^{110}Pd(^{37}Cl,4nγ):SD 1999Ax02,1993At01,1991Mu08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 113, 715 (2012)	31-May-2011

Additional information 1.

2001Sh11: Theoretical study of decay-out spin of Super Deformed (SD) bands.

2001Le04: Studied ridge structures in $\gamma\gamma$ matrices using Euroball array.

1998Ca19 (also 2000Br50,1999Ca02), 1998Ca36, 1997Le26, 1997Ca27, 2001Ca15, 2001Br16, 2001Br09, 2000Br50, 1999Ca22, 1999Ax02, 1998Br38, 1997Br41, 1996Ma34: study Giant Dipole Resonance (GDR) built on superdeformed state using ^{110}Pd(^{37}Cl,4nγ).

1997Le17, 1996Le07: decay of yrast SDB was studied. Only single-step 3361γ deexciting the second-lowest SDB state to a level above 35/2$^{(+)}$, 4947 level, seen in 1996At03 is confirmed in 1997Le17. No two-step links were evident (1997Le17).

2004Mi21, 2002Be61, 1999Ax02, 1995Fo02, 1993At01 (also 1996Le07, 1995Le31, 1993At02, 1993At03), 1991Mu08: ^{110}Pd(^{37}Cl,4nγ) E=160 MeV. Measured $\gamma\gamma$, $\gamma\gamma(\theta)$. From a fluctuation-analysis method, 1995Le31 report evidence for 10 to 40 superdeformed bands (without discrete transitions) in ^{143}Eu within a narrow transition range of 1300-1500 keV. Continuum spectroscopy results given by 1996Le07. Others: 2001Ca40, 2001Km02. Lifetime data are given in 1995Fo02 (centroid-shift analysis) and 1993At03.

1995Mu11: ^{122}Sn(^{27}Al,6nγ). Percent population of SD band=1.0.

Other: 1998MaZQ.

2000Li14: ^{97}Mo(^{51}V,2p3nγ) E=238 MeV. Measured Eγ, Iγ, $\gamma\gamma$. Deduced yrast band. Eγ and Iγ for 15 transitions (547 to 1385) reported.

^{143}Eu Levels

E(level)	J$^\pi$	Comments
x†	J≈(33/2)	E(level): x=8582 *4* (1993At01) deduced from possible deexciting transitions to normal bands. J$^\pi$: from 1999Ax02, who adopted the assignment in 1997Lu03 based on comparison of experimental moments of inertia with those from model calculations. Assignment of (37/2) by 1993At01 was based on deexcitation of SD band. Possible deexcitation to 4656 (33/2) and 4949 (35/2) levels through cascades of two γ rays summing to 3925 *5* and 3634 *5*, respectively (1993At01). A single-step transition of 2418.9 *9* is tentatively assigned (1996At03) to the decay of SD band, but its placement is uncertain. A 2715 transition is also reported by 1999Ax02 in coincidence with transitions in SD-1 band, but its exact placement is not known.
483.28+x† *10*	J+2	Possible deexcitation to 5590 (37/2), 5795 (35/2), 5851 (39/2) and 5872 levels through cascades of two γ rays summing to 3476 *5*, 3274 *5*, 3211 *5* and 3187 *5*, respectively, was suggested by 1993At01. 1996At03 found, and 1997Le17 confirmed, a 3360.6 transition to deexcite this level and feed a normal level that decays to a level above 4947, 35/2$^+$.
1029.64+x† *15*	J+4	Possible deexcitation to 6336 (39/2) level through a cascade of two γ rays summing to 3274 *5* (1993At01).
1638.49+x† *18*	J+6	
2309.63+x† *20*	J+8	
3042.06+x† *23*	J+10	
3835.19+x† *25*	J+12	
4688.5+x† *3*	J+14	
5601.4+x† *4*	J+16	
6573.7+x† *4*	J+18	
7604.9+x† *4*	J+20	
8694.8+x† *5*	J+22	
9843.5+x† *5*	J+24	
11050.7+x† *6*	J+26	
12316.4+x† *6*	J+28	

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^{110}Pd(^{37}Cl,4nγ):SD 1999Ax02,1993At01,1991Mu08 (continued)

^{143}Eu Levels (continued)

E(level)	J$^{\pi}$	Comments
13640.9+x[†] *6*	J+30	
15023.6+x[†] *7*	J+32	
16466.7+x[†] *7*	J+34	
17969.8+x[†] *7*	J+36	
19533.1+x[†] *8*	J+38	
21157.1+x[†] *13*	J+40	
22841.8+x[†] *16*	J+42	
24588.1+x[†] *20*	J+44	
26392.9+x[†] *24*	J+46	
y[‡]	J1≈(61/2)	J$^{\pi}$: from 1999Ax02, based on 33/2 for the lowest level of SD-1 band.
865.2+y[‡] *3*	J1+2	
1789.0+y[‡] *4*	J1+4	
2768.8+y[‡] *4*	J1+6	
3805.0+y[‡] *5*	J1+8	
4898.3+y[‡] *5*	J1+10	
6048.9+y[‡] *6*	J1+12	
7257.2+y[‡] *6*	J1+14	
8523.2+y[‡] *7*	J1+16	
9847.4+y[‡] *7*	J1+18	
11230.4+y[‡] *8*	J1+20	
12672.3+y[‡] *9*	J1+22	
14173.5+y[‡] *10*	J1+24	
15734.5+y[‡] *10*	J1+26	
17355.8+y[‡] *16*	J1+28	
19040+y[‡] *3*	J1+30	
20780+y[‡] *4*	J1+32	

[†] Band(A): SD-1 band (1999Ax02,2000Li14,1993At01,1991Mu08). Q(intrinsic)=13.0 *15* (1995Fo02), 13 *1* (1993At01,1993At03). The lifetime details are given in 1995Fo02 and 1993At03. Percent population=1.1 (1993At01), 1.0 (1995Mu11), 1.8 (1999Ax02). β_2=0.52 *5*, β_4=0.05. Configuration=((ν 6)$^{+4}$(π 6)$^{+1}$), involving i13/2 intruder orbitals from N=6 shell for both neutrons and protons (1995Fo02).

[‡] Band(B): SD-2 band (1999Ax02). Percent population=35% *4* of SD-1 band (1999Ax02). Configuration=(π 6)^2(ν 7)^0 (1999Ax02).

γ(^{143}Eu)

F(τ) given are the Doppler Shift attenuation factors (1995Fo02).

E$_{\gamma}$[†]	I$_{\gamma}$[‡]	E$_i$(level)	J$^{\pi}_i$	E$_f$	J$^{\pi}_f$	Comments
483.28 *10*	0.32 *2*	483.28+x	J+2	x	J≈(33/2)	
546.36[&] *10*	0.69 *3*	1029.64+x	J+4	483.28+x	J+2	F(τ)=0.22 *4* (1995Fo02).
608.85 *10*	1.05 *3*	1638.49+x	J+6	1029.64+x	J+4	F(τ)=0.38 *3* (1995Fo02).
671.14[&] *10*	0.96 *4*	2309.63+x	J+8	1638.49+x	J+6	F(τ)=0.50 *2* (1995Fo02).

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^{110}Pd(^{37}Cl,4nγ):SD 1999Ax02,1993At01,1991Mu08 (continued)

γ(^{143}Eu) (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Comments
732.42 *10*	0.99 *3*	3042.06+x	J+10	2309.63+x	J+8	F(τ)=0.66 *2* (1995Fo02).
793.13 *10*	0.98 *3*	3835.19+x	J+12	3042.06+x	J+10	F(τ)=0.72 *2* (1995Fo02).
853.30 *10*	1.01 *4*	4688.5+x	J+14	3835.19+x	J+12	F(τ)=0.78 *2* (1995Fo02).
865.2& *3*	0.29 *4*	865.2+y	J1+2	y	J1≈(61/2)	
912.9& *2*	0.98#@ *8*	5601.4+x	J+16	4688.5+x	J+14	F(τ)=0.85 *2* (1995Fo02).
923.76 *13*	0.32 *3*	1789.0+y	J1+4	865.2+y	J1+2	
972.26 *10*	1.04#@ *8*	6573.7+x	J+18	5601.4+x	J+16	F(τ)=0.86 *2* (1995Fo02).
979.8 *2*	@	2768.8+y	J1+6	1789.0+y	J1+4	
1031.25 *20*	1.03#@ *7*	7604.9+x	J+20	6573.7+x	J+18	F(τ)=0.89 *2* (1995Fo02).
1036.27 *22*	@	3805.0+y	J1+8	2768.8+y	J1+6	
1089.93 *20*	0.95#@ *6*	8694.8+x	J+22	7604.9+x	J+20	F(τ)=0.91 *2* (1995Fo02).
1093.3 *2*	@	4898.3+y	J1+10	3805.0+y	J1+8	
1148.67& *20*	0.75#@ *11*	9843.5+x	J+24	8694.8+x	J+22	F(τ)=0.93 *2* (1995Fo02).
1150.6& *2*	@	6048.9+y	J1+12	4898.3+y	J1+10	
1207.13 *20*	0.81 *4*	11050.7+x	J+26	9843.5+x	J+24	F(τ)=0.94 *2* (1995Fo02).
1208.3 *3*	0.32 *3*	7257.2+y	J1+14	6048.9+y	J1+12	
1265.69 *20*	0.66 *3*	12316.4+x	J+28	11050.7+x	J+26	F(τ)=0.96 *2* (1995Fo02).
1266.0 *2*	0.29 *3*	8523.2+y	J1+16	7257.2+y	J1+14	
1324.2 *3*	0.21 *3*	9847.4+y	J1+18	8523.2+y	J1+16	
1324.52 *21*	0.56 *3*	13640.9+x	J+30	12316.4+x	J+28	F(τ)=0.97 *2* (1995Fo02).
1382.70 *21*	0.43 *3*	15023.6+x	J+32	13640.9+x	J+30	F(τ)=0.97 *2* (1995Fo02).
1383.0 *3*	0.16 *3*	11230.4+y	J1+20	9847.4+y	J1+18	
1441.9 *3*	0.14 *3*	12672.3+y	J1+22	11230.4+y	J1+20	
1443.12 *21*	0.33 *3*	16466.7+x	J+34	15023.6+x	J+32	F(τ)=1.00 *2* (1995Fo02).
1501.2 *4*	0.07 *2*	14173.5+y	J1+24	12672.3+y	J1+22	
1503.03 *21*	0.32 *3*	17969.8+x	J+36	16466.7+x	J+34	F(τ)=1.01 *2* (1995Fo02).
1561.0 *4*	0.06 *2*	15734.5+y	J1+26	14173.5+y	J1+24	
1563.3 *2*	0.17 *2*	19533.1+x	J+38	17969.8+x	J+36	
1621.3 *12*		17355.8+y	J1+28	15734.5+y	J1+26	
1624.0 *10*	0.09 *2*	21157.1+x	J+40	19533.1+x	J+38	
1684 *2*		19040+y	J1+30	17355.8+y	J1+28	
1684.7 *10*		22841.8+x	J+42	21157.1+x	J+40	
1740 *2*		20780+y	J1+32	19040+y	J1+30	
1746.3 *12*		24588.1+x	J+44	22841.8+x	J+42	
1804.8 *12*		26392.9+x	J+46	24588.1+x	J+44	

† From 1999Ax02. Evaluators combined in quadrature statistical and systematic uncertainties as quoted in 1999Ax02. For SD-1 band, the statistical uncertainties are typically 0.02-0.05 keV up to 1400 keV and up to 0.7 keV above this energy. For SD-1 band, independent Eγ are also available from 2000Li14 (from 547 to 1386), 1993At01 and 1991Mu08.

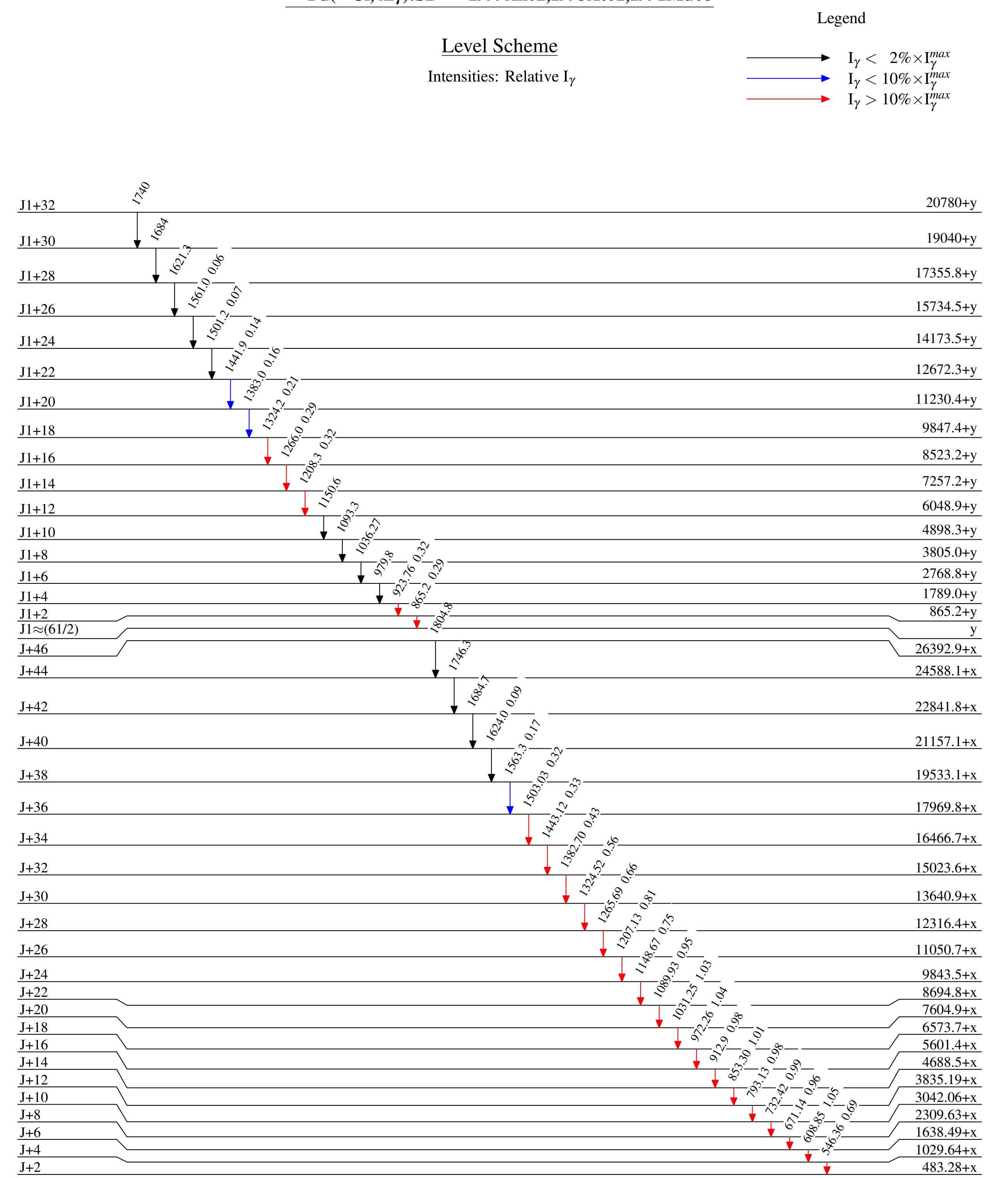
‡ Read from a graph shown in 1999Ax02, unless otherwise stated. Intensities for selected transitions are also available from 2000Li14 and in a graphical format from 1993At01.

From intensity plot given in 1993At01.

@ Intensity shown in the plot in 1999Ax02 does not represent a true value due either to the use of this γ ray as a gating transition or to possible mixture of a close-lying contaminant.

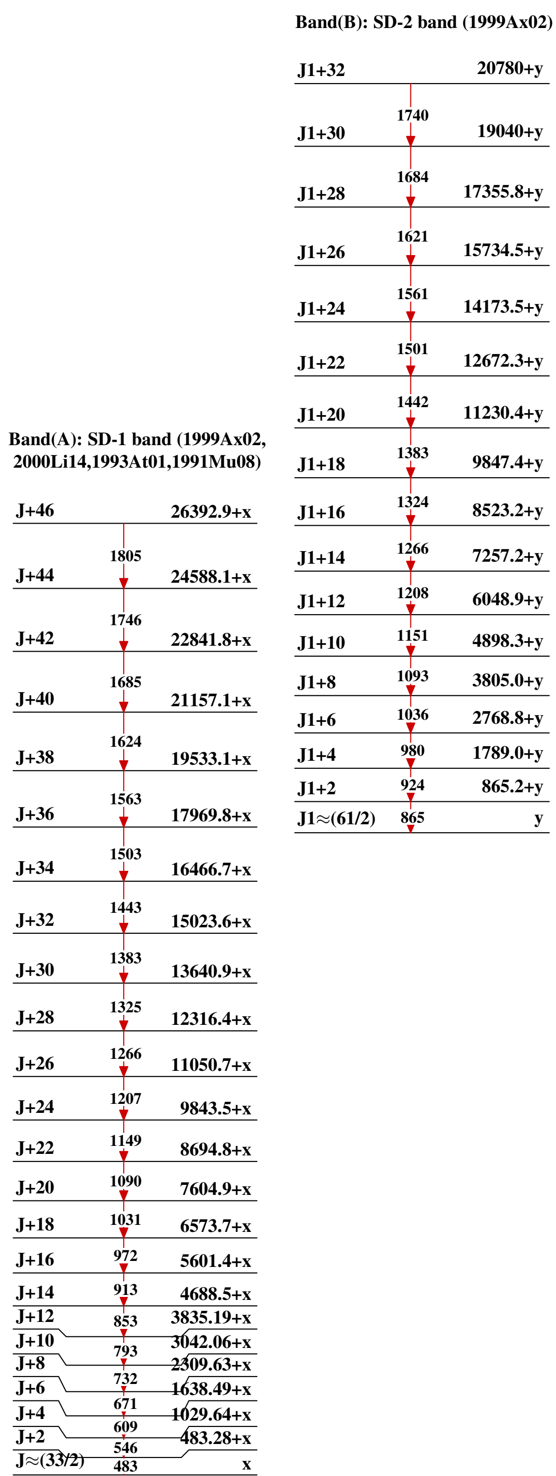
& Eγ has larger systematic uncertainty due to a close-lying contaminant.

$^{110}Pd(^{37}Cl,4n\gamma)$:SD 1999Ax02,1993At01,1991Mu08



$^{143}_{63}Eu_{80}$

^{110}Pd(^{37}Cl,4nγ):SD 1999Ax02,1993At01,1991Mu08



$^{143}_{63}Eu_{80}$