^{58}Ni(^{31}P,3pnγ),^{56}Fe(^{32}S,2pnγ) 2002Ta11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 116, 1 (2014)	31-Dec-2013

2002Ta11: E(^{31}P)=130 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $T_{1/2}$ by line-shape analysis using six Compton-suppressed HPGe detectors. In ^{56}Fe(^{32}S,2pnγ) E=120 MeV, 12 Compton-suppressed HPGe detectors were used.

Other: 1990ChZH.

^{85}Zr Levels

E(level)[@]	J$^\pi$[†]	$T_{1/2}$[#]	E(level)[@]	J$^\pi$[†]	$T_{1/2}$[#]
0	(7/2$^+$)		4589.0[&] *21*	(27/2$^+$)	
50.12[e] *4*	(9/2$^+$)		4887.0[g] *25*	(27/2$^-$)	
854.0[a] *15*	(11/2$^+$)		4996.0[de] *22*	(29/2$^+$)	0.291 ps *28*
872.0[e] *15*	(13/2$^+$)		5602[h] *3*	(29/2$^-$)	
1884.0[e] *18*	(17/2$^+$)		6076[g] *3*	(31/2$^-$)	
1941.0[a] *18*	(15/2$^+$)		6239.0[e] *24*	(33/2$^+$)	
2625.0[h] *20*	(17/2$^-$)		7482[&f] *3*	(37/2$^+$)	
2958.0[g] *23*	(19/2$^-$)		7527[g] *3*	(35/2$^-$)	
3018.0[be] *20*	(21/2$^+$)	0.201 ps *+21−28*	7720[e] *3*	(37/2$^+$)	
3073.0[&] *20*	(21/2$^+$)		8918[&f] *3*	(41/2$^+$)	
3387.0[h] *24*	(21/2$^-$)		9232[g] *3*	(39/2$^-$)[‡]	
3516.0[&] *20*	(23/2$^+$)		9332[e] *3*	(41/2$^+$)	
3838.0[g] *24*	(23/2$^-$)		10828[&f] *3*	(45/2$^+$)	
3958.0[ce] *21*	(25/2$^+$)	0.80 ps *+26−28*	11141[e] *3*	(45/2$^+$)	
4374.0[h] *25*	(25/2$^-$)				

[†] From 2002Ta11 based band structure.
[‡] (37/2$^-$) in figure 1 of 2002Ta11 is a misprint.
[#] From line-shape analysis.
[@] From least-squares fit to Eγ data.
[&] Level related to band 1, fork-type structure.
[a] Possible member of signature partner of band 1.
[b] Q(transition)=2.61 *+15−19* from lifetime (2002Ta11).
[c] Q(transition)=2.01 *+32−35* from lifetime (2002Ta11).
[d] Q(transition)=2.51 *13* from lifetime (2002Ta11).
[e] Band(A): Band based on (9/2$^+$). Band crossing at $\hbar\omega$=0.52 MeV due to alignment of a pair of $g_{9/2}$ protons. Second alignment at $\hbar\omega$=0.63 MeV due to crossing by a pair of neutrons. Fork-type structure above (19/2$^+$) gives rise to doubling of levels at (21/2$^+$), (23/2$^+$), (27/2$^+$), (37/2$^+$), (41/2$^+$) and (45/2$^+$).
[f] Band(B): Band based on (37/2$^+$). Levels related to band based on (9/2$^+$), fork-type structure.
[g] Band(C): Band based on (19/2$^-$), α=−1/2.
[h] Band(c): Band based on (19/2$^-$), α=+1/2.

^{58}Ni(^{31}P,3pnγ),^{56}Fe(^{32}S,2pnγ) 2002Ta11 (continued)

γ(^{85}Zr)

E_γ [†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π
50.12[‡] *4*		50.12	(9/2$^+$)	0	(7/2$^+$)
333 *1*	17.3 *2*	2958.0	(19/2$^-$)	2625.0	(17/2$^-$)
407 *1*	10.0 *2*	4996.0	(29/2$^+$)	4589.0	(27/2$^+$)
429 *1*	14.6 *2*	3387.0	(21/2$^-$)	2958.0	(19/2$^-$)
442 *1*	12.9 *2*	3958.0	(25/2$^+$)	3516.0	(23/2$^+$)
443 *1*	20.7 *3*	3516.0	(23/2$^+$)	3073.0	(21/2$^+$)
451 *1*	9.2 *1*	3838.0	(23/2$^-$)	3387.0	(21/2$^-$)
474 *1*	1.2 *1*	6076	(31/2$^-$)	5602	(29/2$^-$)
498 *1*	8.5 *2*	3516.0	(23/2$^+$)	3018.0	(21/2$^+$)
513 *1*	7.3 *1*	4887.0	(27/2$^-$)	4374.0	(25/2$^-$)
536 *1*	9.1 *2*	4374.0	(25/2$^-$)	3838.0	(23/2$^-$)
631 *1*	10.9 *3*	4589.0	(27/2$^+$)	3958.0	(25/2$^+$)
684 *1*	8.8 *2*	2625.0	(17/2$^-$)	1941.0	(15/2$^+$)
715 *1*	2.9 *2*	5602	(29/2$^-$)	4887.0	(27/2$^-$)
804 *1*	12.5 *2*	854.0	(11/2$^+$)	50.12	(9/2$^+$)
822 *1*	100	872.0	(13/2$^+$)	50.12	(9/2$^+$)
880 *1*	2.5 *1*	3838.0	(23/2$^-$)	2958.0	(19/2$^-$)
940 *1*	10.1 *2*	3958.0	(25/2$^+$)	3018.0	(21/2$^+$)
987 *1*	5.2 *2*	4374.0	(25/2$^-$)	3387.0	(21/2$^-$)
1012 *1*	79.7 *5*	1884.0	(17/2$^+$)	872.0	(13/2$^+$)
1038 *1*	12.2 *2*	4996.0	(29/2$^+$)	3958.0	(25/2$^+$)
1049 *1*	4.0 *1*	4887.0	(27/2$^-$)	3838.0	(23/2$^-$)
1073 *1*	6.9 *2*	4589.0	(27/2$^+$)	3516.0	(23/2$^+$)
1087 *1*	9.1 *2*	1941.0	(15/2$^+$)	854.0	(11/2$^+$)
1134 *1*	24.6 *3*	3018.0	(21/2$^+$)	1884.0	(17/2$^+$)
1189 *1*	29.1 *4*	3073.0	(21/2$^+$)	1884.0	(17/2$^+$)
1189 *1*	5.1 *1*	6076	(31/2$^-$)	4887.0	(27/2$^-$)
1228 *1*	3.9 *3*	5602	(29/2$^-$)	4374.0	(25/2$^-$)
1243 *1*	17.2 *3*	6239.0	(33/2$^+$)	4996.0	(29/2$^+$)
1243 *1*	9.2 *3*	7482	(37/2$^+$)	6239.0	(33/2$^+$)
1436 *1*	7.8 *2*	8918	(41/2$^+$)	7482	(37/2$^+$)
1451 *1*	6.5 *2*	7527	(35/2$^-$)	6076	(31/2$^-$)
1481 *1*	7.3 *2*	7720	(37/2$^+$)	6239.0	(33/2$^+$)
1612 *1*	6.3 *2*	9332	(41/2$^+$)	7720	(37/2$^+$)
1705 *1*	3.1 *3*	9232	(39/2$^-$)	7527	(35/2$^-$)
1809 *1*	4.3 *3*	11141	(45/2$^+$)	9332	(41/2$^+$)
1910 *1*	4.5 *3*	10828	(45/2$^+$)	8918	(41/2$^+$)

[†] Uncertainty is stated by 2002Ta11 as 1 keV for a 1 MeV transition. The evaluators assign 1 keV to each transition.
[‡] From Adopted Gammas for ^{85}Zr.

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Level Scheme

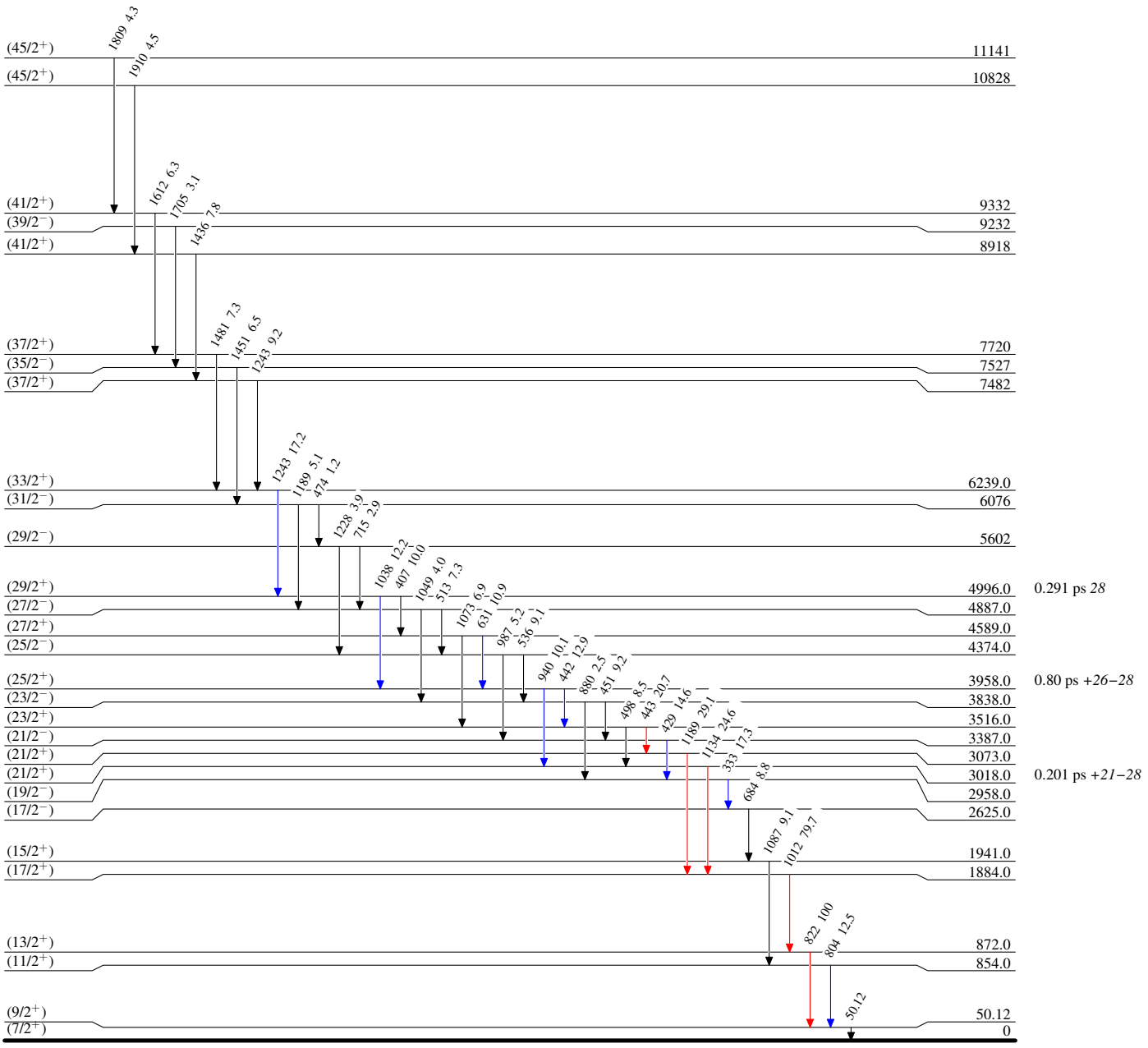
Intensities: Relative I_γ

Legend

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

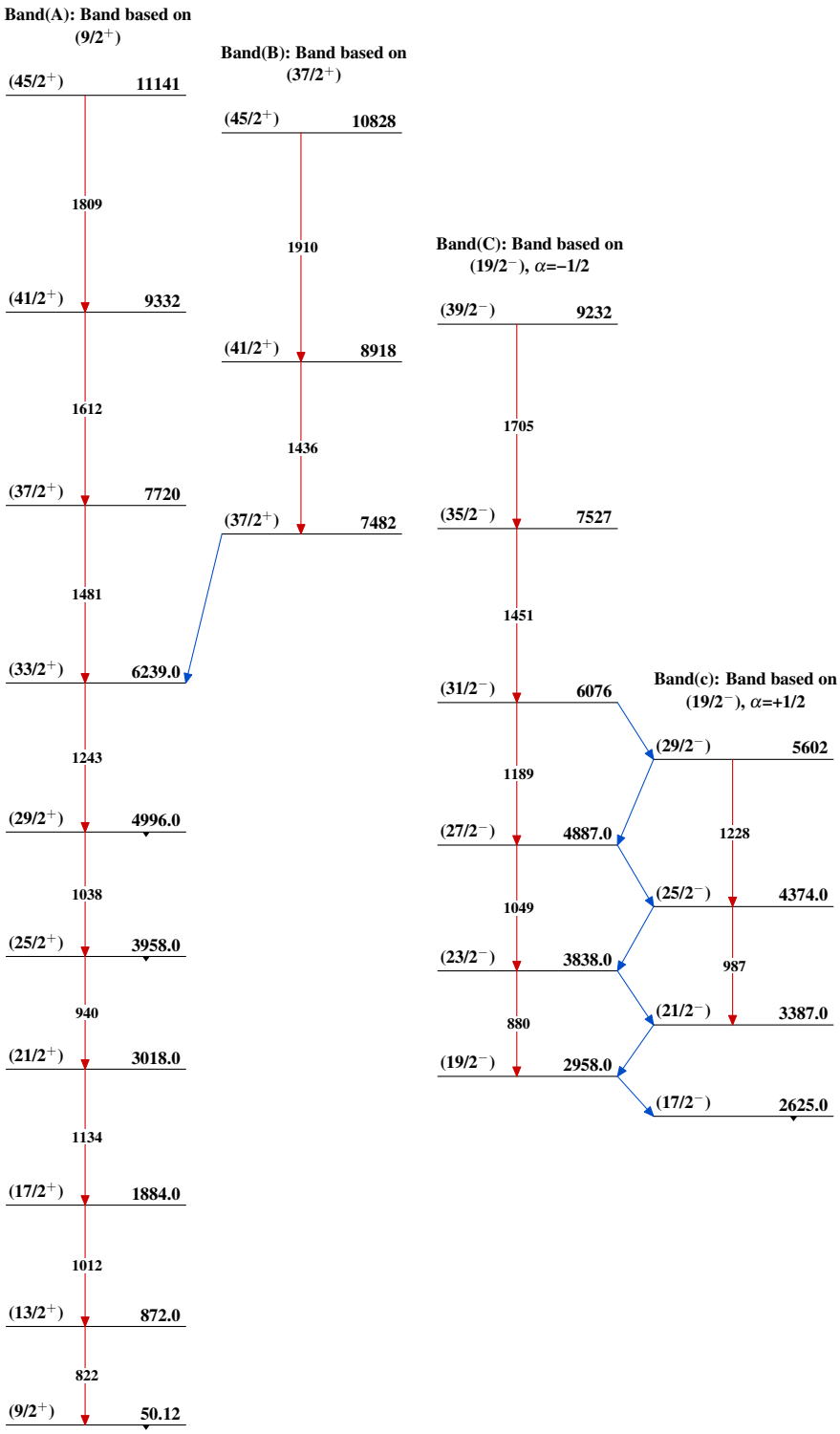
$I_\gamma < 10\% \times I_\gamma^{max}$

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



$^{85}_{40}Zr_{45}$

^{58}Ni(^{31}P,3pnγ),^{56}Fe(^{32}S,2pnγ) 2002Ta11



$^{85}_{40}Zr_{45}$