

B **1212.0** *5*, (15/2$^+$) **γ_{866}*345.9*** *4* (†$_\gamma$8 *3*) **γ_{543}*669.1*** *7* (†$_\gamma$100 *8*) (E2)
1213.43+x *11* **γ_{785+x}*428.15*** *8* (†$_\gamma$100 *14*) **γ_{365+x}*848.7*** *2* (†$_\gamma$17 *4*)

A **1295.1** *4*, (17/2$^-$) **γ_{810}*485.5*** *4* (†$_\gamma$84 *11*) (M1,E2) **γ_{637}*657.8*** *6* (†$_\gamma$100 *17*) (E2)
1408.9 *11*

A **1451.7** *6*, (19/2$^-$) **γ_{1295}*156*** **γ_{810}*641.7*** *6* (†$_\gamma$100) (E2)

B **1590.9** *6*, (17/2$^+$) **γ_{1212}*379*** **γ_{866}*724.8*** *7* (†$_\gamma$100) (E2)
1695.7 *7*, (17/2$^-$) **γ_{1176}*519.3*** *5* (†$_\gamma$100) (M1,E2)
1805.3 *7*, (19/2$^-$) **γ_{1295}*510*** (?) **γ_{1176}*629*** **γ_{810}*996***

B **1976.3** *7*, (19/2$^+$) **γ_{1591}*385*** (?) **γ_{1212}*764.3*** *7* (†$_\gamma$100) (E2)
1994.26+x *15* **γ_{1055+x}*940.2*** (†$_\gamma$≈23) **γ_{324+x}*1669.7*** *2* (†$_\gamma$71 *10*) **γ_{73+x}*1921.8*** *3* (†$_\gamma$100 *16*) **γ_{0+x}*1994.3*** *3* (†$_\gamma$71 *16*)

A **2067.3** *7*, (21/2$^-$) **γ_{1452}*615*** **γ_{1295}*773***

A **2202.0** *8*, (23/2$^-$) **γ_{2067}*135*** **γ_{1452}*749.9*** *7* (†$_\gamma$100) (E2)
2286.7 *11* **γ_{1409}*878***
2313.3 *10* (?), (19/2$^-$) **γ_{1696}*617.5*** *6* (?) (†$_\gamma$100) (M1,E2)

D **2352.1** *8*, (19/2$^+$) **γ_{1409}*943*** **γ_{1212}*1140***

B **2386.8** *8*, (21/2$^+$) **γ_{1976}*411*** **γ_{1591}*795.6*** *8* (†$_\gamma$100) (E2)

D **2505.4** *8*, (21/2$^+$) **γ_{2352}*153*** **γ_{2287}*219*** **γ_{1976}*529*** **γ_{1591}*915***
2563.7 *8*, (23/2$^-$) **γ_{2067}*496*** **γ_{1805}*759*** **γ_{1452}*1112***

D **2685.2** *8*, (23/2$^+$) **γ_{2505}*180*** **γ_{2387}*298*** **γ_{2352}*333*** **γ_{1976}*709***

C **2761.3** *9*, (23/2$^+$) **γ_{2387}*375*** **γ_{1976}*784.6*** *7* (†$_\gamma$100) (E2)

D **2909.3** *10*, (25/2$^+$) **γ_{2685}*224*** **γ_{2505}*404***

A **2912.3** *9*, (25/2$^-$) **γ_{2202}*710*** **γ_{2067}*845***

A **3028.7** *10*, (27/2⁻) γ_{2202}***826.6*** *8* (†$_\gamma$100) (E2)

C **3035.6** *10*, (25/2⁺) γ_{2761}***274*** γ_{2387}***649***

E **3069.3** *11*, (25/2⁻) γ_{2912}***157***

D **3198.3** *11*, (27/2⁺) γ_{2909}***289*** γ_{2685}***513***

C **3272.1** *11*, (27/2⁺) γ_{3036}***236*** γ_{2761}***511***

E **3287.4** *9*, (27/2⁻) γ_{3069}***218*** γ_{3029}***258***(?) γ_{2912}***375*** γ_{2564}***724*** γ_{2202}***1086***(?)

D **3522.3** *12*, (29/2⁺) γ_{3198}***324*** γ_{2909}***613***

C **3539.3** *12*, (29/2⁺) γ_{3272}***267*** γ_{3036}***504***

E **3543.9** *11*, (29/2⁻) γ_{3287}***257*** γ_{3069}***475***(?) γ_{3029}***515***

E **3817.7** *11*, (31/2⁻) γ_{3544}***274*** γ_{3287}***530*** γ_{3029}***789***

C **3840.2** *13*, (31/2⁺) γ_{3539}***301*** γ_{3272}***568***

D **3893.3** *13*, (31/2⁺) γ_{3522}***371*** γ_{3198}***695***

A **3920.7** *14*, (31/2⁻) γ_{3029}***892***

E **4152.8** *12*, (33/2⁻) γ_{3818}***335*** γ_{3544}***609***

C **4177.4** *14*, (33/2⁺) γ_{3840}***337*** γ_{3539}***638***

D **4313.3** *13*, (33/2⁺) γ_{3893}***420*** γ_{3522}***791***

E **4510.7** *13*, (35/2⁻) γ_{4153}***358*** γ_{3818}***693***

C **4549.0** *14*, (35/2⁺) γ_{4177}***371*** γ_{3840}***709***

D **4745.3** *14*, (35/2⁺) γ_{4313}***432*** γ_{3893}***852***

A **4842.7** *17*, (35/2⁻) γ_{3921}***922***

E **4908.9** *13*, (37/2⁻) γ_{4511}***398*** γ_{4153}***756***

C **4954.9** *15*, (37/2⁺) γ_{4549}***405*** γ_{4177}***778***

D **5244.3** *17*, (37/2⁺) γ_{4313}***931***

E **5341.4** *14*, (39/2⁻) γ_{4909}***432*** γ_{4511}***831***

C **5389.5** *16*, (39/2⁺) γ_{4955}***434*** γ_{4549}***841***

D **5714.3** *18*, (39/2⁺) γ_{4745}***969***

E **5796.6** *15*, (41/2⁻) γ_{5341}***455*** γ_{4909}***888***

A **5804.7** *20*, (39/2⁻) γ_{4843}***962***

C **5859.7** *17*, (41/2⁺) γ_{5390}***470*** γ_{4955}***905***

E **6292.5** *16*, (43/2⁻) γ_{5797}***496*** γ_{5341}***951***

C **6351.6** *19*, (43/2⁺) γ_{5860}***491***(?) γ_{5390}***962***

D **6742.3** *20*, (43/2⁺) γ_{5714}***1028***

E **6808.6** *18*, (45/2⁻) γ_{6293}***515***(?) γ_{5797}***1012***

C **6879.7** *19*, (45/2⁺) γ_{6352}***529***(?) γ_{5860}***1020***

E **7354.5** *19*, (47/2⁻) γ_{6809}***547***(?) γ_{6293}***1062***

C **7421.6** *21*, (47/2⁺) γ_{6352}***1070***

D **7801.3** *23*, (47/2⁺) γ_{6742}***1059***

E **7931.6** *21*, (49/2⁻) γ_{6809}***1123***

C **8008.7** *22*, (49/2⁺) γ_{6880}***1129***

C **8576.4** *23*(?), (51/2⁺) γ_{7422}***1155***(?)

F **y**, J≈(29/2)

F **590.73+y** *5*, J+2 γ_{y}***590.73*** *5* (†$_\gamma$0.5 *1*)
$I^{(1)}$*=52.7,* $I^{(2)}$*=56.1,* ħω*=0.313*

F **1252.72+y** *7*, J+4 γ_{591+y}***661.99*** *5*
(†$_\gamma$1.0 *1*) $I^{(1)}$*=53.1,* $I^{(2)}$*=56.7,* ħω*=0.349*

F **1985.24+y** *9*, J+6 γ_{1253+y}***732.52*** *5*
(†$_\gamma$1.1 *1*) $I^{(1)}$*=53.4,* $I^{(2)}$*=55.7,* ħω*=0.384*

F **2789.51+y** *10*, J+8 γ_{1985+y}***804.27*** *5*
(†$_\gamma$0.9 *1*) $I^{(1)}$*=53.6,* $I^{(2)}$*=57.4,* ħω*=0.420*

F **3663.46+y** *11*, J+10 γ_{2790+y}***873.95*** *5*
(†$_\gamma$1.0 *1*) $I^{(1)}$*=53.9,* $I^{(2)}$*=58.0,* ħω*=0.454*

F **4606.39+y** *12*, J+12 γ_{3663+y}***942.93*** *5*
(†$_\gamma$1.1 *1*) $I^{(1)}$*=54.2,* $I^{(2)}$*=58.5,* ħω*=0.489*

F **5617.72+y** *13*, J+14 γ_{4606+y}***1011.33*** *5*
(†$_\gamma$1.0 *1*) $I^{(1)}$*=54.5,* $I^{(2)}$*=57.8,* ħω*=0.523*

F **6698.20+y** *15*, J+16 γ_{5618+y}***1080.48*** *6*
(†$_\gamma$0.8 *1*) $I^{(1)}$*=54.7,* $I^{(2)}$*=56.5,* ħω*=0.558*

F **7849.48+y** *16*, J+18 γ_{6698+y}***1151.28*** *6*
(†$_\gamma$0.6 *1*) $I^{(1)}$*=54.7,* $I^{(2)}$*=54.3,* ħω*=0.594*

F **9074.48+y** *17*, J+20 γ_{7849+y}***1225.00*** *6*
(†$_\gamma$0.5 *1*) $I^{(1)}$*=54.6,* $I^{(2)}$*=52.4,* ħω*=0.632*

F **10375.86+y** *18*, J+22 γ_{9074+y}***1301.38*** *6*
(†$_\gamma$0.5 *1*) $I^{(1)}$*=54.4,* $I^{(2)}$*=50.2,* ħω*=0.671*

F **11756.97+y** *20*, J+24 $\gamma_{10376+y}$***1381.11*** *8*
(†$_\gamma$0.3 *1*) $I^{(1)}$*=54.1,* $I^{(2)}$*=48.2,* ħω*=0.711*

F **13221.03+y** *21*, J+26 $\gamma_{11757+y}$***1464.06*** *8*
(†$_\gamma$0.4 *1*) $I^{(1)}$*=53.8,* $I^{(2)}$*=46.6,* ħω*=0.753*

F **14770.92+y** *23*, J+28 $\gamma_{13221+y}$***1549.89*** *10*
$I^{(1)}$*=53.3,* $I^{(2)}$*=44.3,* ħω*=0.798*

F **16411.2+y** *3*, J+30 $\gamma_{14771+y}$***1640.26*** *12*
$I^{(1)}$*=52.8,* $I^{(2)}$*=43.8,* ħω*=0.843*

F **18142.7+y** *3*, J+32 $\gamma_{16411+y}$***1731.50*** *15*
$I^{(1)}$*=52.3,* $I^{(2)}$*=44.2,* ħω*=0.888*

F **19964.7+y** *4*, J+34 $\gamma_{18143+y}$***1822.0*** *3*

G **z**, J≈(47/2)

G **846.80+z**, J+2 γ_{z}***846.80*** *10* (†$_\gamma$1.00 *10*)
$I^{(1)}$*=58.1,* $I^{(2)}$*=65.3,* ħω*=0.439*

G **1754.87+z**, J+4 γ_{847+z}***908.07*** *10*
(†$_\gamma$1.00 *10*) $I^{(1)}$*=58.4,* $I^{(2)}$*=59.3,* ħω*=0.471*

G **2730.39+z**, J+6 γ_{1755+z}***975.52*** *10*
(†$_\gamma$1.02 *10*) $I^{(1)}$*=58.5,* $I^{(2)}$*=59.2,* ħω*=0.505*

G **3773.52+z**, J+8 γ_{2730+z}***1043.13*** *10*
(†$_\gamma$1.15 *10*) $I^{(1)}$*=58.5,* $I^{(2)}$*=57.9,* ħω*=0.539*

G **4885.76+z**, J+10 γ_{3774+z}***1112.24*** *11*
(†$_\gamma$1.20 *10*) $I^{(1)}$*=58.4,* $I^{(2)}$*=57.9,* ħω*=0.573*

G **6067.04+z**, J+12 γ_{4886+z}***1181.28*** *12*
(†$_\gamma$1.10 *10*) $I^{(1)}$*=58.4,* $I^{(2)}$*=57.6,* ħω*=0.608*

G **7317.75+z**, J+14 γ_{6067+z}***1250.71*** *12*

($\dagger_\gamma$1.15 *10*) $I^{(1)}$=*58.3*, $I^{(2)}$=*56.1*,
$\hbar\omega$=*0.643*

G **8639.79+z**, J+16 γ_{7318+z}***1322.04*** *12*
($\dagger_\gamma$0.97 *15*) $I^{(1)}$=*58.1*, $I^{(2)}$=*53.9*,
$\hbar\omega$=*0.680*

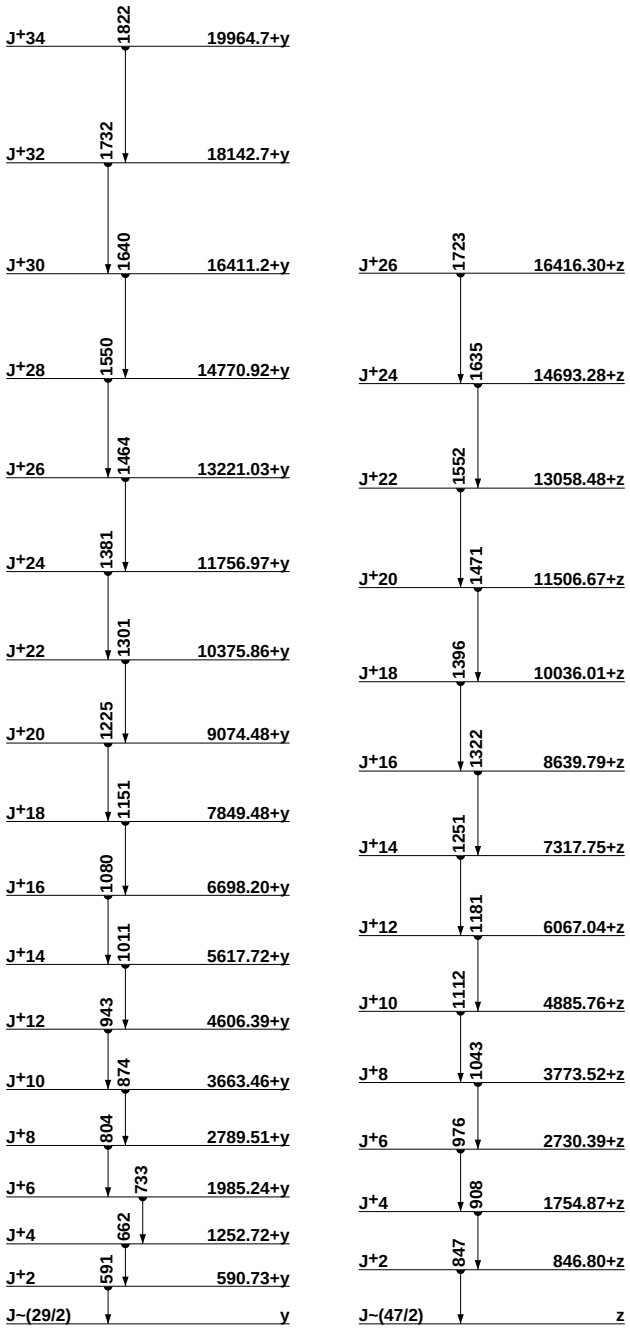
G **10036.01+z**, J+18 γ_{8640+z}***1396.22*** *15*
($\dagger_\gamma$0.95 *15*) $I^{(1)}$=*57.9*, $I^{(2)}$=*53.7*,
$\hbar\omega$=*0.717*

G **11506.67+z**, J+20 $\gamma_{10036+z}$***1470.66*** *15*
($\dagger_\gamma$0.70 *15*) $I^{(1)}$=*57.6*, $I^{(2)}$=*49.3*,
$\hbar\omega$=*0.756*

G **13058.48+z**, J+22 $\gamma_{11507+z}$***1551.81*** *19*
($\dagger_\gamma$0.55 *15*) $I^{(1)}$=*57.1*, $I^{(2)}$=*48.2*,
$\hbar\omega$=*0.797*

G **14693.28+z**, J+24 $\gamma_{13058+z}$***1634.80*** *20*
($\dagger_\gamma$0.50 *15*) $I^{(1)}$=*56.6*, $I^{(2)}$=*45.3*,
$\hbar\omega$=*0.839*

G **16416.30+z**, J+26 $\gamma_{14693+z}$***1723.02*** *25*



SD-1 band
(96Se04,88Lu01)
(87Be32,93Pa02)

SD-2 band
(96Se03)

$^{131}_{58}$Ce