(HI,xnγ):SD 1995Wi13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov and A. Rodionov, F. G. Kondev	NDS 112, 855 (2011)	31-Oct-2010

1995Wi13: ^{100}Mo(^{37}Cl,4nγ) E=155 MeV; measured $\gamma\gamma$, $\gamma\gamma\gamma$ and $\gamma\gamma\gamma\gamma$ coin deduced 4 SD bands. The EUROGAM γ ray spectrometer with 41 escape suppressed HPGe detectors.

1997Ha05: ^{105}Pd(^{35}Cl,α2pnγ) E=180 MeV; measured Eγ, $\gamma\gamma\gamma$, $\gamma\gamma\gamma$(particle) coin deduced SD bands. GAMMASPHERE and MICROBALL arrays.

Multiple, excited superdeformed bands observed and suggested on the analogy of other superdeformed bands in this region and calculations. There were reported four SD bands (1995Wi13). These bands are weakly populated (0.2% − 1% of the reaction channel). The SD-1 and SD-2 bands are associated with the proton orbital of configuration=π9/2[404] ($g_{9/2}$) and SD-3 and SD-4 bands are associated with configuration=π5/2[532] ($h_{11/2}$). Dipole linking transitions between SD-1 and SD-2 bands have been reported. SD-1 and SD-2 bands feed a positive parity band at J=41/2; SD-3 and SD-4 feed negative parity yrast band at J=43/2. It is assumed that unseen linking transitions contribute $\Delta J \approx 6\hbar$.

The SD-3 band extends from 53/2 to 105/2 according to the γ ray spectrum, but the authors (1995Wi13) mention it to extend up to 113/2.

Additional information 1.

^{133}Pr Levels

E(level)†	J$^\pi$‡	Comments
y@	(51/2)	Additional information 2. J$^\pi$: J≈(51/2).
390.0+y# *8*	J+1	
800.0+y@ *8*	J+2	
1230.0+y# *10*	J+3	
1671.0+y@ *11*	J+4	
2138.0+y# *12*	J+5	
2614.0+y@ *13*	J+6	
3117.0+y# *16*	J+7	
3627.0+y@ *16*	J+8	
4167.0+y# *19*	J+9	
4712.0+y@ *19*	J+10	
5288.0+y# *21*	J+11	
5868.0+y@ *22*	J+12	
6480.0+y# *23*	J+13	
7096.0+y@ *24*	J+14	
7745+y# *3*	J+15	
8395+y@ *3*	J+16	
9066+y# *3*	J+17	
9775+y@ *3*	J+18	
10478+y# *3*	J+19	
11225+y@ *3*	J+20	
11967+y# *3*	J+21	
12755+y@ *3*	J+22	
z&	(53/2)	Additional information 3. J$^\pi$: J_1≈(53/2).
784.0+z& *10*	J1+2	
1638.0+z& *15*	J1+4	

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(HI,xnγ):SD 1995Wi13 (continued)

^{133}Pr Levels (continued)

E(level)[†]	Jπ[‡]	Comments
2571.0+z[&] *18*	J1+6	
3584.0+z[&] *20*	J1+8	
4682.0+z[&] *23*	J1+10	
5864.0+z[&] *25*	J1+12	
7130+z[&] *3*	J1+14	
8481+z[&] *3*	J1+16	
9909+z[&] *3*	J1+18	
11399+z[&] *4*	J1+20	
12971+z[&] *4*	J1+22	
14620+z[&] *4*	J1+24	
16356+z[&] *4*	J1+26	
u[a]	(55/2)	Additional information 4. Jπ: J_2≈(53/2).
821.0+u[a] *10*	J2+2	
1706.0+u[a] *15*	J2+4	
2667.0+u[a] *18*	J2+6	
3702.0+u[a] *20*	J2+8	
4812.0+u[a] *23*	J2+10	
5996.0+u[a] *25*	J2+12	
7260+u[a] *3*	J2+14	
8602+u[a] *3*	J2+16	
10022+u[a] *3*	J2+18	
11522+u[a] *4*	J2+20	
13098+u[a] *4*	J2+22	
14754+u[a] *4*	J2+24	

† From least-squares fit to Eγ′s.
‡ From band assignment and calculations.
\# Band(A): SD-1 band. Probable configuration=π9/2[404] ($g_{9/2}$) orbital. Signature partner of SD-2 band. Percent population=1.0% for the strongest transitions relative to total population of ^{133}Pr.
@ Band(B): SD-2 band. Probable configuration=π9/2[404] ($g_{9/2}$) orbital. Signature partner of SD-1 band. Percent population=1.0% for the strongest transitions relative to total population of ^{133}Pr.
& Band(C): SD-3 band. Probable Configuration=($\pi_{5/2}$[532]) of $h_{11/2}$ orbital. Signature partner of SD-4 band. Percent population=0.5% for the strongest transitions relative to total population of ^{133}Pr.
a Band(D): SD-4 band. Probable Configuration=($\pi_{5/2}$[532]) of $h_{11/2}$ orbital. Signature partner of SD-3 band. Percent population=0.2% for the strongest transitions relative to total population of ^{133}Pr.

γ(^{133}Pr)

Eγ	Iγ[†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
390		390.0+y	J+1	y	(51/2)	
410		800.0+y	J+2	390.0+y	J+1	
430	0.15 *2*	1230.0+y	J+3	800.0+y	J+2	B(M1)/B(E2)=0.74 *13* (1995Wi13).
441	0.16 *5*	1671.0+y	J+4	1230.0+y	J+3	B(M1)/B(E2)=0.7 *2* (1995Wi13).
467		2138.0+y	J+5	1671.0+y	J+4	
476	0.19 *5*	2614.0+y	J+6	2138.0+y	J+5	B(M1)/B(E2)=0.90 *16* (1995Wi13).
784	100	784.0+z	J1+2	z	(53/2)	

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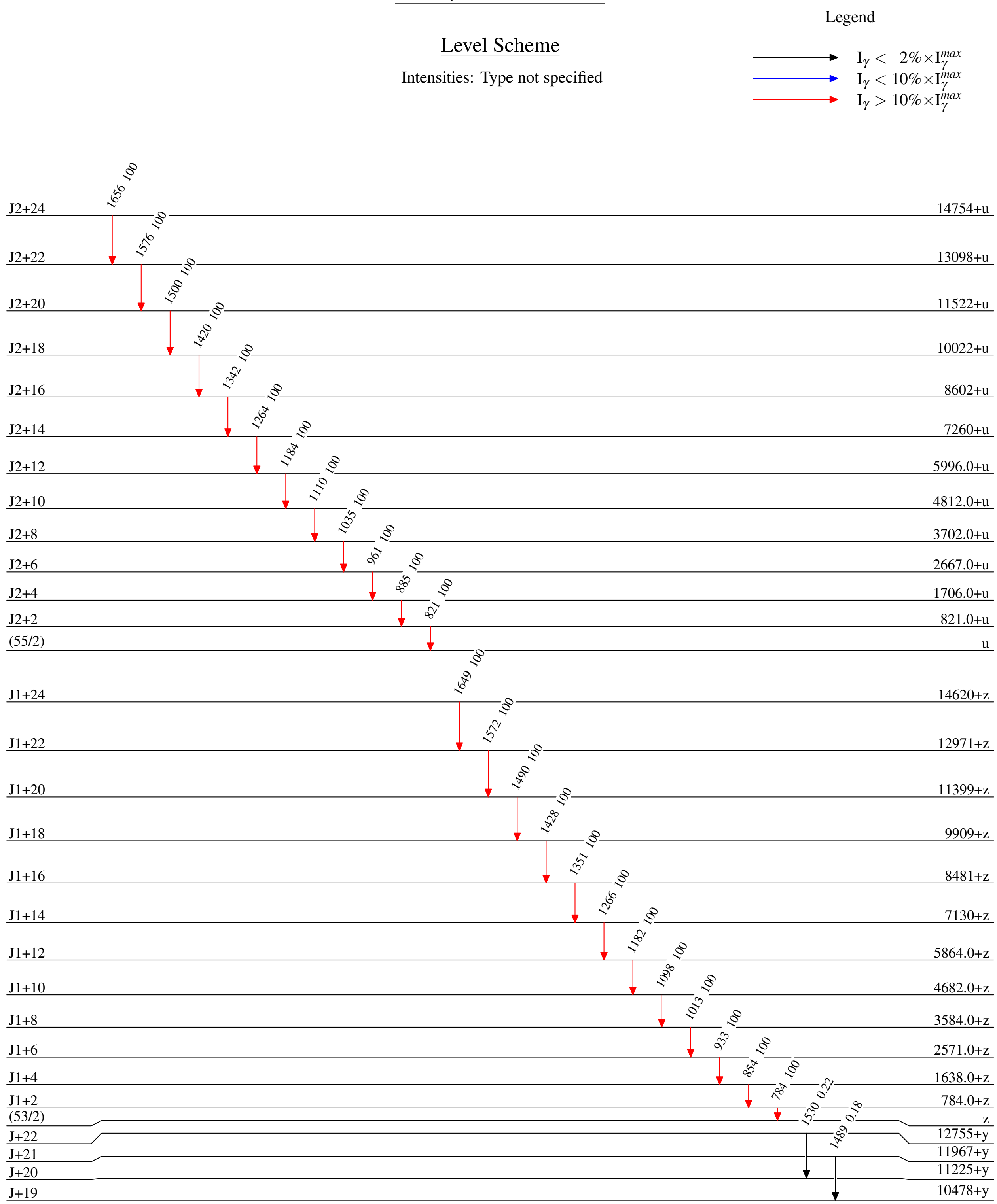
(HI,xnγ):SD 1995Wi13 (continued)

γ(^{133}Pr) (continued)

E_γ	I_γ †	E_i(level)	J^π_i	E_f	J^π_f	Comments
800	0.15 *10*	800.0+y	J+2	y	(51/2)	
821	100	821.0+u	J2+2	u	(55/2)	
840	0.76 *4*	1230.0+y	J+3	390.0+y	J+1	
854	100	1638.0+z	J1+4	784.0+z	J1+2	
871	0.96 *3*	1671.0+y	J+4	800.0+y	J+2	
885	100	1706.0+u	J2+4	821.0+u	J2+2	
908	0.88 *4*	2138.0+y	J+5	1230.0+y	J+3	
933	100	2571.0+z	J1+6	1638.0+z	J1+4	
943	1.00 *4*	2614.0+y	J+6	1671.0+y	J+4	
961	100	2667.0+u	J2+6	1706.0+u	J2+4	
979	0.96 *5*	3117.0+y	J+7	2138.0+y	J+5	
1013	0.94 *4*	3627.0+y	J+8	2614.0+y	J+6	
1013	100	3584.0+z	J1+8	2571.0+z	J1+6	
1035	100	3702.0+u	J2+8	2667.0+u	J2+6	
1050	0.89 *4*	4167.0+y	J+9	3117.0+y	J+7	
1085	0.86 *4*	4712.0+y	J+10	3627.0+y	J+8	
1098	100	4682.0+z	J1+10	3584.0+z	J1+8	
1110	100	4812.0+u	J2+10	3702.0+u	J2+8	
1121	0.81 *4*	5288.0+y	J+11	4167.0+y	J+9	
1156	0.80 *3*	5868.0+y	J+12	4712.0+y	J+10	
1182	100	5864.0+z	J1+12	4682.0+z	J1+10	
1184	100	5996.0+u	J2+12	4812.0+u	J2+10	
1192	0.73 *4*	6480.0+y	J+13	5288.0+y	J+11	E_γ: 1195 (1997Ha05).
1228	0.66 *4*	7096.0+y	J+14	5868.0+y	J+12	
1264	100	7260+u	J2+14	5996.0+u	J2+12	
1265	0.56 *4*	7745+y	J+15	6480.0+y	J+13	E_γ: 1269 (1997Ha05).
1266	100	7130+z	J1+14	5864.0+z	J1+12	
1299		8395+y	J+16	7096.0+y	J+14	
1321	0.40 *4*	9066+y	J+17	7745+y	J+15	E_γ: 1345 (1997Ha05).
1342	100	8602+u	J2+16	7260+u	J2+14	
1351	100	8481+z	J1+16	7130+z	J1+14	
1380	0.43 *3*	9775+y	J+18	8395+y	J+16	
1412	0.25 *4*	10478+y	J+19	9066+y	J+17	E_γ: 1429 (1997Ha05).
1420	100	10022+u	J2+18	8602+u	J2+16	
1428	100	9909+z	J1+18	8481+z	J1+16	
1450	0.18 *3*	11225+y	J+20	9775+y	J+18	
1489	0.18 *4*	11967+y	J+21	10478+y	J+19	
1490	100	11399+z	J1+20	9909+z	J1+18	
1500	100	11522+u	J2+20	10022+u	J2+18	
1530	0.22 *3*	12755+y	J+22	11225+y	J+20	
1572	100	12971+z	J1+22	11399+z	J1+20	
1576	100	13098+u	J2+22	11522+u	J2+20	
1649	100	14620+z	J1+24	12971+z	J1+22	
1656	100	14754+u	J2+24	13098+u	J2+22	

† Absolute intensities (%) relative to total population of ^{133}Pr. Values were read from intensity plot shown by 1995Wi13 in fig.2. At the high energy end of the spectrum, intensities are given for two additional γ rays of SD-3 band and for one additional γ ray of SD-4 band. But these γ rays are not shown in the γ ray spectra of fig. 1.

(HI,xnγ):SD 1995Wi13

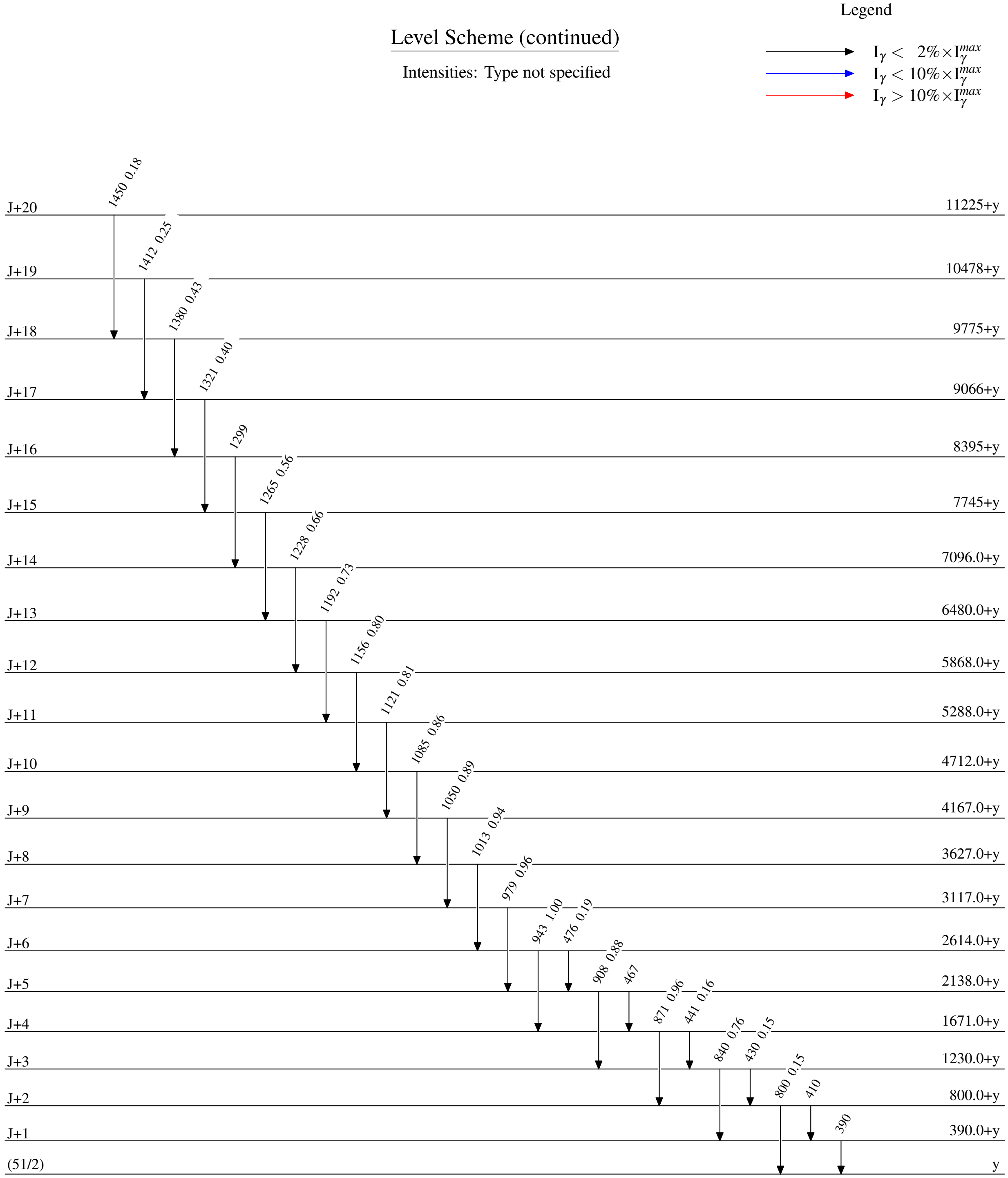


$^{133}_{59}Pr_{74}$

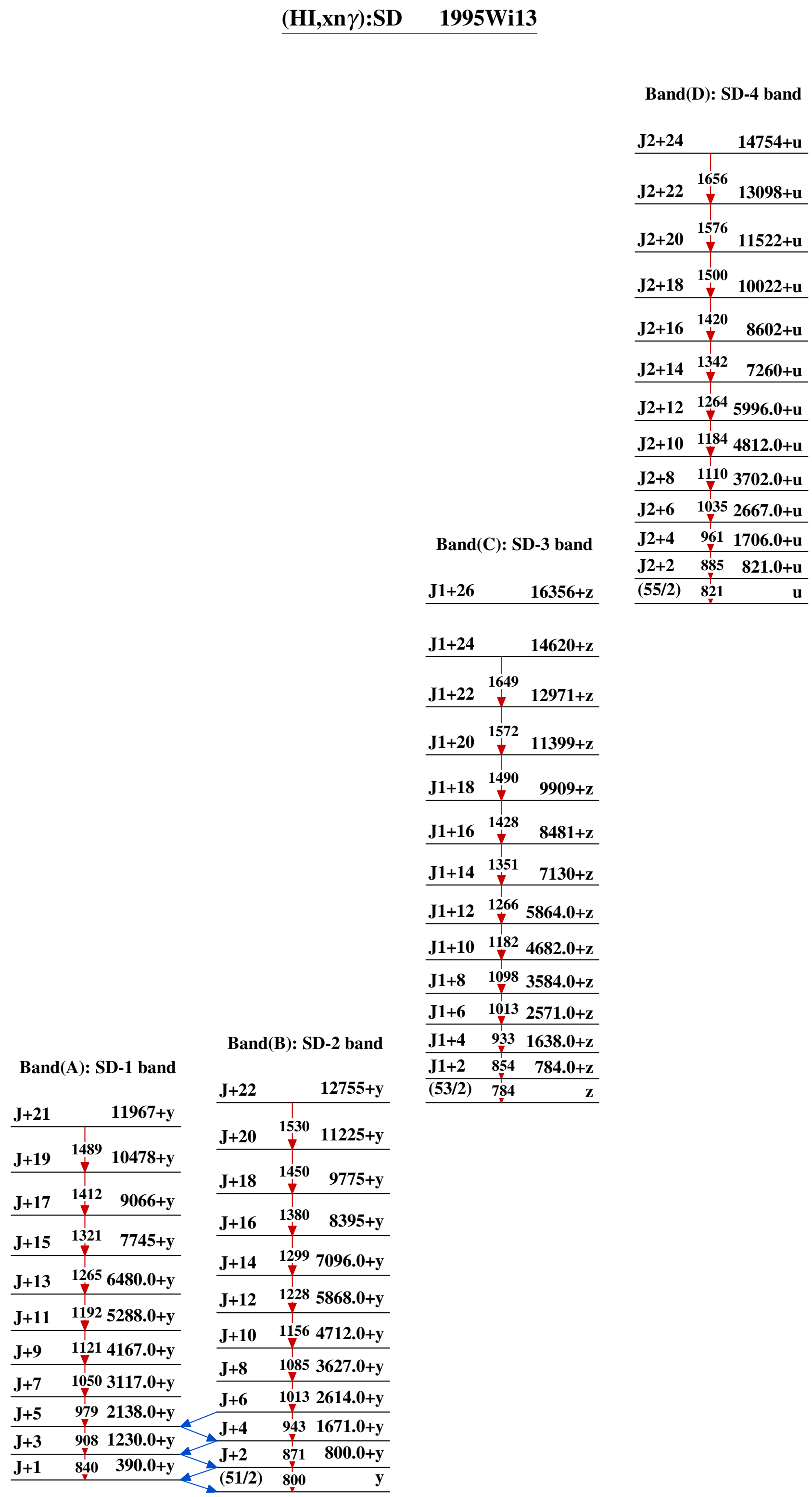
(HI,xnγ):SD 1995Wi13

Level Scheme (continued)

Intensities: Type not specified



$^{133}_{59}Pr_{74}$


(HI,xnγ):SD 1995Wi13
Band(D): SD-4 band
J2+24 14754+u
1656
J2+22 13098+u
1576
J2+20 11522+u
1500
J2+18 10022+u
1420
J2+16 8602+u
1342
J2+14 7260+u
1264
J2+12 5996.0+u
1184
J2+10 4812.0+u
1110
J2+8 3702.0+u
1035
J2+6 2667.0+u
961
J2+4 1706.0+u
885
J2+2 821.0+u
821
(55/2) u
Band(C): SD-3 band
J1+26 16356+z
J1+24 14620+z
1649
J1+22 12971+z
1572
J1+20 11399+z
1490
J1+18 9909+z
1428
J1+16 8481+z
1351
J1+14 7130+z
1266
J1+12 5864.0+z
1182
J1+10 4682.0+z
1098
J1+8 3584.0+z
1013
J1+6 2571.0+z
933
J1+4 1638.0+z
854
J1+2 784.0+z
784
(53/2) z
Band(B): SD-2 band
J+22 12755+y
1530
J+20 11225+y
1450
J+18 9775+y
1380
J+16 8395+y
1299
J+14 7096.0+y
1228
J+12 5868.0+y
1156
J+10 4712.0+y
1085
J+8 3627.0+y
1013
J+6 2614.0+y
943
J+4 1671.0+y
871
J+2 800.0+y
800
(51/2) y
Band(A): SD-1 band
J+21 11967+y
1489
J+19 10478+y
1412
J+17 9066+y
1321
J+15 7745+y
1265
J+13 6480.0+y
1192
J+11 5288.0+y
1121
J+9 4167.0+y
1050
J+7 3117.0+y
979
J+5 2138.0+y
908
J+3 1230.0+y
840
J+1 390.0+y

$^{133}_{59}Pr_{74}$