^{124}Sn(^{29}Si,p5nγ):SD 1998Ha21

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh	NDS 181, 1 (2022)	9-Mar-2022

1998Ha21: ^{124}Sn(^{29}Si,p5nγ) E=158 MeV. Measured Eγ, Iγ, γγγγ, γγγγ-(particle) coincidences, using Gammasphere array of 95 HPGe detectors and microball array of 95 charged-particle detectors. Deduced SD band.

^{147}Eu Levels

E(level)	Jπ	E(level)	Jπ	E(level)	Jπ	E(level)	Jπ
x†	J	4118.9+y‡ *8*	J1+10	8649.7+z# *8*	J2+18	4708.5+v& *9*	J4+10
737.3+x† *3*	J+2	5123.7+y‡ *8*	J1+12	9921.3+z# *8*	J2+20	5812.2+v& *10*	J4+12
1527.9+x† *4*	J+4	6188.8+y‡ *8*	J1+14	11251.1+z# *8*	J2+22	6967.6+v& *11*	J4+14
2370.2+x† *4*	J+6	7315.2+y‡ *8*	J1+16	12634.4+z# *9*	J2+24	8190.3+v& *12*	J4+16
3262.5+x† *4*	J+8	8502.2+y‡ *8*	J1+18	14055.7+z# *10*	J2+26	9466.3+v& *13*	J4+18
4209.3+x† *4*	J+10	9749.5+y‡ *8*	J1+20	u@	J3	10798.1+v& *13*	J4+20
5210.6+x† *4*	J+12	11056.8+y‡ *8*	J1+22	944.0+u@ *3*	J3+2	12186.4+v& *15*	J4+22
6266.9+x† *4*	J+14	12423.4+y‡ *9*	J1+24	1938.8+u@ *4*	J3+4	13634.0+v& *15*	J4+24
7379.4+x† *4*	J+16	13847.2+y‡ *9*	J1+26	2985.0+u@ *5*	J3+6	15140.9+v& *16*	J4+26
8548.8+x† *6*	J+18	15321.3+y‡ *9*	J1+28	4081.3+u@ *5*	J3+8	16702.0+v& *19*	J4+28
9775.4+x† *6*	J+20	16818.3+y‡ *14*	J1+30	5232.9+u@ *5*	J3+10	18322.2+v& *24*	J4+30
11059.6+x† *6*	J+22	18315.3+y‡ *17*	J1+32	6436.3+u@ *6*	J3+12	w?[ab]	J5
12402.4+x† *6*	J+24	19846.6+y‡ *18*	J1+34	7694.3+u@ *7*	J3+14	1244+w[a]	J5+2
13804.0+x† *7*	J+26	21429.3+y‡ *23*	J1+36	9007.7+u@ *7*	J3+16	2541+w?[a]	J5+4
15264.5+x† *7*	J+28	z#	J2	10382.9+u@ *8*	J3+18	3884+w?[a]	J5+6
16783.8+x† *8*	J+30	708.1+z# *3*	J2+2	11847.6+u@ *9*	J3+20	5277+w?[a]	J5+8
18362.3+x† *9*	J+32	1479.7+z# *5*	J2+4	13419.7+u@ *11*	J3+22	6721+w?[a]	J5+10
19999.8+x† *12*	J+34	2314.6+z# *5*	J2+6	15065.1+u@ *14*	J3+24	8216+w?[a]	J5+12
y‡	J1	3213.5+z# *5*	J2+8	v&	J4	9761+w?[a]	J5+14
702.8+y‡ *7*	J1+2	4175.4+z# *6*	J2+10	835.9+v& *4*	J4+2	11362+w?[a]	J5+16
1466.0+y‡ *8*	J1+4	5200.4+z# *6*	J2+12	1724.8+v& *5*	J4+4		
2290.8+y‡ *8*	J1+6	6288.0+z# *7*	J2+14	2665.3+v& *7*	J4+6		
3174.9+y‡ *8*	J1+8	7437.9+z# *7*	J2+16	3659.9+v& *8*	J4+8		

† Band(A): SD-1 Band, (π=+,α=−1/2) (1998Ha21). Percent population=0.44 *4* (1998Ha21). Intruder configuration=ν(1/2[651],α=−1/2) π($6_1 6_2$1/2[301], α=+1/2) (1998Ha21).

‡ Band(B): SD-2 Band, (π=−,α=−1/2) (1998Ha21). Percent population=0.40 *5* (1998Ha21). Intruder configuration=ν(1/2[651],α=−1/2) π($6_1$1/2[301], α=+1/2 *1*/2[301],α=−1/2) at low frequencies and ν(1/2[651],α=−1/2) π($6_1 6_2 6_3$) at high frequencies (1998Ha21).

Band(C): SD-3 Band, (π=−,α=+1/2) (1998Ha21). Percent population=0.28 *4* (1998Ha21). Intruder configuration=ν(1/2[651],α=+1/2) π($6_1$1/2[301], α=+1/2 *1*/2[301],α=−1/2) at low frequencies and ν(1/2[651],α=−1/2) π($6_1 6_2 6_3$) at high frequencies (1998Ha21).

@ Band(D): SD-4 Band, (π=−,α=−1/2) (1998Ha21). Percent population=0.30 *4* (1998Ha21). Intruder configuration=ν(1/2[651],α=−1/2) π($6_1 6_2 6_3$) at low frequencies and ν(1/2[651],α=−1/2) π($6_1$1/2[301],α=+1/2 1/2[301],α=−1/2) at high frequencies (1998Ha21).

& Band(E): SD-5 Band, (π=+,α=+1/2) (1998Ha21). Percent population=0.22 *3* (1998Ha21). Intruder configuration=ν(1/2[651],α=−1/2) π($6_1 6_2$1/2[301], α=−1/2) (1998Ha21).

a Band(F): SD-6 Band (1998Ha21) (?). Very weakly populated. This band may continue with the following γ ray cascade:

Continued on next page (footnotes at end of table)

^{124}Sn(^{29}Si,p5nγ):SD 1998Ha21 (continued)

^{147}Eu Levels (continued)

1199-1136-1079-1018-957-891-829.

[b] The band may extend to lower energies with the following γ rays in the SD band cascade due to their possible coincidence relationship: 1136, 1079, 1018, 957, 891 and 829 keV.

γ(^{147}Eu)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π
703.2 *7*	0.07 *1*	702.8+y	J1+2	y	J1
708.1 *3*		708.1+z	J2+2	z	J2
737.3 *3*	0.18 *2*	737.3+x	J+2	x	J
763.2 *2*	0.22 *2*	1466.0+y	J1+4	702.8+y	J1+2
771.7 *3*		1479.7+z	J2+4	708.1+z	J2+2
790.6 *1*	0.61 *6*	1527.9+x	J+4	737.3+x	J+2
824.8 *1*	1.02 *10*	2290.8+y	J1+6	1466.0+y	J1+4
834.9 *2*		2314.6+z	J2+6	1479.7+z	J2+4
835.9 *4*		835.9+v	J4+2	v	J4
842.3 *1*	1.16 *12*	2370.2+x	J+6	1527.9+x	J+4
884.1 *1*	0.91 *9*	3174.9+y	J1+8	2290.8+y	J1+6
889.0 *3*		1724.8+v	J4+4	835.9+v	J4+2
892.3 *1*	1.05 *10*	3262.5+x	J+8	2370.2+x	J+6
898.9 *2*		3213.5+z	J2+8	2314.6+z	J2+6
940.5 *4*		2665.3+v	J4+6	1724.8+v	J4+4
944.0 *1*	1.03 *10*	4118.9+y	J1+10	3174.9+y	J1+8
944.0 *3*		944.0+u	J3+2	u	J3
946.8 *1*	1.12 *11*	4209.3+x	J+10	3262.5+x	J+8
961.9 *2*		4175.4+z	J2+10	3213.5+z	J2+8
994.7 *4*		3659.9+v	J4+8	2665.3+v	J4+6
994.8 *2*		1938.8+u	J3+4	944.0+u	J3+2
1001.3 *1*	0.87 *9*	5210.6+x	J+12	4209.3+x	J+10
1004.8 *1*	1.09 *11*	5123.7+y	J1+12	4118.9+y	J1+10
1025.0 *2*		5200.4+z	J2+12	4175.4+z	J2+10
1046.2 *2*		2985.0+u	J3+6	1938.8+u	J3+4
1048.6 *4*		4708.5+v	J4+10	3659.9+v	J4+8
1056.3 *1*	0.86 *9*	6266.9+x	J+14	5210.6+x	J+12
1065.1 *1*	1.06 *11*	6188.8+y	J1+14	5123.7+y	J1+12
1087.6 *2*		6288.0+z	J2+14	5200.4+z	J2+12
1096.3 *2*		4081.3+u	J3+8	2985.0+u	J3+6
1103.7 *5*		5812.2+v	J4+12	4708.5+v	J4+10
1112.5 *1*	1.09 *11*	7379.4+x	J+16	6266.9+x	J+14
1126.4 *1*	0.93 *9*	7315.2+y	J1+16	6188.8+y	J1+14
1149.9 *2*		7437.9+z	J2+16	6288.0+z	J2+14
1151.6 *2*		5232.9+u	J3+10	4081.3+u	J3+8
1155.4 *4*		6967.6+v	J4+14	5812.2+v	J4+12
1169.4 *4*	0.76 *8*	8548.8+x	J+18	7379.4+x	J+16
1187.0 *2*	0.96 *10*	8502.2+y	J1+18	7315.2+y	J1+16
1203.4 *2*		6436.3+u	J3+12	5232.9+u	J3+10
1211.8 *3*		8649.7+z	J2+18	7437.9+z	J2+16
1222.8 *4*		8190.3+v	J4+16	6967.6+v	J4+14
1226.6 *1*	0.84 *8*	9775.4+x	J+20	8548.8+x	J+18
1244[#]		1244+w	J5+2	w?	J5
1247.3 *1*	0.71 *7*	9749.5+y	J1+20	8502.2+y	J1+18
1258.0 *3*		7694.3+u	J3+14	6436.3+u	J3+12
1271.6 *2*		9921.3+z	J2+20	8649.7+z	J2+18
1276.0 *5*		9466.3+v	J4+18	8190.3+v	J4+16
1284.2 *1*	0.82 *8*	11059.6+x	J+22	9775.4+x	J+20
1297[#]		2541+w?	J5+4	1244+w	J5+2

Continued on next page (footnotes at end of table)

^{124}Sn(^{29}Si,p5nγ):SD 1998Ha21 (continued)

γ(^{147}Eu) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π
1307.3 *1*	0.74 *7*	11056.8+y	J1+22	9749.5+y	J1+20
1313.4 *3*		9007.7+u	J3+16	7694.3+u	J3+14
1329.8 *3*		11251.1+z	J2+22	9921.3+z	J2+20
1331.8 *4*		10798.1+v	J4+20	9466.3+v	J4+18
1342.7 *1*	0.67 *7*	12402.4+x	J+24	11059.6+x	J+22
1343[#]		3884+w?	J5+6	2541+w?	J5+4
1366.6 *2*	0.62 *6*	12423.4+y	J1+24	11056.8+y	J1+22
1375.2 *3*		10382.9+u	J3+18	9007.7+u	J3+16
1383.3 *3*		12634.4+z	J2+24	11251.1+z	J2+22
1388.3 *6*		12186.4+v	J4+22	10798.1+v	J4+20
1393[#]		5277+w?	J5+8	3884+w?	J5+6
1401.6 *2*	0.43 *4*	13804.0+x	J+26	12402.4+x	J+24
1421.3 *5*		14055.7+z	J2+26	12634.4+z	J2+24
1423.8 *2*	0.57 *6*	13847.2+y	J1+26	12423.4+y	J1+24
1444[#]		6721+w?	J5+10	5277+w?	J5+8
1447.6 *4*		13634.0+v	J4+24	12186.4+v	J4+22
1460.5 *2*	0.36 *4*	15264.5+x	J+28	13804.0+x	J+26
1464.7 *4*		11847.6+u	J3+20	10382.9+u	J3+18
1474.1 *2*	0.48 *5*	15321.3+y	J1+28	13847.2+y	J1+26
1495[#]		8216+w?	J5+12	6721+w?	J5+10
1497[‡] *1*	0.41[‡] *4*	16818.3+y	J1+30	15321.3+y	J1+28
1497[‡] *1*	0.41[‡] *4*	18315.3+y	J1+32	16818.3+y	J1+30
1506.9 *6*		15140.9+v	J4+26	13634.0+v	J4+24
1519.3 *3*	0.22 *2*	16783.8+x	J+30	15264.5+x	J+28
1531.3 *4*	0.12 *1*	19846.6+y	J1+34	18315.3+y	J1+32
1545[#]		9761+w?	J5+14	8216+w?	J5+12
1561.1 *9*		16702.0+v	J4+28	15140.9+v	J4+26
1572.1 *7*		13419.7+u	J3+22	11847.6+u	J3+20
1578.5 *4*	0.09 *1*	18362.3+x	J+32	16783.8+x	J+30
1582.7 *14*	0.03 *1*	21429.3+y	J1+36	19846.6+y	J1+34
1601[#]		11362+w?	J5+16	9761+w?	J5+14
1620.2 *15*		18322.2+v	J4+30	16702.0+v	J4+28
1637.5 *8*	0.05 *1*	19999.8+x	J+34	18362.3+x	J+32
1645.4 *8*		15065.1+u	J3+24	13419.7+u	J3+22

[†] Relative intensities normalized to 1.0 in the plateau region.
[‡] Multiply placed with undivided intensity.
[#] Placement of transition in the level scheme is uncertain.

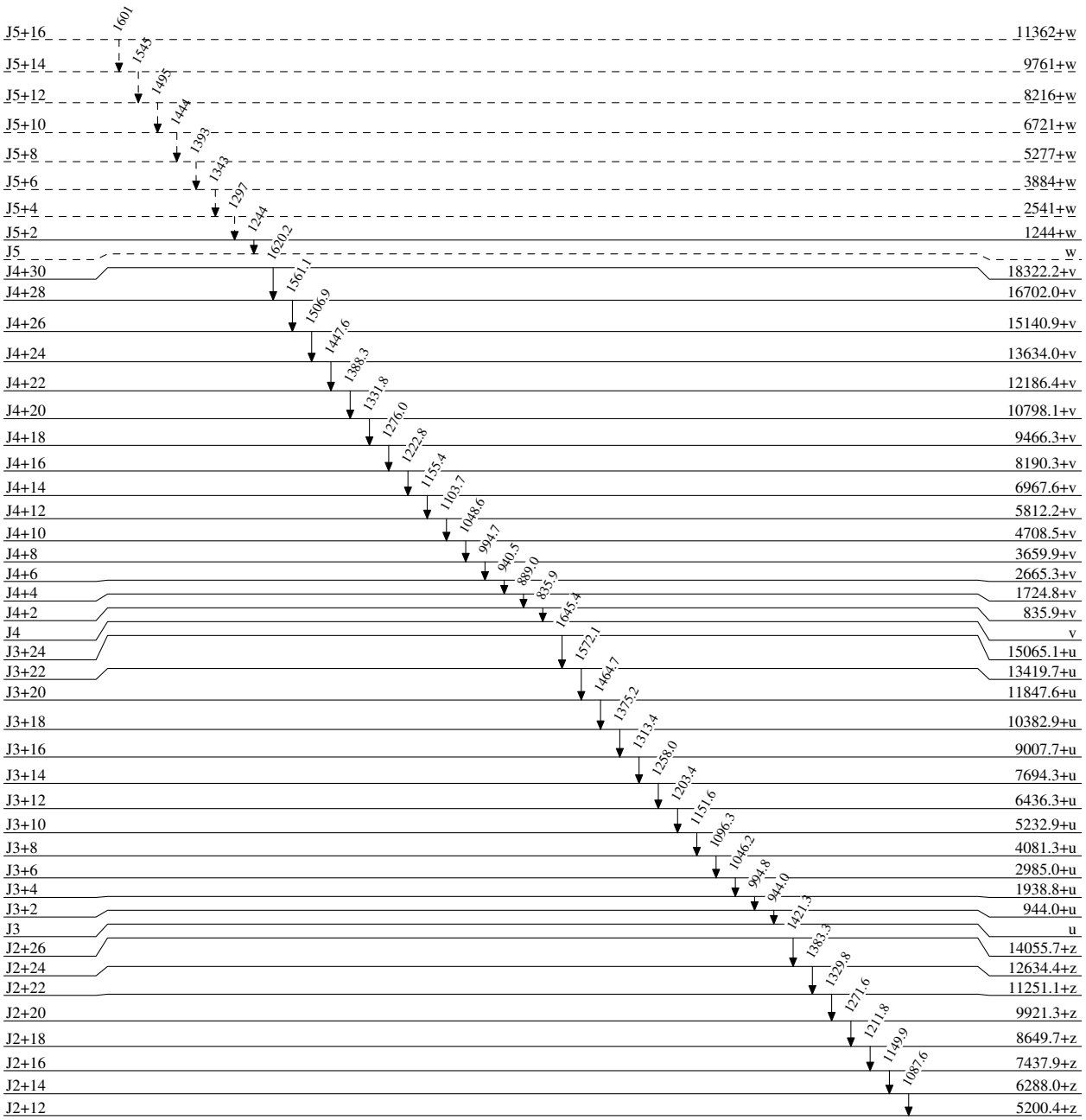
^{124}Sn(^{29}Si,p5nγ):SD 1998Ha21

Legend

Level Scheme

Intensities: Relative I_γ

γ Decay (Uncertain)



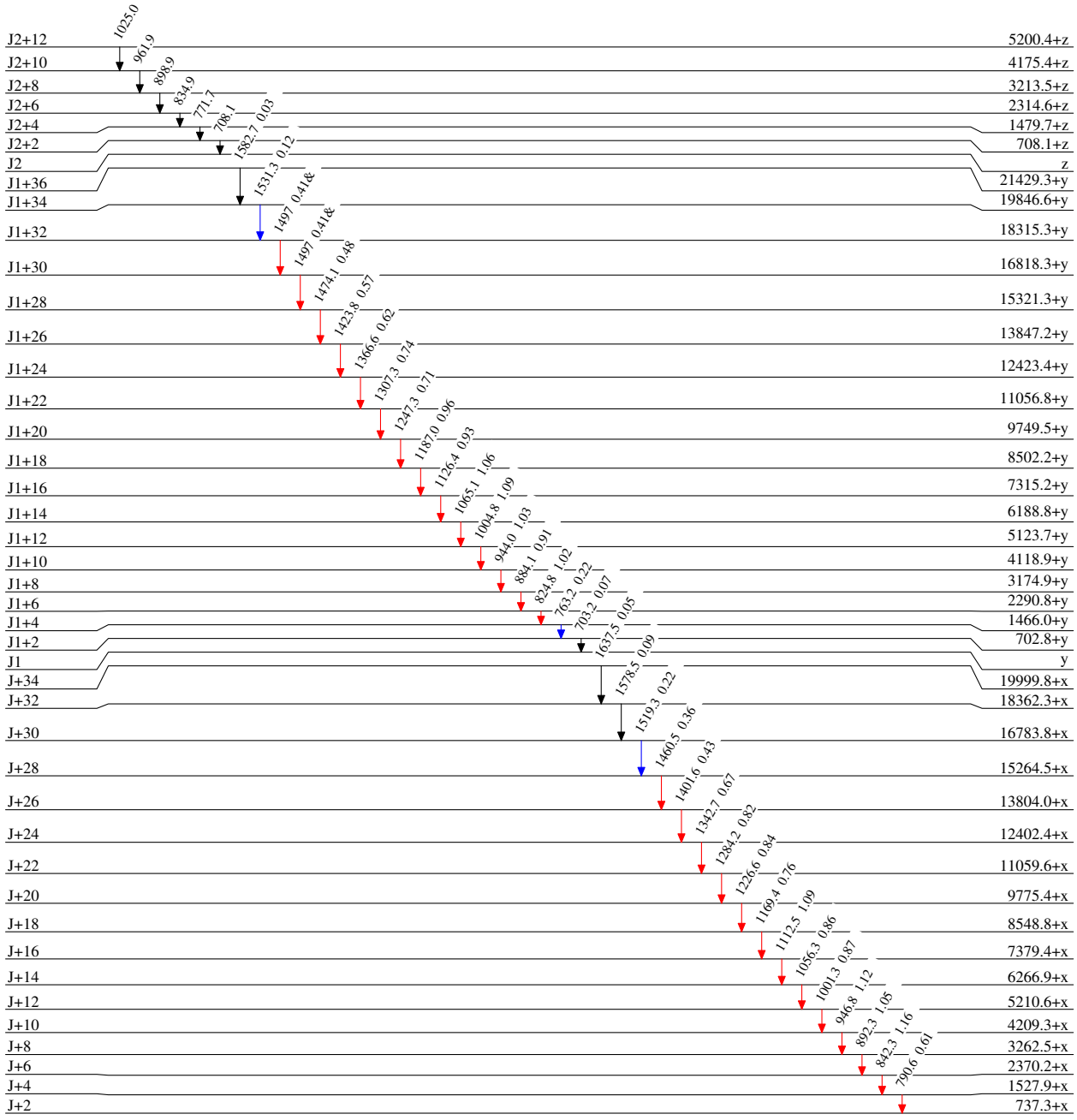
$^{147}_{63}Eu_{84}$

^{124}Sn(^{29}Si,p5nγ):SD 1998Ha21

Level Scheme (continued)

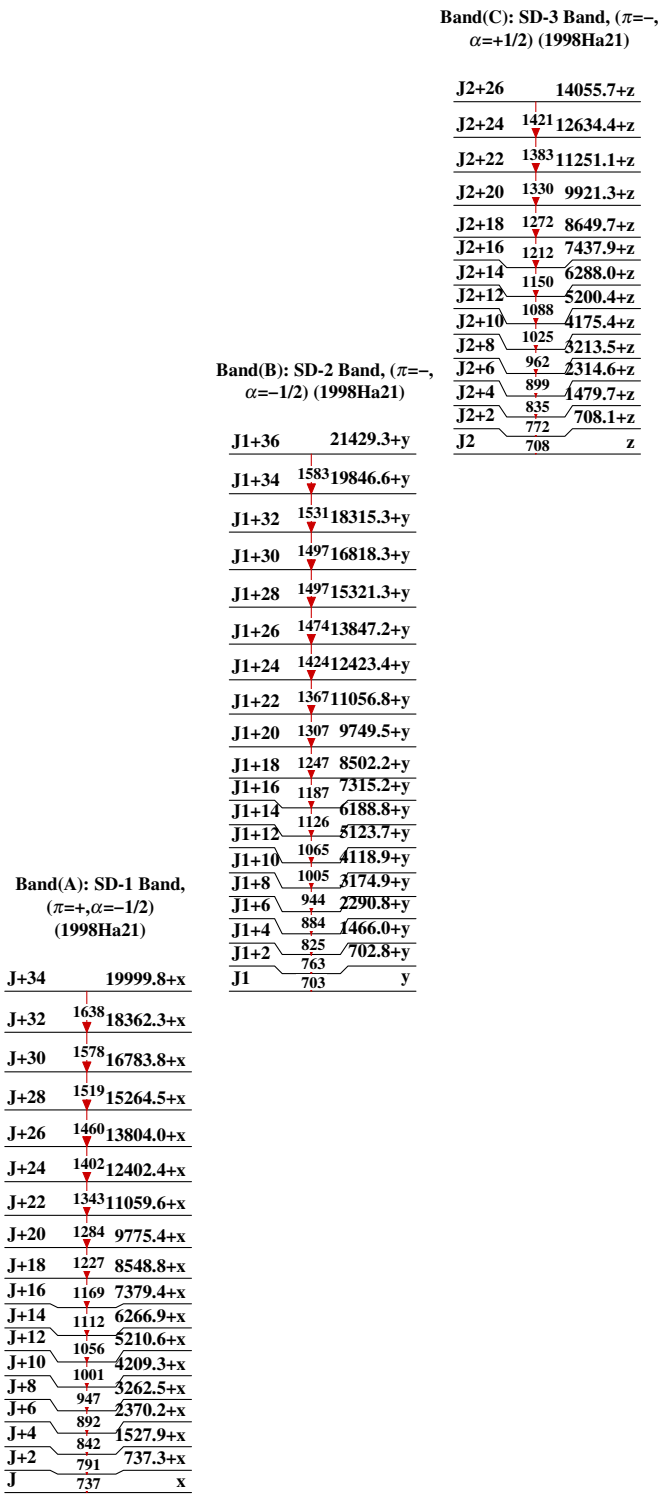
Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



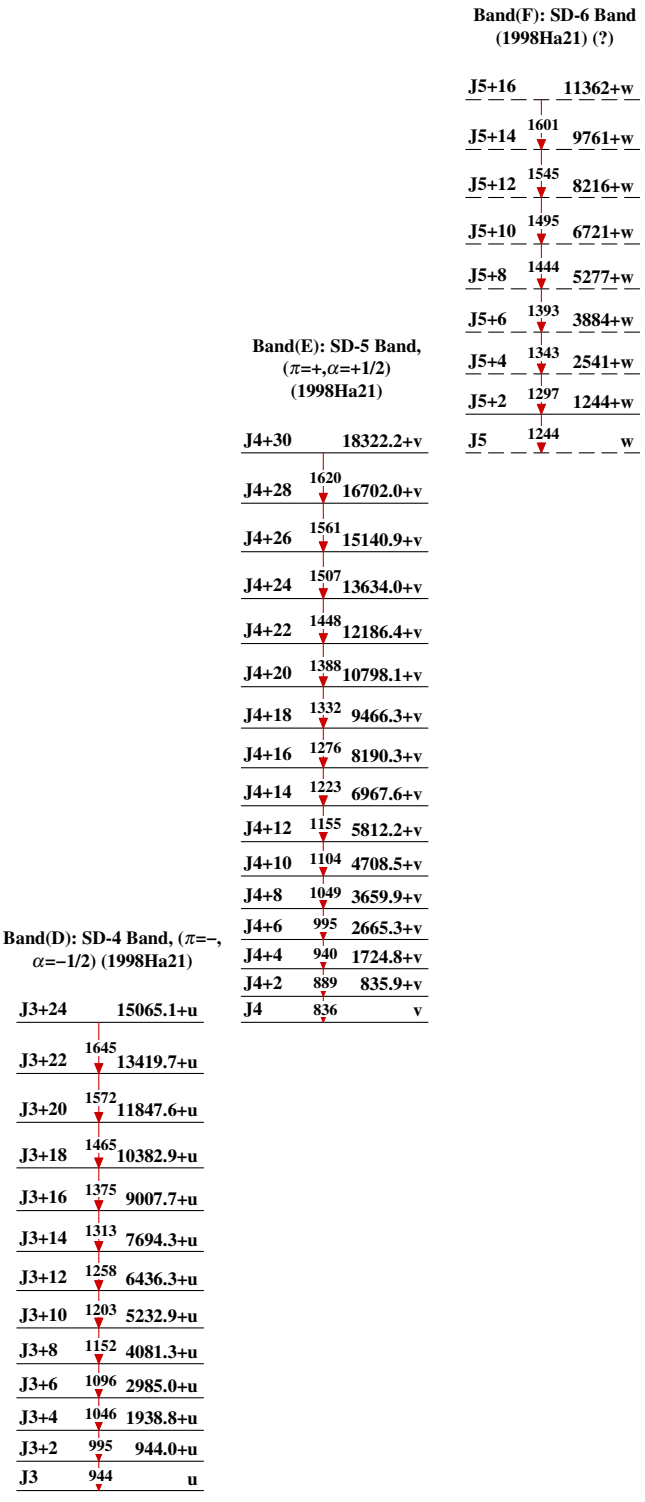
$^{147}_{63}Eu_{84}$

^{124}Sn(^{29}Si,p5nγ):SD 1998Ha21



$^{147}_{63}Eu_{84}$

^{124}Sn(^{29}Si,p5nγ):SD 1998Ha21 (continued)



$^{147}_{63}Eu_{84}$