^{118}Sn(^{32}S,p4nγ) 2004Zh09

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 110, 507 (2009)	1-Oct-2008

E=165 MeV. Measured Eγ, Iγ, $\gamma\gamma$, XG(T), GG(T), ÂDO (G angular distribution from oriented nuclei) ratio, GEMINI array consisting of 12 HPGe detectors with BGO anti-Compton shields.
All data given here are from 2004Zh09 which supersede those from 2001Zh40.

^{145}Tb Levels

E(level)[†]	J$^\pi$	T$_{1/2}$	Comments
y	11/2$^-$	30.9 s *7*	Additional information 1. E(level): the ground state of ^{145}Tb has not been determined and it is suggested to be either $\pi h_{11/2}$ or $\pi d_{3/2}$. The 640γ was also observed in ^{145}Dy decay to ^{145}Tb, and was suggested to populate $\pi h_{11/2}$ state. From systematics, 2003Au02 suggest x=0 *100*. T$_{1/2}$: from 2003Au02.
640.00+y *9*	13/2$^-$		
906.00+y *9*	15/2$^-$		
1420.40+y *10*	15/2$^+$		
1711.70+y *11*	17/2$^-$		
1895.01+y *10*	17/2$^+$		
1983.81+y *13*	19/2$^-$		
2139.00+y *20*	19/2$^+$		
2226.51+y *11*	19/2$^+$		
2290.80+y *17*	21/2$^+$		
2415.51+y *22*	21/2		
2489.80+y *19*	23/2$^+$		
2578.81+y *19*	23/2$^+$		
2877.81+y *18*	25/2$^+$		
3102.0+y *3*	23/2		
3203.6+y *4*	23/2		
3317.81+y *21*	27/2$^+$		
3376.61+y *21*	27/2		
3408.1+y *3*	25/2		
3433.0+y *4*	27/2		
3880.2+y[#] *5*	29/2		
3912.2+y *4*	29/2		
3938.8+y *3*	29/2$^+$		
4103.6+y *3*	29/2		
4331.8+y *4*	31/2		
4333.7+y *4*	29/2		
4353.3+y *4*	29/2		
4371.9+y *3*	31/2$^+$		
4500.8+y[#] *5*	31/2		
4621.9+y *4*	31/2		
4641.4+y *3*	31/2		
4703.2+y[#] *5*	33/2		
4813.3+y *4*	33/2		
4950.6+y *4*	33/2$^+$		
5036.2+y[‡] *4*	35/2		
5183.6+y[#] *5*	35/2		
5184.2+y *5*	35/2$^+$		
5269.3+y *4*	37/2		
5530.1+y[#] *6*	37/2		
5572.3+y *5*	37/2		

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^{118}Sn(^{32}S,p4nγ) 2004Zh09 (continued)

^{145}Tb Levels (continued)

E(level)[†]	Jπ	E(level)[†]	Jπ	E(level)[†]	Jπ	E(level)[†]	Jπ
5738.1+y[‡] *5*	37/2	5937.2+y *7*	37/2	6224.9+y[‡] *6*	39/2	7033.4+y[‡] *9*	43/2
5745.1+y[#] *6*	39/2	5988.7+y *6*	41/2	6445.3+y[#] *7*	43/2	7378.0+y[‡] *10*	45/2
5834.6+y *7*	39/2	6018.0+y[#] *6*	41/2	6580.9+y[‡] *7*	41/2		

[†] From least-squares fit to Eγ′s (by evaluators).
[‡] Band(A): γ sequence based on 35/2.
[#] Band(B): γ sequence based on 29/2.

γ(^{145}Tb)

R=Iγ(32°(148°))/Iγ(90°). Typical values: R=1.4 for DJ=2 or 0; R=0.8 for DJ=1; R=0.3-0.8 D+Q; R<0.8 for negative δ.

E_γ[†]	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Comments
64.3 *3*	9.9	2290.80+y	21/2$^+$	2226.51+y	19/2$^+$	R=0.87 *11*.
89.0 *3*	10.8	2578.81+y	23/2$^+$	2489.80+y	23/2$^+$	R=1.49 *20*.
124.7 *3*	7.8	2415.51+y	21/2	2290.80+y	21/2$^+$	R=1.54 *11*.
151.8 *3*	6.8	2290.80+y	21/2$^+$	2139.00+y	19/2$^+$	R=0.88 *10*.
163.3 *3*	7.2	2578.81+y	23/2$^+$	2415.51+y	21/2	R=0.83 *9*.
171.9[#] *5*	14.1	4813.3+y	33/2	4641.4+y	31/2	R=0.74 *6*.
172.8[#] *5*	1.8	5745.1+y	39/2	5572.3+y	37/2	R=0.77 *10*.
189.0 *3*	8.4	2415.51+y	21/2	2226.51+y	19/2$^+$	R=0.78 *6*.
191.4 *3*	6.1	4813.3+y	33/2	4621.9+y	31/2	R=0.86 *13*.
199.0 *1*	41.2	2489.80+y	23/2$^+$	2290.80+y	21/2$^+$	R=0.85 *4*.
202.4 *3*	7.8	4703.2+y	33/2	4500.8+y	31/2	R=0.74 *13*.
204.5 *5*	4.3	3408.1+y	25/2	3203.6+y	23/2	R=0.68 *9*.
215.0 *3*	12.2	5745.1+y	39/2	5530.1+y	37/2	R=0.68 *7*.
222.9 *1*	25.2	5036.2+y	35/2	4813.3+y	33/2	R=0.74 *4*.
233.1[#] *1*	20.7	5269.3+y	37/2	5036.2+y	35/2	R=0.79 *4*.
233.6[#] *3*	6.0	5184.2+y	35/2$^+$	4950.6+y	33/2$^+$	R=0.63 *15*.
243.6 *3*	12.2	5988.7+y	41/2	5745.1+y	39/2	R=0.70 *6*.
266.0 *3*	9.4	906.00+y	15/2$^-$	640.00+y	13/2$^-$	R=0.75 *10*.
272.9 *3*	7.3	6018.0+y	41/2	5745.1+y	39/2	R=0.73 *7*.
288.0[@] *3*	17.7	2578.81+y	23/2$^+$	2290.80+y	21/2$^+$	R=0.87 *10*.
288.1[@] *5*	3.5	4641.4+y	31/2	4353.3+y	29/2	
288.2[@] *3*	6.4	4621.9+y	31/2	4333.7+y	29/2	
299.0 *1*	49.4	2877.81+y	25/2$^+$	2578.81+y	23/2$^+$	R=0.35 *3*.
306.1[#] *3*	5.0	3408.1+y	25/2	3102.0+y	23/2	R=0.38 *8*.
307.0[#] *3*	8.5	2290.80+y	21/2$^+$	1983.81+y	19/2$^-$	R=0.81 *7*.
331.3[#] *5*	4.6	4703.2+y	33/2	4371.9+y	31/2$^+$	R=0.63 *10*.
331.5[#] *1*	38.6	2226.51+y	19/2$^+$	1895.01+y	17/2$^+$	R=0.63 *4*.
344.6 *5*	2.5	7378.0+y	45/2	7033.4+y	43/2	R=0.50 *7*.
346.5 *3*	13.0	5530.1+y	37/2	5183.6+y	35/2	R=0.42 *6*.
356.0 *3*	5.7	6580.9+y	41/2	6224.9+y	39/2	R=0.45 *7*.
388.0 *3*	10.0	2877.81+y	25/2$^+$	2489.80+y	23/2$^+$	R=0.77 *10*.
395.8 *3*	12.1	2290.80+y	21/2$^+$	1895.01+y	17/2$^+$	R=1.41 *25*.
427.3[&] *3*	8.0[&]	2139.00+y	19/2$^+$	1711.70+y	17/2$^-$	R=0.76 *10*.
427.3[&] *5*	4.0[&]	6445.3+y	43/2	6018.0+y	41/2	

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^{118}Sn(^{32}S,p4nγ) 2004Zh09 (continued)

γ(^{145}Tb) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
433.1 *3*	5.4	4371.9+y	31/2$^+$	3938.8+y	29/2$^+$	R=0.51 *8*.
440.0# *1*	28.8	3317.81+y	27/2$^+$	2877.81+y	25/2$^+$	R=0.40 *6*.
441.4#	4.1	4813.3+y	33/2	4371.9+y	31/2$^+$	
452.5 *5*	3.5	7033.4+y	43/2	6580.9+y	41/2	R=0.48 *8*.
456.6 *3*	5.0	6445.3+y	43/2	5988.7+y	41/2	R=0.68 *6*.
474.6 *1*	20.6	1895.01+y	17/2$^+$	1420.40+y	15/2$^+$	R=0.70 *7*.
479.2@ *3*	8.3	3912.2+y	29/2	3433.0+y	27/2	R=0.67 *10*.
480.4@ *3*	15.0	5183.6+y	35/2	4703.2+y	33/2	R=0.41 *6*.
481.5@ *5*	3.7	4813.3+y	33/2	4331.8+y	31/2	R=0.61 *7*.
486.8 *3*	8.6	6224.9+y	39/2	5738.1+y	37/2	R=0.40 *8*.
498.8 *1*	35.0	3376.61+y	27/2	2877.81+y	25/2$^+$	R=0.73 *6*.
514.4# *1*	27.8	1420.40+y	15/2$^+$	906.00+y	15/2$^-$	R=1.45 *25*.
514.8# *1*	25.0	2226.51+y	19/2$^+$	1711.70+y	17/2$^-$	R=0.80 *10*.
537.8 *3*	5.3	4641.4+y	31/2	4103.6+y	29/2	R=0.35 *9*.
555.2 *3*	8.4	3433.0+y	27/2	2877.81+y	25/2$^+$	R=0.79 *10*.
565.3 *5*	4.3	5834.6+y	39/2	5269.3+y	37/2	R=0.69 *8*.
578.7 *5*	3.0	4950.6+y	33/2$^+$	4371.9+y	31/2$^+$	R=0.54 *8*.
587.0 *1*	23.7	2877.81+y	25/2$^+$	2290.80+y	21/2$^+$	R=1.39 *11*.
620.6# *3*	7.9	4500.8+y	31/2	3880.2+y	29/2	R=0.72 *8*.
621.0# *3*	9.3	3938.8+y	29/2$^+$	3317.81+y	27/2$^+$	R=0.44 *6*.
640.0 *1*	59.4	640.00+y	13/2$^-$	y	11/2$^-$	R=0.36 *4*.
701.9# *3*	9.2	5738.1+y	37/2	5036.2+y	35/2	R=0.60 *9*.
702.6# *5*	1.4	4641.4+y	31/2	3938.8+y	29/2$^+$	
718.6 *3*	5.5	2139.00+y	19/2$^+$	1420.40+y	15/2$^+$	R=1.38 *25*.
727.0 *3*	8.9	4103.6+y	29/2	3376.61+y	27/2	R=0.49 *6*.
729.2 *5*	1.8	4641.4+y	31/2	3912.2+y	29/2	
753.0 *5*	4.3	5937.2+y	37/2	5184.2+y	35/2$^+$	R=0.79 *11*.
780.4 *1*	21.4	1420.40+y	15/2$^+$	640.00+y	13/2$^-$	R=0.86 *8*.
805.7# *3*	5.8	1711.70+y	17/2$^-$	906.00+y	15/2$^-$	
806.1# *1*	26.8	2226.51+y	19/2$^+$	1420.40+y	15/2$^+$	R=1.47 *11*.
812.3 *5*	3.3	5184.2+y	35/2$^+$	4371.9+y	31/2$^+$	
829.3 *3*	9.2	3408.1+y	25/2	2578.81+y	23/2$^+$	R=0.62 *13*.
906.0 *1*	100.0	906.00+y	15/2$^-$	y	11/2$^-$	R=1.33 *7*.
925.6 *3*	6.7	4333.7+y	29/2	3408.1+y	25/2	R=1.5 *3*.
945.2 *3*	6.5	4353.3+y	29/2	3408.1+y	25/2	R=1.38 *25*.
955.2 *3*	12.0	4331.8+y	31/2	3376.61+y	27/2	R=1.39 *10*.
989.0 *1*	42.3	1895.01+y	17/2$^+$	906.00+y	15/2$^-$	R=0.76 *8*.
1011.8 *5*	4.2	4950.6+y	33/2$^+$	3938.8+y	29/2$^+$	R=1.5 *4*.
1054.1 *3*	10.5	4371.9+y	31/2$^+$	3317.81+y	27/2$^+$	R=1.43 *25*.
1061.0 *3*	6.2	3938.8+y	29/2$^+$	2877.81+y	25/2$^+$	R=1.40 *20*.
1071.7 *1*	29.1	1711.70+y	17/2$^-$	640.00+y	13/2$^-$	R=1.41 *15*.
1077.8 *1*	31.6	1983.81+y	19/2$^-$	906.00+y	15/2$^-$	R=1.34 *11*.
1118.2 *3*	7.1	3102.0+y	23/2	1983.81+y	19/2$^-$	R=1.24 *20*.
1200.4 *5*	1.8	5572.3+y	37/2	4371.9+y	31/2$^+$	R=1.34 *20*.
1219.8 *5*	4.5	3203.6+y	23/2	1983.81+y	19/2$^-$	R=1.3 *3*.
1264.8 *5*	2.0	4641.4+y	31/2	3376.61+y	27/2	R=1.39 *25*.
1390.4 *5*	3.0	3880.2+y	29/2	2489.80+y	23/2$^+$	R=1.5 *4*.

[†] Based on a general comment by 2004Zh09 that uncertainties are 0.1-0.5 keV, the evaluators have assigned $\Delta(E\gamma)$ as follows: 0.1 keV for Iγ>20, 0.3 keV for Iγ=5-20, and 0.5 keV for Iγ<5.

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^{118}Sn(^{32}S,p4nγ) 2004Zh09 (continued)

$\gamma(^{145}Tb)$ (continued)

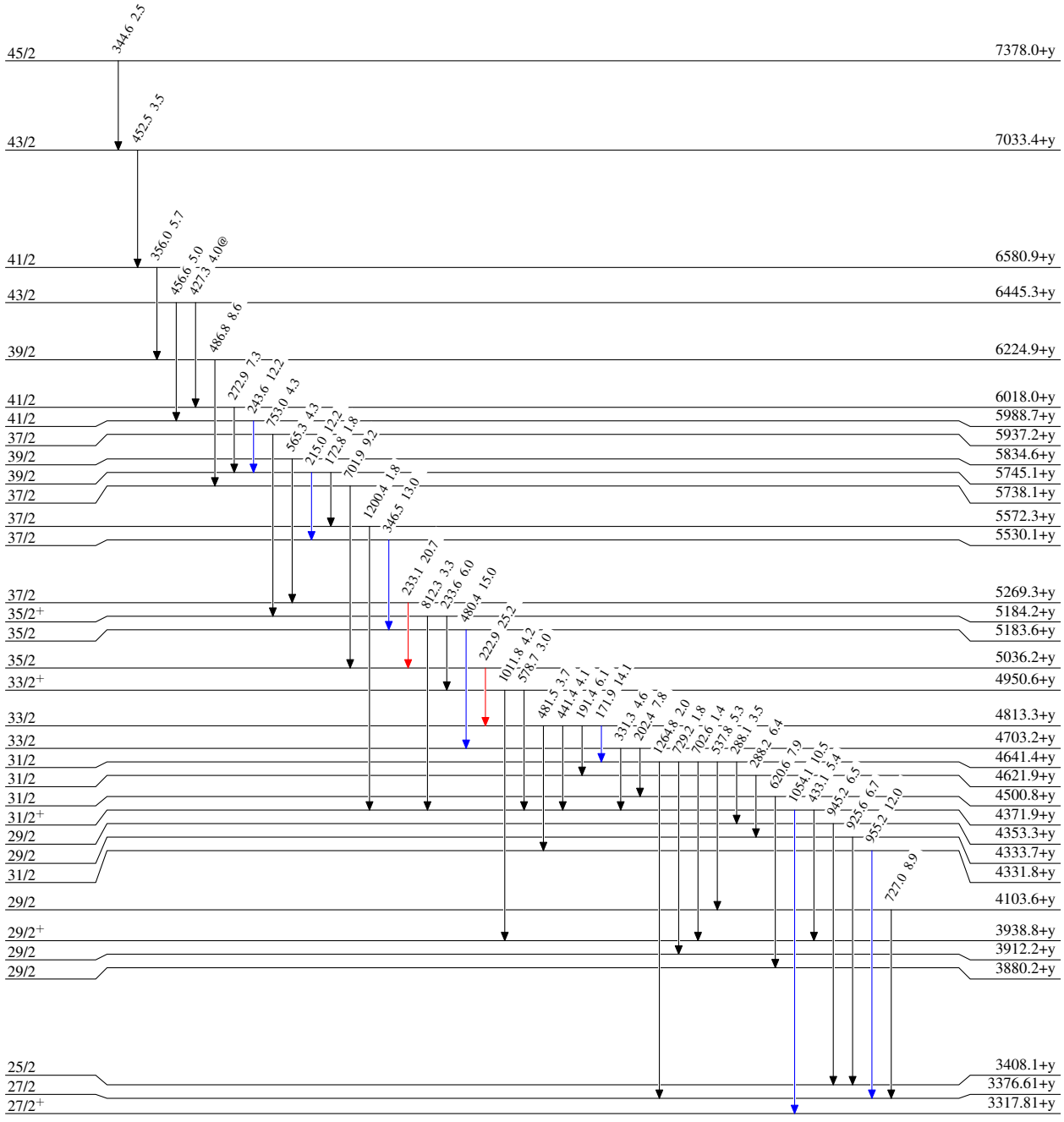
‡ 2004Zh09 state that uncertainties are 5-30%.
# Following are unresolved doublets: 171.9+172.8; 233.1+233.6; 306.1+307.0; 331.3+331.5; 440.0+441.4; 514.4+514.8; 620.6+621.0; 701.9+702.6; 805.7+806.1.
@ Following are unresolved triplets: 288.0+288.1+288.2; 479.2+480.4+481.5.
& Multiply placed with intensity suitably divided.

^{118}Sn(^{32}S,p4nγ) 2004Zh09

Level Scheme

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



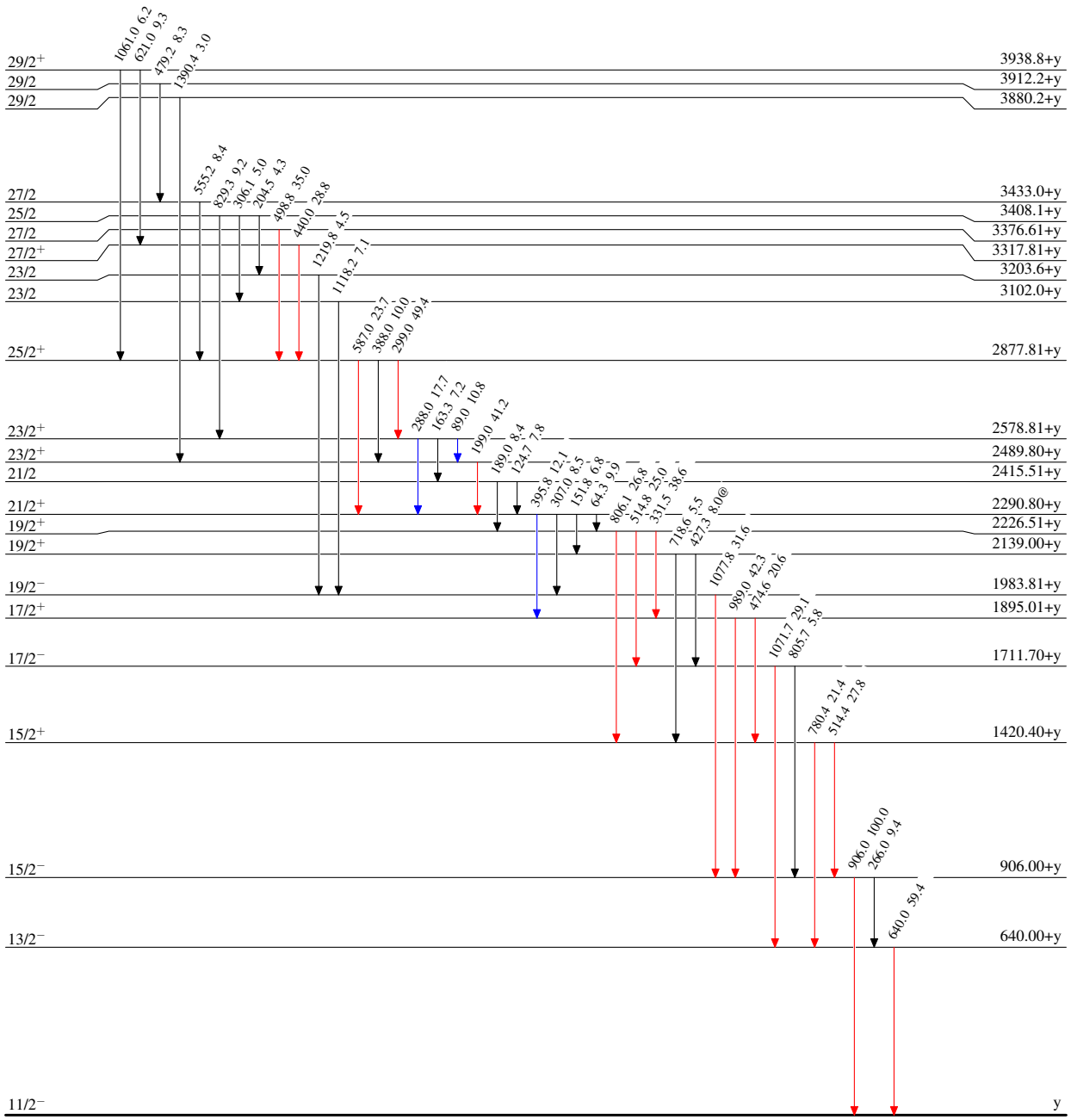
$^{145}_{65}Tb_{80}$

^{118}Sn(^{32}S,p4nγ) 2004Zh09

Level Scheme (continued)

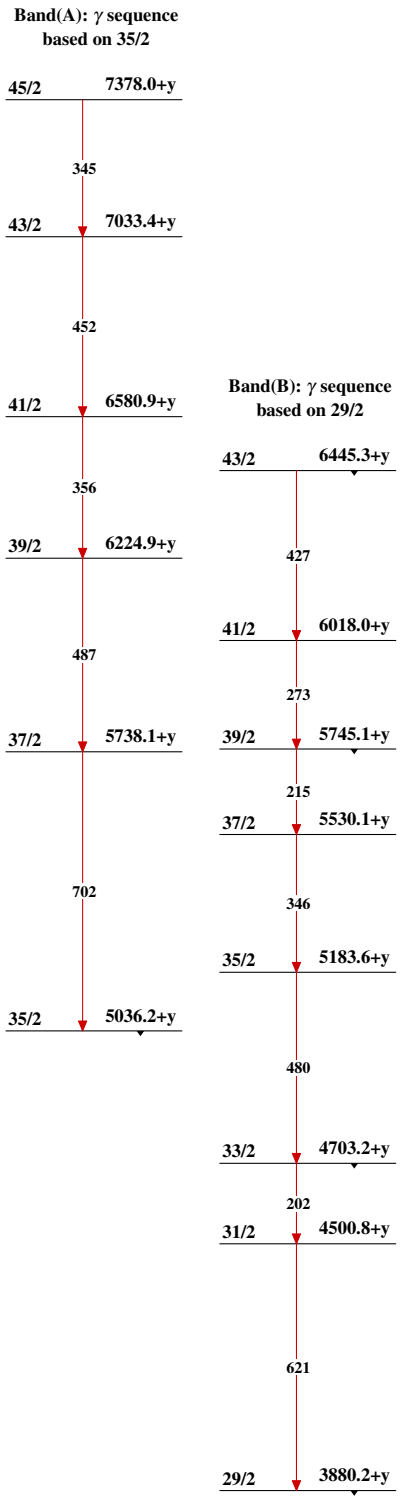
Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



$^{145}_{65}Tb_{80}$

^{118}Sn(^{32}S,p4nγ) 2004Zh09



$^{145}_{65}Tb_{80}$