(HI,xnγ) 1995Se08,1981Wi10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne and A. Negret	NDS 109, 943 (2008)	1-May-2007

1981Wi10: ^{90}Zr(^{19}F,3nγ) E(^{19}F)=62-82 MeV. Measured: Eγ, Iγ, γγ, γ(θ). Deduced: ^{106}In levels, J^π, δ.

1995Se08: ^{54}Fe(^{58}Ni,5pnγ) E=270 MeV. Measured Eγ, Iγ, γγ, γ-p coin, γ-n coin using the Nordball detector array of 15 BGO Compton-suppressed Ge detectors combined with a 2π inner ball of 30 BaF_2detectors, a 4π charged-particle detector array of 21 Si detectors and a 1π neutron detector wall of 11 liquid scintillator detectors. The Ge detectors in Nordball array were arranged at 37.3°, 79.1°, 100.9° and 142.6° with respect to the beam axis.

$R_{asymm}=I_\gamma(142.6°)/[I_\gamma(79.1°)+I_\gamma(100.9°)]$. Expected ratios are 0.9 for ΔJ=1, dipole transitions and 0.5 for ΔJ=2, quadrupole and ΔJ=0, dipole transitions.

^{106}In Levels

E(level)[†][#]	J^π[@]	Comments
0.0[‡]	7^+	Configuration=$\pi g_{9/2}^{-1}\otimes\nu d_{5/2}$.
147.18[‡] *4*	(7^+)	Configuration=$\pi g_{9/2}^{-1}\otimes\nu g_{7/2}$.
820.52 *9*	(8^+)	Configuration=$\pi g_{9/2}^{-1}\otimes\nu g_{7/2}$.
1117.62 *13*	(8^+)	Configuration=$\pi g_{9/2}^{-1}\otimes\nu^3$, 4-qp state.
1307.08 *7*	(9^+)	Configuration=$\pi g_{9/2}^{-1}\otimes\nu^3$, 4-qp state.
1406.82 *17*	(9^+)	Configuration=$\pi g_{9/2}^{-1}\otimes\nu^3$, 4-qp state.
1419.36[&] *5*	(8^-)	Member of $\pi g_{9/2}^{-1}\otimes\nu h_{11/2}$ multiplet.
1628.30[&] *15*	(9^-)	Member of $\pi g_{9/2}^{-1}\otimes\nu h_{11/2}$ multiplet.
1713.69 *20*	(10^+)	Configuration=$\pi g_{9/2}^{-1}\otimes\nu^3$, 4-qp state.
1956.96 *22*	(11^+)	Configuration=$\pi g_{9/2}^{-1}\otimes\nu^3$, 4-qp state.
2148.41[&] *15*	(10^-)	Member of $\pi g_{9/2}^{-1}\otimes\nu h_{11/2}$ multiplet.
2174.21 *23*	(11^+)	Configuration=$\pi g_{9/2}^{-1}\otimes\nu^3$, 4-qp state.
2730.88[&] *15*	(11^-)	(9^-), 1628 coupled to first 2^+ in ^{106}Sn.
3182.19[&] *16*	(12^-)	(10^-), 2148 coupled to first 2^+ in ^{106}Sn.
3217.00[a] *17*	(12^-)	
3456.93[&] *16*	(13^-)	
3638.81[a] *21*	(13^-)	
3783.23[&] *17*	(14^-)	
4007.10[a] *23*	(14^-)	
4331.58[&] *22*	(15^-)	
4486.4[a] *3*	(15^-)	
4980.3[a] *6*	(16^-)	
5483.2[a] *7*	(17^-)	

[†] From least-squares fit to Eγ′s (by evaluators) not using 239.27γ in the fitting procedure; normalized χ^2=1.27. Inclusion of 239.27γ in the fitting procedure gives poor fit with normalized χ^2=3.0, higher than the critical value of 2.2.

[‡] Mixed configurations: $\pi g_{9/2}^{-1}\otimes\nu d_{5/2}$ and $\pi g_{9/2}^{-1}\otimes\nu g_{7/2}$. The dominant component for each is listed under comments.

[#] From ^{54}Fe(^{58}Ni,5pnγ) E=270 MeV (1995Se08).

[@] From Adopted Levels.

[&] Band(A): Negative parity yrast structure.

[a] Band(B): (12^-) sequence.

(HI,xnγ) 1995Se08,1981Wi10 (continued)

γ(^{106}In)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
147.18 *4*	29.3 *17*	147.18	(7$^+$)	0.0	7$^+$		R_{asymm}=1.50 *16*.
208.9 *2*	104 *3*	1628.30	(9$^-$)	1419.36	(8$^-$)	D+Q	R_{asymm}=1.01 *6*. ΔJ=1,0 and δ=−0.03 or 1.3 in ^{90}Zr(^{19}F,3nγ)(1981Wi10).
239.27 *11*	7.3 *8*	3456.93	(13$^-$)	3217.00	(12$^-$)		E_γ: poor fit. Level-energy difference=239.93.
243.27 *10*	21 *4*	1956.96	(11$^+$)	1713.69	(10$^+$)		R_{asymm}=0.76 *15*.
274.74 *3*	49 *2*	3456.93	(13$^-$)	3182.19	(12$^-$)	D+Q	R_{asymm}=0.96 *9*. ΔJ=1 and δ=−0.07 in ^{90}Zr(^{19}F,3nγ)(1981Wi10).
306.79 *18*	4.7 *8*	1713.69	(10$^+$)	1406.82	(9$^+$)		
326.30 *5*	36.6 *17*	3783.23	(14$^-$)	3456.93	(13$^-$)	D+Q	R_{asymm}=0.61 *9*. ΔJ=1 and δ=−0.03 in ^{90}Zr(^{19}F,3nγ)(1981Wi10).
368.29 *8*	27 *2*	4007.10	(14$^-$)	3638.81	(13$^-$)		R_{asymm}=0.47 *14*.
406.8 *3*	10 *3*	1713.69	(10$^+$)	1307.08	(9$^+$)		R_{asymm}=0.76 *19*.
421.69 *14*	15.0 *16*	3638.81	(13$^-$)	3217.00	(12$^-$)		R_{asymm}=0.9 *2*.
451.30 *5*	52 *3*	3182.19	(12$^-$)	2730.88	(11$^-$)	D+Q	R_{asymm}=0.86 *11*. ΔJ=1 and δ=−0.01 in ^{90}Zr(^{19}F,3nγ)(1981Wi10).
457.2 *3*	7.8 *15*	3638.81	(13$^-$)	3182.19	(12$^-$)		
460.52 *11*	20 *2*	2174.21	(11$^+$)	1713.69	(10$^+$)		R_{asymm}=1.2 *3*.
479.27 *16*	12.8 *18*	4486.4	(15$^-$)	4007.10	(14$^-$)		
486.07 *8*	30 *2*	3217.00	(12$^-$)	2730.88	(11$^-$)		R_{asymm}=1.16 *16*.
493.9 *5*	7 *2*	4980.3	(16$^-$)	4486.4	(15$^-$)		
502.9 *4*	3 *1*	5483.2	(17$^-$)	4980.3	(16$^-$)		
510.71 *14*	11.7 *14*	1628.30	(9$^-$)	1117.62	(8$^+$)		
520.10 *3*	85 *3*	2148.41	(10$^-$)	1628.30	(9$^-$)	D+Q	ΔJ=2,1,0 and δ=+8.1 or −0.17 or +0.6 in ^{90}Zr(^{19}F,3nγ)(1981Wi10). R_{asymm}=0.97 *9*.
548.35 *14*	12.9 *14*	4331.58	(15$^-$)	3783.23	(14$^-$)		
582.46 *4*	70 *3*	2730.88	(11$^-$)	2148.41	(10$^-$)	D+Q	R_{asymm}=0.87 *9*. ΔJ=1,0 and δ=−0.05 or 1.15 in ^{90}Zr(^{19}F,3nγ).
586.24 *17*	15 *4*	1406.82	(9$^+$)	820.52	(8$^+$)		R_{asymm}=0.9 *3*.
673.38 *9*	16.2 *14*	820.52	(8$^+$)	147.18	(7$^+$)		R_{asymm}=0.8 *3*.
820.2 *2*	6.8 *12*	820.52	(8$^+$)	0.0	7$^+$		
970.3 *2*	6.1 *12*	1117.62	(8$^+$)	147.18	(7$^+$)		
1034.1 *2*	5.2 *10*	3182.19	(12$^-$)	2148.41	(10$^-$)		
1102.7 *3*	4.7 *9*	2730.88	(11$^-$)	1628.30	(9$^-$)		
1117.8 *2*	6.4 *12*	1117.62	(8$^+$)	0.0	7$^+$		
1225[‡]		3182.19	(12$^-$)	1956.96	(11$^+$)		E_γ: from level-scheme figure of 1995Se08, not given in authors′ list with gamma ray energies.
1272.1 *3*	4.7 *12*	1419.36	(8$^-$)	147.18	(7$^+$)		
1307.08 *7*	35 *3*	1307.08	(9$^+$)	0.0	7$^+$		R_{asymm}=1.8 *3*.
1419.35 *5*	100 *5*	1419.36	(8$^-$)	0.0	7$^+$	D+Q	R_{asymm}=0.87 *9*. ΔJ=1,0 and δ=0 or −11.4 in ^{90}Zr(^{19}F,3nγ)(1981Wi10).

[†] From ^{54}Fe(^{58}Ni,5pnγ) E=270 MeV (1995Se08).
[‡] Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Relative I_γ

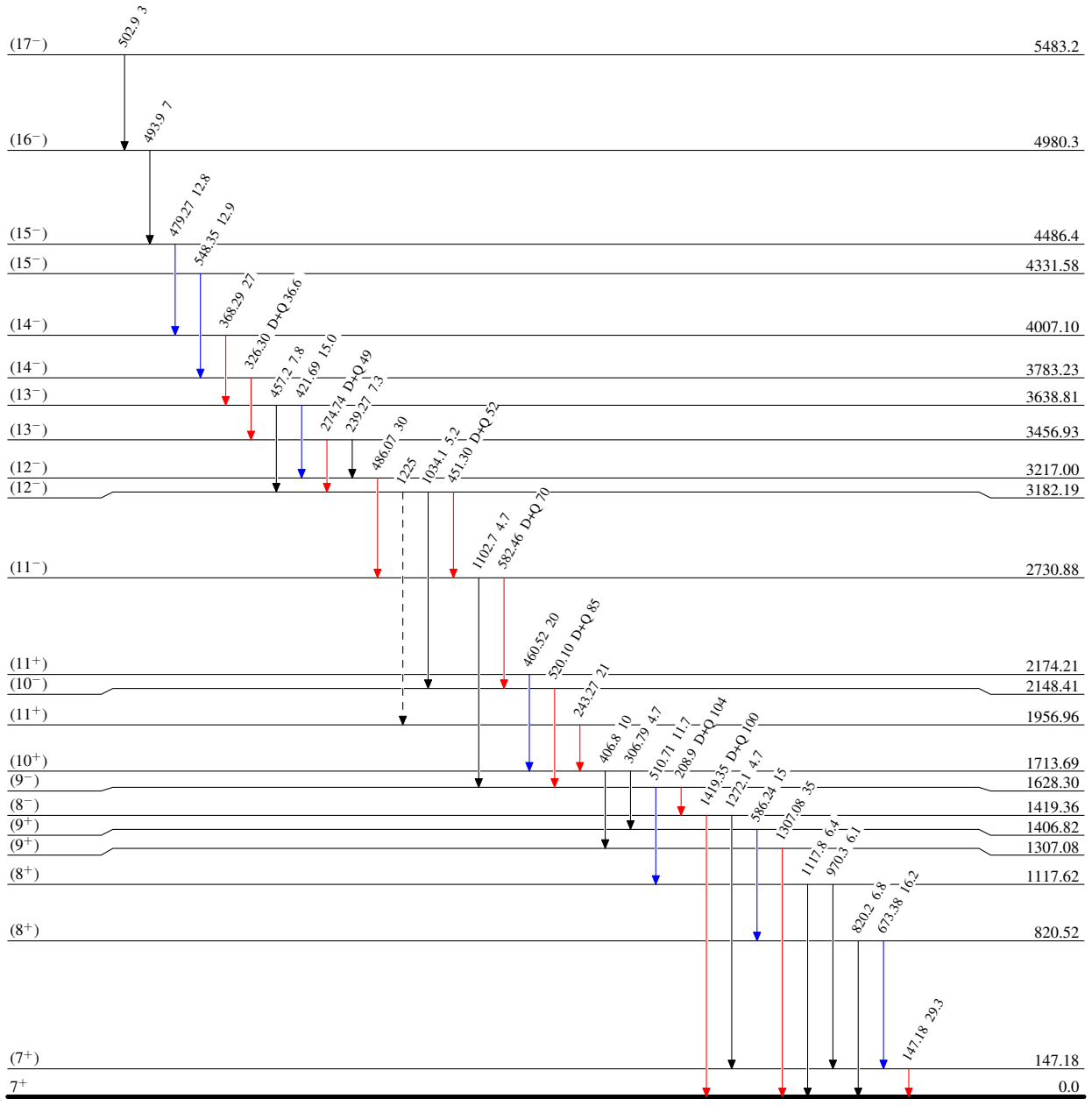
Legend

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

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

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

γ Decay (Uncertain)



$^{106}_{49}In_{57}$

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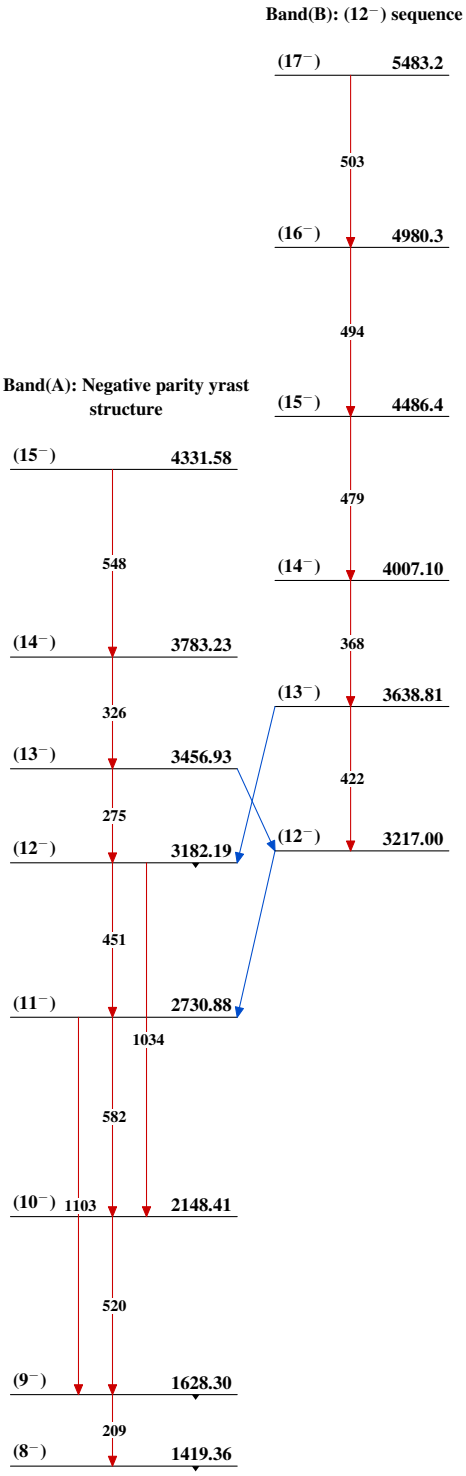

$^{106}_{49}In_{57}$