**(HI,xnγ):SD 2001La17,1995Be36**

| Type | Author | History Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | C. W. Reich | NDS 110, 2257 (2009) | 1-May-2008 |

Additional information 1.

2001La17: $^{110}$Pd($^{48}$Ti,4nγ), E($^{48}$Ti)=215 MeV. Target consisted of α stack of two self-supporting metallic foils (thickness=2×500 μg/cm$^2$) of enrichment 98.64%. Measured Eγ and γγ using the EUROBALL detector array, consisting of 13 cluster detectors, 25 Clover detectors and 26 tapered escape-suppressed detectors.

1995Be36: $^{118}$Sn($^{40}$Ar,4nγ), E($^{40}$Ar)=185 Mev. Measured γ′s using 36 Compton-suppressed Ge detectors in an implementation of Gammasphere. Measured Eγ, Iγ, coincidences. Deduced mults for several transitions.

For model calculations related to SD bands, see for example: 1985Du01; 1987Du04; 1987Ch07; 1989Na07; 1997Ha14.

## $^{154}$Er Levels

| E(level) | $J^\pi$ | Comments |
|---|---|---|
| x† | J1 | $J^\pi$: 2001La17 suggest $J_1 \approx (24^+)$, which is the value shown in the compilation of 2002Si26. This band appears to feed into the normal-deformed levels of $J^\pi = 19^-$ to $25^-$ (2001La17). Other: $(26^+)$ (1995Be36), from considerations of γ intensity within the SD and yrast bands. This latter value appears in the compilation of 1999Ha56.<br>E(level): 1995Be36 infer that the likely entry region of the SD band into the states of normal deformation in $^{154}$Er is near an excitation energy of 7.4 MeV. |
| 696.37+x† *17* | J1+2 | |
| 1430.72+x† *18* | J1+4 | |
| 2207.93+x† *20* | J1+6 | |
| 3032.37+x† *21* | J1+8 | |
| 3907.13+x† *22* | J1+10 | |
| 4834.58+x† *24* | J1+12 | |
| 5814.46+x† *25* | J1+14 | |
| 6847.0+x† *3* | J1+16 | |
| 7932.7+x† *3* | J1+18 | |
| 9070.6+x† *3* | J1+20 | |
| 10261.6+x† *4* | J1+22 | |
| 11504.5+x† *4* | J1+24 | |
| 12804.9+x† *5* | J1+26 | |
| 14154.4+x† *5* | J1+28 | |
| y‡ | J2 | $J^\pi$: 2001La17 suggest $J_2 \approx (26^+)$. This band appears to have a feeding pattern similar to that of the SD-1 band, although it may feed levels somewhat higher up in the spectrum of states of normal deformation. |
| 744.73+y‡ *20* | J2+2 | |
| 1533.57+y‡ *25* | J2+4 | |
| 2367.0+y‡ *3* | J2+6 | |
| 3246.1+y‡ *3* | J2+8 | |
| 4171.6+y‡ *4* | J2+10 | |
| 5143.8+y‡ *4* | J2+12 | |
| 6162.1+y‡ *4* | J2+14 | |
| 7227.6+y‡ *4* | J2+16 | |
| 8340.2+y‡ *4* | J2+18 | |
| 9499.0+y‡ *5* | J2+20 | |
| 10706.2+y‡ *5* | J2+22 | |

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**(HI,xnγ):SD 2001La17,1995Be36 (continued)**

$^{154}$Er Levels (continued)

| E(level) | $J^\pi$ |
|---|---|
| 11959.6+y‡ *5* | J2+24 |
| 13260.2+y?‡ *6* | J2+26 |

† Band(A): SD-1 band (2001La17,1995Be36); probable triaxial shape based on a single proton N=6 intruder orbital (2001La17). Percent population=0.5% (2001La17), ≈ 0.4% (1995Be36).

‡ Band(B): SD-2 band (2001La17). Probable prolate shape (2001La17), with configuration $\pi 6^4 \nu 7^2$ (in the notation of 1988Be22). percent population is roughly 1/3 that of the SD-1 band.

γ($^{154}$Er)

| $E_\gamma$† | $I_\gamma$‡ | $E_i$(level) | $J_i^\pi$ | $E_f$ | $J_f^\pi$ | Mult.# | Comments |
|---|---|---|---|---|---|---|---|
| 696.37 *17* | 0.21 *5* | 696.37+x | J1+2 | x | J1 | [E2] | $E_\gamma$: other: 695.06 *25* (1995Be36). |
| 734.35 *5* | 1.00 *8* | 1430.72+x | J1+4 | 696.37+x | J1+2 | E2 | $E_\gamma$: other: 734.26 *23* (1995Be36). Mult.: from R=1.79 *25*. |
| 744.73 *20* | | 744.73+y | J2+2 | y | J2 | | |
| 777.21 *8* | 0.98 *8* | 2207.93+x | J1+6 | 1430.72+x | J1+4 | E2 | $E_\gamma$: other: 776.73 22 (1995Be36). Mult.: from R=1.39 *39*. |
| 788.84 *15* | | 1533.57+y | J2+4 | 744.73+y | J2+2 | | |
| 824.44 *7* | 0.96 *9* | 3032.37+x | J1+8 | 2207.93+x | J1+6 | [E2] | $E_\gamma$: other: 824.09 *21* (1995Be36). |
| 833.45 *7* | | 2367.0+y | J2+6 | 1533.57+y | J2+4 | | |
| 874.76 *6* | 0.68 *7* | 3907.13+x | J1+10 | 3032.37+x | J1+8 | [E2] | $E_\gamma$: other: 874.95 *23* (1995Be36). |
| 879.04 *8* | | 3246.1+y | J2+8 | 2367.0+y | J2+6 | | |
| 925.56 *17* | | 4171.6+y | J2+10 | 3246.1+y | J2+8 | | |
| 927.45 *9* | 0.76 *7* | 4834.58+x | J1+12 | 3907.13+x | J1+10 | E2 | $E_\gamma$: other: 927.51 *26* (1995Be36). Mult.: from R=1.80 *39*. |
| 972.13 *11* | | 5143.8+y | J2+12 | 4171.6+y | J2+10 | | |
| 979.88 *8* | 0.73 *7* | 5814.46+x | J1+14 | 4834.58+x | J1+12 | E2 | $E_\gamma$: other: 981.04 *44* (1995Be36). Mult.: from R=1.44 *40*. |
| 1018.36 *15* | | 6162.1+y | J2+14 | 5143.8+y | J2+12 | | |
| 1032.58 *9* | 0.71 *9* | 6847.0+x | J1+16 | 5814.46+x | J1+14 | E2 | $E_\gamma$: other: 1032.14 *20* (1995Be36). Mult.: from R=1.40 *47*. |
| 1065.53 *10* | | 7227.6+y | J2+16 | 6162.1+y | J2+14 | | |
| 1085.61 *10* | 0.71 *8* | 7932.7+x | J1+18 | 6847.0+x | J1+16 | E2 | $E_\gamma$: other: 1085.24 *22* (1995Be36). Mult.: from R=1.78 *62*. |
| 1112.59 *11* | | 8340.2+y | J2+18 | 7227.6+y | J2+16 | | |
| 1137.98 *13* | 0.63 *7* | 9070.6+x | J1+20 | 7932.7+x | J1+18 | E2 | $E_\gamma$: other: 1137.88 *30* (1995Be36). Mult.: from R=1.27 *52*. |
| 1158.81 *12* | | 9499.0+y | J2+20 | 8340.2+y | J2+18 | | |
| 1190.95 *23* | 0.63 *7* | 10261.6+x | J1+22 | 9070.6+x | J1+20 | E2 | $E_\gamma$: other: 1191.39 *28* (1995Be36). Mult.: from R=1.61 *40*. |
| 1207.19 *13* | | 10706.2+y | J2+22 | 9499.0+y | J2+20 | | |
| 1242.93 *11* | 0.41 *7* | 11504.5+x | J1+24 | 10261.6+x | J1+22 | [E2] | $E_\gamma$: other: 1243.84 *34* (1995Be36). |
| 1253.39 *18* | | 11959.6+y | J2+24 | 10706.2+y | J2+22 | | |
| 1300.39 *18* | 0.37 *6* | 12804.9+x | J1+26 | 11504.5+x | J1+24 | [E2] | $E_\gamma$: other: 1301.93 *51* (1995Be36). |
| 1300.54& *24* | | 13260.2+y? | J2+26 | 11959.6+y | J2+24 | | |
| 1349.49 *20* | | 14154.4+x | J1+28 | 12804.9+x | J1+26 | [E2] | |
| x1368.4@ *12* | 0.12 *8* | | | | | | |
| x1424.26@ *39* | 0.30 *8* | | | | | | |

† From 2001La17.

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**(HI,xnγ):SD 2001La17,1995Be36 (continued)**

γ($^{154}$Er) (continued)

‡ From 1995Be36. 2001La17 do not report γ intensities.
# From an asymmetry ratio R (1995Be36), defined to be R=Iγ(forward+backward angles)/Iγ(90°). For stretched quadrupole transitions, R=1.59 *25*; and, for stretched dipoles, R=0.82 *24*. Stretched quadrupole transitions are assigned E2.
@ γ reported by 1995Be36, but not placed in their SD band.
& Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

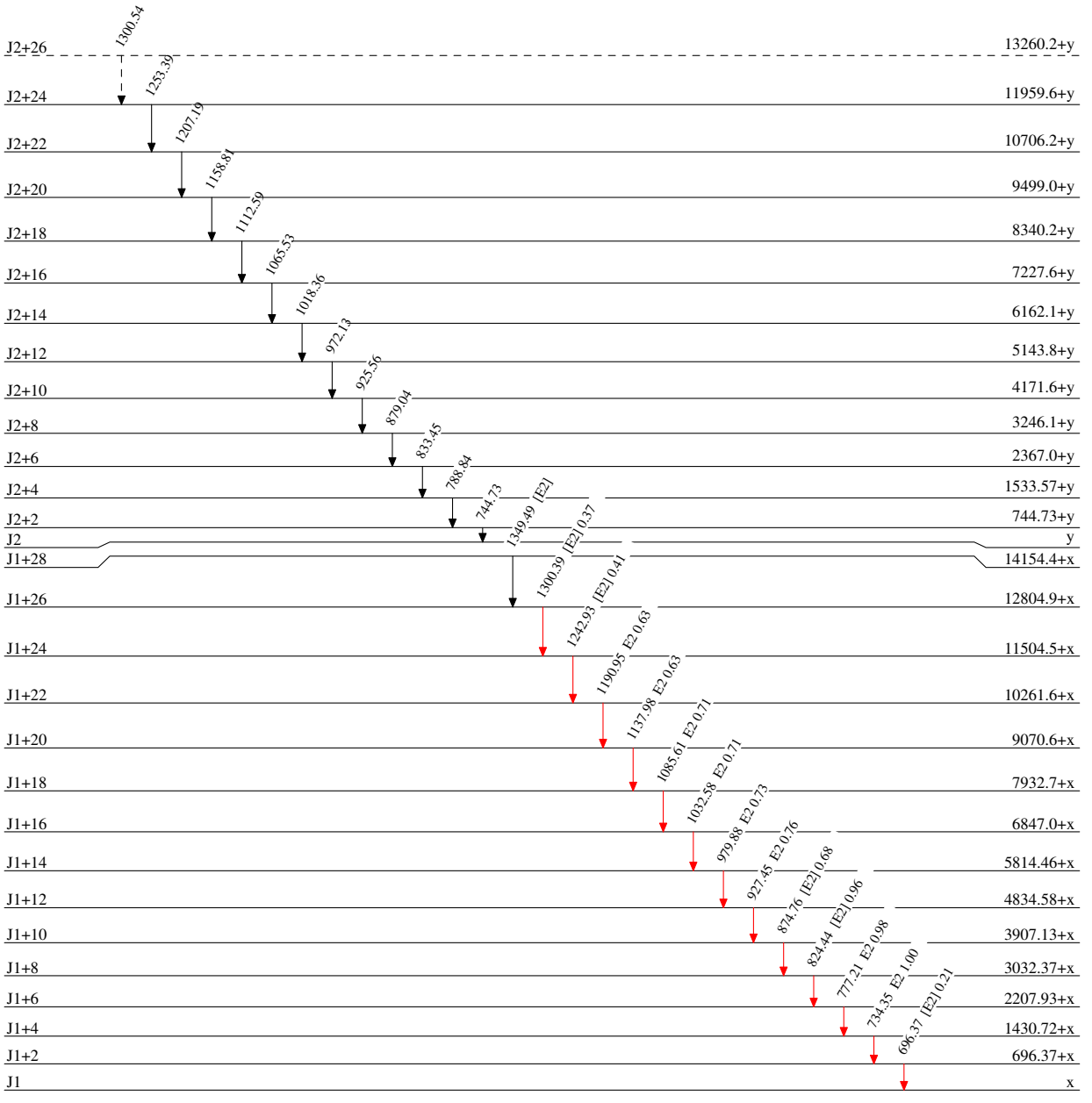
**(HI,xnγ):SD 2001La17,1995Be36**

Level Scheme

Intensities: Relative $I_\gamma$

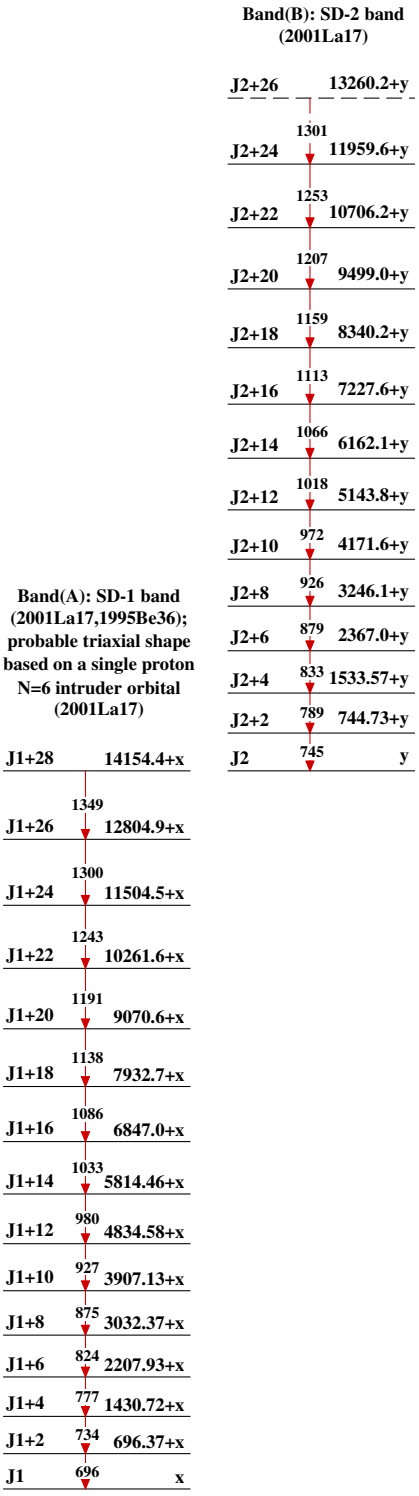
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)




$^{154}_{68}Er_{86}$

## (HI,xnγ):SD 2001La17,1995Be36




$^{154}_{68}Er_{86}$