^{105}Pd(^{35}Cl,αp3nγ) 1996Jo13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, A. A. Rodionov and S. Sakharov, Balraj Singh	NDS 104, 497 (2005)	10-Feb-2005

Includes ^{105}Pd(^{32}S,2p3nγ) from 1995Kr08.

1996Jo13: E=180 MeV. Measured Eγ, Iγ, $\gamma\gamma\gamma$, $\gamma\gamma\gamma$(particle) coin using GAMMASPHERE array of 57 HPGe detectors and microball array for particle detection. Deduced SD bands.

2001Ri20: E=173 MeV. Measured level lifetimes by Doppler-shift attenuation method for SD-1 (or highly-deformed) band. Deduced transition quadrupole moment.

1995Kr08: ^{105}Pd(^{32}S,2p3nγ) E=152 MeV. Measured lifetimes by recoil-distance method.

^{132}Nd Levels

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	Comments
0.0[@]	0$^+$		
213.0[@] *10*	2$^+$		
610.0[@] *15*	4$^+$	7.62 ps *28*	
1131.7[@] *17*	6$^+$	1.59 ps *14*	
1711.7[@] *19*	8$^+$	1.04 ps *14*	
1884.3[&] *17*	5$^-$		
2225.5[&] *18*	7$^-$		
2310.7[@] *21*	10$^+$		
2690.6[&] *19*	9$^-$		
2946.7[@] *23*	12$^+$		
2959.6[a] *23*	(9$^-$)		
3255.6[&] *20*	11$^-$		
3497.6[a] *20*	(11$^-$)		
3633[@] *3*	14$^+$		
3906.6[&] *22*	13$^-$		
4163.6[a] *21*	(13$^-$)		
4373[@] *3*	16$^+$		
4619.6[&] *24*	15$^-$		
4927.6[a] *23*	(15$^-$)		E(level): reordering of the 741-764-764 cascade from 6433 level as 764-764-741 by 1997Pe27 defines this level at 4906.
5185[@] *3*	18$^+$		
5368[&] *3*	17$^-$		
5692[b] *3*	(17$^-$)		E(level): reordering of the 741-764-764 cascade from 6433 level as 764-764-741 by 1997Pe27 defines this level at 5670.
6068[@] *3*	20$^+$		
6165[&] *3*	19$^-$		
6433[b] *3*	(19$^-$)		
7013[@] *4*	22$^+$		
7052[&] *3*	21$^-$		
7230[b] *3*	(21$^-$)		
8079[b] *3*	(23$^-$)		
8981[b] *4*	(25$^-$)		
9948[b] *4*	(27$^-$)		
10982[b] *4*	(29$^-$)		
12091[b] *4*	(31$^-$)		

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^{105}Pd(^{35}Cl,αp3nγ) 1996Jo13 (continued)

^{132}Nd Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	Comments
13280[b] *4*	(33$^-$)	
14550[b] *4*	(35$^-$)	
15907[b] *4*	(37$^-$)	
17352[b] *5*	(39$^-$)	
18890[b] *5*	(41$^-$)	
20524?[b] *5*	(43$^-$)	
x[c]	J	E(level): corresponds to 6163 level in Adopted Levels. Additional information 1.
827.0+x[c] *10*	J+2	E(level): corresponds to 6994 level in Adopted Levels. This level is fed by an 856 transition (not reported by 1996Jo13) from a 7850 level in Adopted Levels.
1704.0+x[c] *15*	J+4	E(level): corresponds to 8726 level in Adopted Levels.
2648.0+x[c] *18*	J+6	E(level): corresponds to 9670 level in Adopted Levels.
3657.0+x[c] *20*	J+8	E(level): corresponds to 10678 level in Adopted Levels.
4728.0+x[c] *23*	J+10	E(level): corresponds to 11748 level in Adopted Levels.
5867.0+x[c] *25*	J+12	E(level): corresponds to 12883 level in Adopted Levels.
7078+x[c] *3*	J+14	E(level): corresponds to 14094 level in Adopted Levels.
8349+x[c] *3*	J+16	E(level): corresponds to 15365 level in Adopted Levels.
y?[d]	J1	Additional information 2.
854.0+y?[d] *10*	J1+2	
1757.0+y?[d] *15*	J1+4	
2729.0+y?[d] *18*	J1+6	
3769.0+y?[d] *20*	J1+8	
4880.0+y?[d] *23*	J1+10	
6065.0+y?[d] *25*	J1+12	
7320+y?[d] *3*	J1+14	
8649+y?[d] *3*	J1+16	
10053+y?[d] *3*	J1+18	
11528+y?[d] *4*	J1+20	

[†] From least-squares fit to Eγ's, assuming 1 keV uncertainty for each γ ray.
[‡] As proposed by 1996Jo13 based on band assignments and comparison with model calculations.
[#] From recoil-distance Doppler-shift method (1995Kr08). Differential decay curve method used to analyze data.
[@] Band(A): Yrast band.
[&] Band(B): Band based on 5$^-$.
[a] Band(C): Band based on 9$^-$.
[b] Band(D): SD-1 band (1996Jo13). Percent population=0.7 (1996Jo13). Probable configuration= $\nu i_{13/2}\nu h_{9/2}$, α=1. Q transition=4.2 *2* (2001Ri20).
[c] Band(E): SD-2 band (1996Jo13). Percent population=0.4 (1996Jo13). Probable configuration= $\nu i_{13/2}\nu h_{11/2}$. But a different configuration is proposed by 1997Pe27 leading to a positive parity for the band.
[d] Band(e): SD-3 band (?) (1996Jo13). Percent population=0.4 (1996Jo13). Probable configuration= $\nu i_{13/2}\nu h_{11/2}$. SD-2 and SD-3 bands are proposed by 1996Jo13 as signature partners. But SD-3 band is suspect; it is not confirmed by 1997Pe27, who state that the γ rays reported by 1996Jo13 were not seen in mutual coincidence but were seen in coin with transitions in a highly-deformed band in ^{133}Nd, and with transitions in their HD-1 and HD-3 bands. This band is not included in the Adopted Levels, gammas.

^{105}Pd(^{35}Cl,αp3nγ) 1996Jo13 (continued)

$\gamma(^{132}Nd)$

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π
213		213.0	2^+	0.0	0^+
242		3497.6	(11^-)	3255.6	11^-
257		4163.6	(13^-)	3906.6	13^-
341		2225.5	7^-	1884.3	5^-
397		610.0	4^+	213.0	2^+
465		2690.6	9^-	2225.5	7^-
522		1131.7	6^+	610.0	4^+
538		3497.6	(11^-)	2959.6	(9^-)
565		3255.6	11^-	2690.6	9^-
580		1711.7	8^+	1131.7	6^+
599		2310.7	10^+	1711.7	8^+
636		2946.7	12^+	2310.7	10^+
651		3906.6	13^-	3255.6	11^-
666		4163.6	(13^-)	3497.6	(11^-)
686		3633	14^+	2946.7	12^+
713		4619.6	15^-	3906.6	13^-
740		4373	16^+	3633	14^+
741[†]	0.89 *18*	6433	(19^-)	5692	(17^-)
748		5368	17^-	4619.6	15^-
764[†]		4927.6	(15^-)	4163.6	(13^-)
764[†]		5692	(17^-)	4927.6	(15^-)
797		6165	19^-	5368	17^-
797	1.00 *14*	7230	(21^-)	6433	(19^-)
807		3497.6	(11^-)	2690.6	9^-
812		5185	18^+	4373	16^+
827[‡]	0.36 *15*	827.0+x	J+2	x	J
849	0.96 *14*	8079	(23^-)	7230	(21^-)
854[#]	0.18 *18*	854.0+y?	J1+2	y?	J1
877[‡]	0.79 *16*	1704.0+x	J+4	827.0+x	J+2
883		6068	20^+	5185	18^+
887		7052	21^-	6165	19^-
902	1.05 *14*	8981	(25^-)	8079	(23^-)
903[#]	0.57 *15*	1757.0+y?	J1+4	854.0+y?	J1+2
908		4163.6	(13^-)	3255.6	11^-
944	0.86 *15*	2648.0+x	J+6	1704.0+x	J+4
945		7013	22^+	6068	20^+
967	0.81 *12*	9948	(27^-)	8981	(25^-)
972[#]	0.69 *13*	2729.0+y?	J1+6	1757.0+y?	J1+4
979		2690.6	9^-	1711.7	8^+
1009	0.86 *13*	3657.0+x	J+8	2648.0+x	J+6
1034	0.84 *11*	10982	(29^-)	9948	(27^-)
1040[#]	0.54 *11*	3769.0+y?	J1+8	2729.0+y?	J1+6
1071	0.34 *12*	4728.0+x	J+10	3657.0+x	J+8
1094		2225.5	7^-	1131.7	6^+
1109	0.86 *9*	12091	(31^-)	10982	(29^-)
1111[#]	0.52 *10*	4880.0+y?	J1+10	3769.0+y?	J1+8
1139	0.30 *10*	5867.0+x	J+12	4728.0+x	J+10
1185[#]	0.48 *11*	6065.0+y?	J1+12	4880.0+y?	J1+10
1189	0.56 *9*	13280	(33^-)	12091	(31^-)
1211	0.22 *11*	7078+x	J+14	5867.0+x	J+12
1255[#]	0.35 *10*	7320+y?	J1+14	6065.0+y?	J1+12
1270	0.38 *10*	14550	(35^-)	13280	(33^-)

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^{105}Pd(^{35}Cl,αp3nγ) 1996Jo13 (continued)

γ(^{132}Nd) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π
1271	0.08 *8*	8349+x	J+16	7078+x	J+14	1445	0.16 *11*	17352	(39$^-$)	15907	(37$^-$)
1274		1884.3	5$^-$	610.0	4$^+$	1475#	0.24 *11*	11528+y?	J1+20	10053+y?	J1+18
1329#	0.32 *11*	8649+y?	J1+16	7320+y?	J1+14	1538	0.21 *11*	18890	(41$^-$)	17352	(39$^-$)
1357	0.33 *10*	15907	(37$^-$)	14550	(35$^-$)	1634#	0.14 *11*	20524?	(43$^-$)	18890	(41$^-$)
1404#	0.32 *11*	10053+y?	J1+18	8649+y?	J1+16						

† The 741-764-764 cascade from 6433 level is reordered as 764-764-741 in Adopted Levels, gammas; based on results from 1997Pe27.

‡ 877-827 cascade in SD-1 band is ordered as 877-856-827 in Adopted Levels, gammas; based on results from 1997Pe27.

Placement of transition in the level scheme is uncertain.

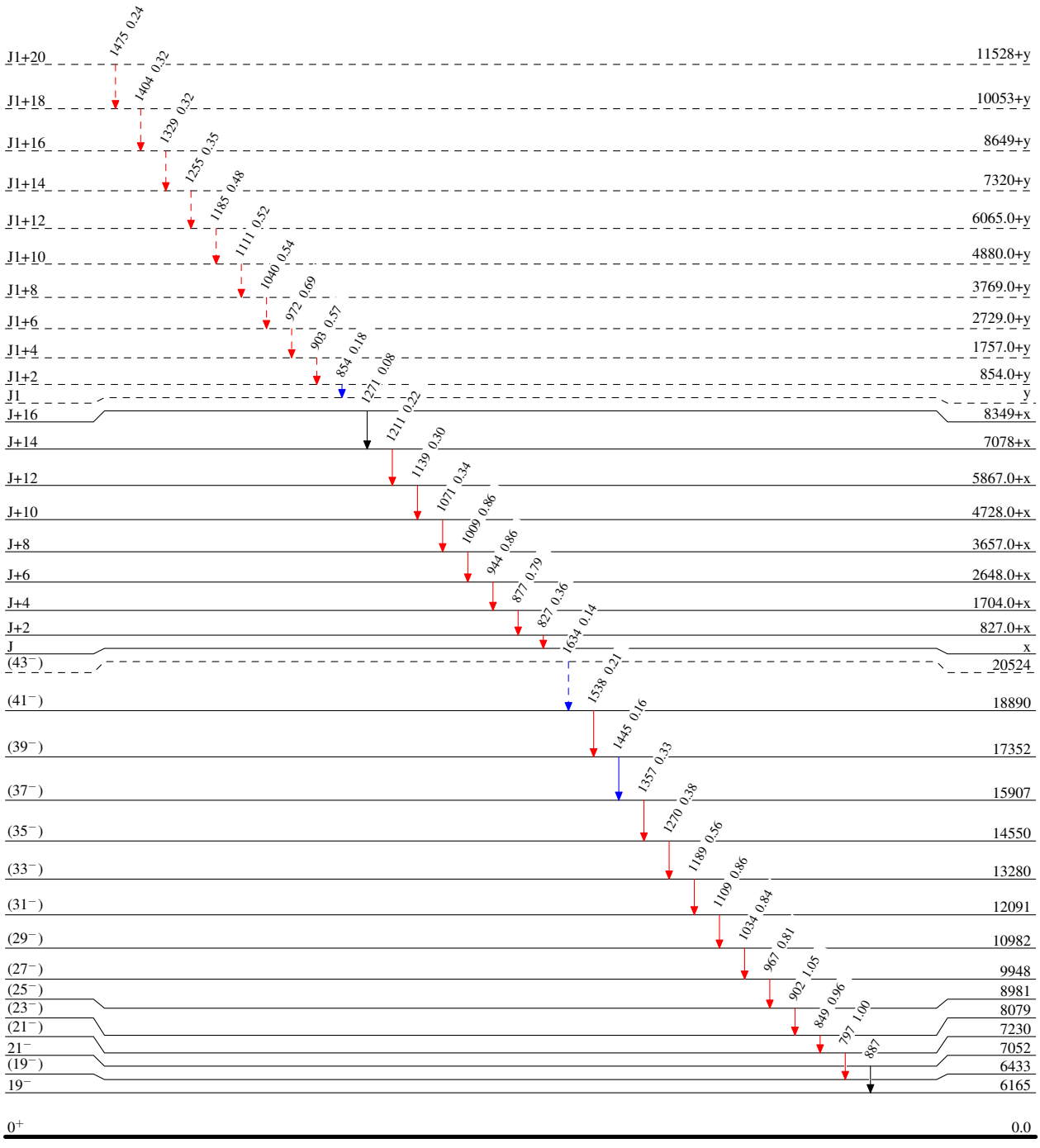
^{105}Pd(^{35}Cl,αp3nγ) 1996Jo13

Level Scheme

Intensities: Relative I_γ

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)

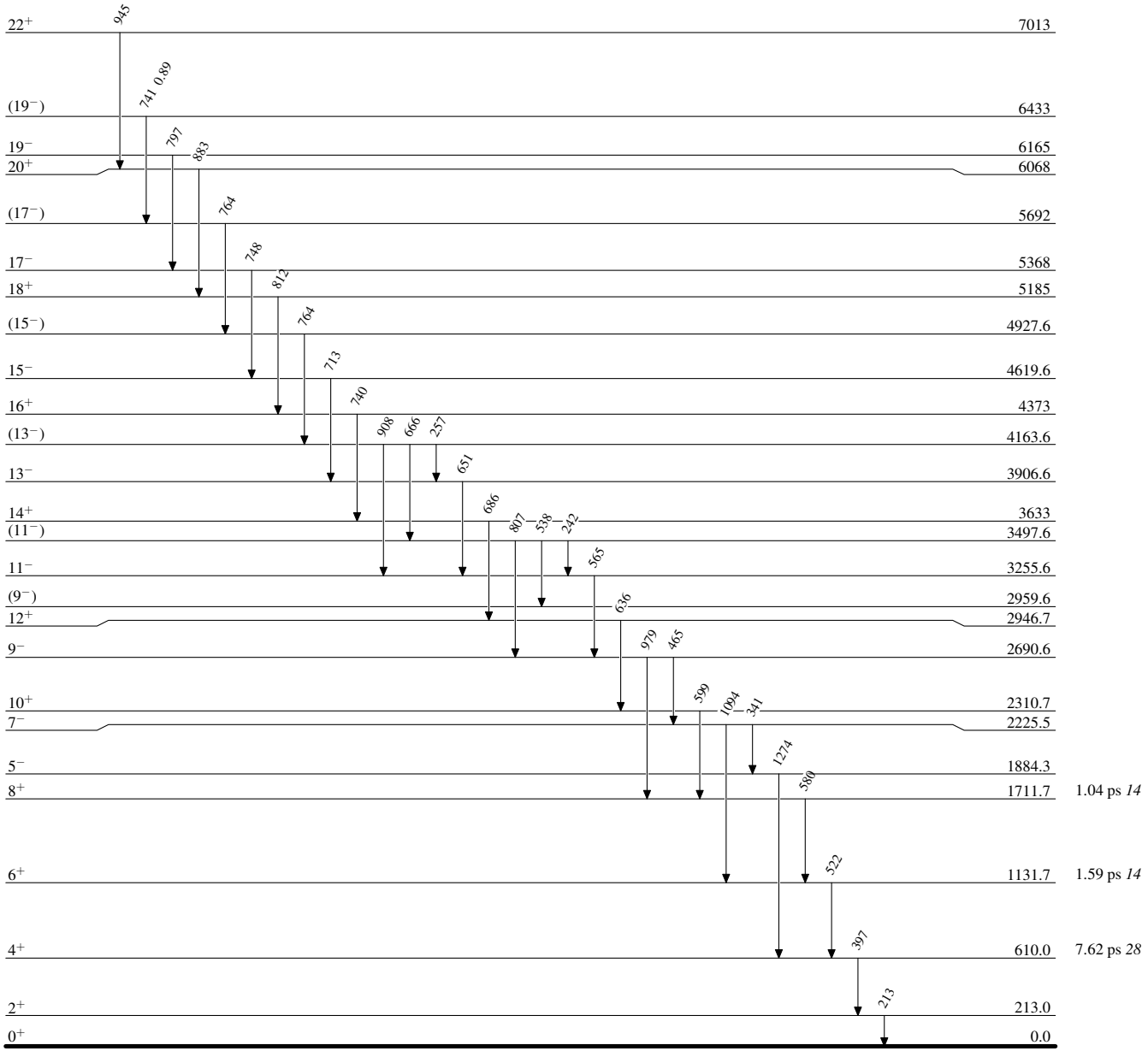


$^{132}_{60}Nd_{72}$

^{105}Pd(^{35}Cl,αp3nγ) 1996Jo13

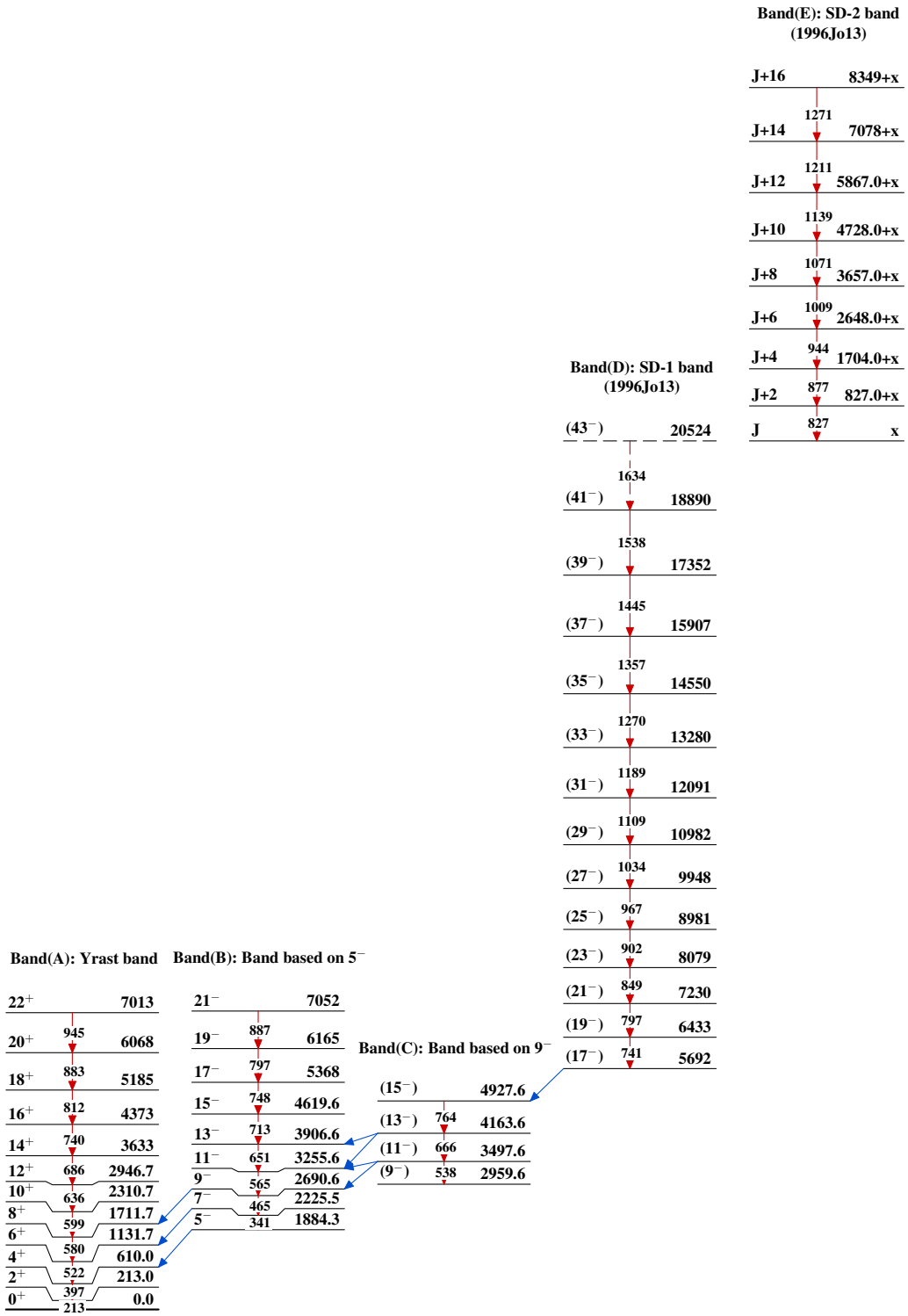
Level Scheme (continued)

Intensities: Relative I_γ

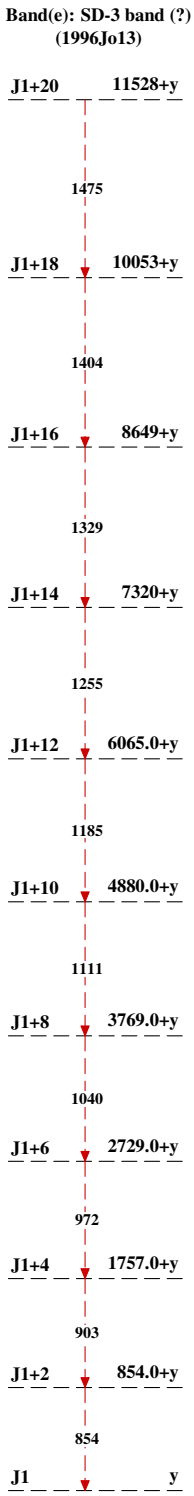


$^{132}_{60}Nd_{72}$

^{105}Pd(^{35}Cl,αp3nγ) 1996Jo13



^{105}Pd(^{35}Cl,αp3nγ) 1996Jo13 (continued)



$^{132}_{60}Nd_{72}$