^{58}Ni(^{58}Ni,3pnγ) 1995Pa26,1998StZY

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, F. G. Kondev	NDS 124, 157 (2015)	1-Aug-2014

1995Pa26: Facility: Daresbury Nuclear Structure Facility; Beam: E(^{58}Ni)=240 MeV; Target: 440 μg/cm^2 ^{58}Ni; Detectors: EUROGAM array consisting of 45 HPGe detectors, Daresbury recoil separator; Measured: γ-γ-γ, $\gamma(\theta)$, Eγ, Iγ; Deduced: ^{112}I level scheme, R_{DCO}.

1998StZY: Facility: LBL; Beam: E(^{58}Ni)=250 MeV; Target: ^{58}Ni; Detectors: GAMMASPHERE, comprising 83 HPGe detectors, MICROBALL, and an array of 15 neutron scintillator detectors; Measured: γ-γ-γ, γ-γ-p(n), $\gamma(\theta)$, Eγ, Iγ; Deduced: level scheme, band structure, R_{DCO}, $T_{1/2}$.

Other: 1987RuZZ.

^{112}I Levels

E(level)†	J$^\pi$‡	$T_{1/2}$	Comments
0.0	(1$^+$)	3.34 s *8*	J$^\pi$,$T_{1/2}$: From Adopted Levels.
55.0 *5*			
124.3 *3*			
188.7 *4*			
245.9 *5*			
291.5 *4*			
296.4? *5*			
350.7? *4*			
440.9 *4*			
576.6? *5*			
643.4 *4*			
853.0 *5*			
1186.0# *6*	(7$^-$)		
1737.7# *7*	(9$^-$)		
1841.0 *7*			
2380.3# *7*	(11$^-$)		
3082.9# *8*	(13$^-$)		
3137.2 *8*			
3816.6# *9*	(15$^-$)		
4665.1 *9*			
4812.5# *9*	(17$^-$)		
5727.3 *9*			
5799.5# *9*	(19$^-$)		
6625.8# *10*	(21$^-$)		
7371.8# *10*	(23$^-$)		
7990.6# *11*	(25$^-$)		
8712.2# *11*	(27$^-$)		
x@	(11$^+$)	>25 ps	Additional information 1. $T_{1/2}$: from 1998StZY.
133.0+x@ *8*	(10$^+$)		
551.9+x@ *9*	(13$^+$)		
656.1+x@ *8*	(12$^+$)		
1254.6+x@ *12*	(15$^+$)		
1310.1+x@ *10*	(14$^+$)		
1988.6+x@ *14*	(17$^+$)		
2067.4+x@ *12*	(16$^+$)		
2936.5+x@ *14*	(18$^+$)		

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^{58}Ni(^{58}Ni,3pnγ) 1995Pa26,1998StZY (continued)

^{112}I Levels (continued)

E(level)†	Jπ‡
2984.6+x@ *17*	(19$^+$)
3899.6+x@ *20*	(21$^+$)
4899.6+x@ *22*	(23$^+$)

† From a least-squares fit to Eγ.
‡ From the proposed J$^\pi$=(7$^-$) to the 1186-keV level, the apparent band band structure and the measured γ-ray transition multipolarities in 1995Pa26. The assignment for the π=+ band is from 1998StZY.
# Band(A): Member of a ΔJ=2 band; Probable configuration=$\pi g_{7/2}\otimes\nu h_{11/2}$.
@ Band(B): Member of a ΔJ=2/ΔJ=1 band; Probable configuration=$\pi h_{11/2}\otimes\nu h_{11/2}$.

γ(^{112}I)

E$_\gamma$†	I$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.‡	Comments
64.6 *3*	<10	188.7		124.3			
124.3 *3*	<10	124.3		0.0	(1$^+$)		
133# *1*		133.0+x	(10$^+$)	x	(11$^+$)	(M1+E2)#	
167.0 *3*	<10	291.5		124.3			
190.6 *3*	12 *1*	245.9		55.0			
194.9 *3*	<10	440.9		245.9			
202.6 *3*	29 *3*	643.4		440.9		(D)	Mult.: R$_{DCO}$=0.77 *11* (1995Pa26).
209.6 *3*	80 *8*	853.0		643.4		(D)	Mult.: R$_{DCO}$=0.85 *10* (1995Pa26).
226.4 *3*	<10	350.7?		124.3			
236.8 *3*	<10	291.5		55.0			
241.4 *3*	14 *1*	296.4?		55.0			
252.4 *3*	<10	440.9		188.7			
276.4 *3*	13 *1*	853.0		576.6?			
280.2 *3*	13 *1*	576.6?		296.4?			
292.7 *3*	12 *1*	643.4		350.7?			
333.0 *3*	100	1186.0	(7$^-$)	853.0		D	Mult.: R$_{DCO}$=0.64 *7* (1995Pa26).
352.0 *3*	16 *2*	643.4		291.5			
397.3 *3*	13 *1*	643.4		245.9			
523# *1*		656.1+x	(12$^+$)	133.0+x	(10$^+$)	(E2)#	
551.7 *3*	97 *10*	1737.7	(9$^-$)	1186.0	(7$^-$)	(E2)	Mult.: R$_{DCO}$=1.03 *7* (1995Pa26).
552# *1*		551.9+x	(13$^+$)	x	(11$^+$)	(E2)#	
618.8 *3*	17 *2*	7990.6	(25$^-$)	7371.8	(23$^-$)		
642.6 *3*	90 *10*	2380.3	(11$^-$)	1737.7	(9$^-$)	(E2)	Mult.: R$_{DCO}$=1.04 *8* (1995Pa26).
654# *1*		1310.1+x	(14$^+$)	656.1+x	(12$^+$)	(E2)#	
655.0 *3*	11 *1*	1841.0		1186.0	(7$^-$)		
656# *1*		656.1+x	(12$^+$)	x	(11$^+$)	(M1+E2)#	
702.6 *3*	81 *8*	3082.9	(13$^-$)	2380.3	(11$^-$)	(E2)	Mult.: R$_{DCO}$=1.04 *8* (1995Pa26).
703# *1*		1254.6+x	(15$^+$)	551.9+x	(13$^+$)	(E2)#	
721.6 *3*	10 *1*	8712.2	(27$^-$)	7990.6	(25$^-$)		
733.7 *3*	65 *7*	3816.6	(15$^-$)	3082.9	(13$^-$)	(E2)	Mult.: R$_{DCO}$=1.13 *14* (1995Pa26).
734# *1*		1988.6+x	(17$^+$)	1254.6+x	(15$^+$)	(E2)#	
745.9 *3*	26 *3*	7371.8	(23$^-$)	6625.8	(21$^-$)		
756.9 *3*	17 *2*	3137.2		2380.3	(11$^-$)		
757# *1*		2067.4+x	(16$^+$)	1310.1+x	(14$^+$)	(E2)#	
758# *1*		1310.1+x	(14$^+$)	551.9+x	(13$^+$)	(M1+E2)#	

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^{58}Ni(^{58}Ni,3pnγ) 1995Pa26,1998StZY (continued)

γ(^{112}I) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	Comments
813# *1*		2067.4+x	(16^+)	1254.6+x	(15^+)	(M1+E2)#	
826.3 *3*	31 *3*	6625.8	(21^-)	5799.5	(19^-)		
848.0 *3*	15 *2*	4665.1		3816.6	(15^-)		
869# *1*		2936.5+x	(18^+)	2067.4+x	(16^+)	(E2)#	
915# *1*		3899.6+x	(21^+)	2984.6+x	(19^+)	(E2)#	
915.2 *3*	14 *1*	5727.3		4812.5	(17^-)		
948# *1*		2936.5+x	(18^+)	1988.6+x	(17^+)	(M1+E2)#	
987.0 *3*	39 *4*	5799.5	(19^-)	4812.5	(17^-)	(E2)	Mult.: R_{DCO}=0.99 *15* (1995Pa26).
996# *1*		2984.6+x	(19^+)	1988.6+x	(17^+)	(E2)#	
996.4 *3*	53 *5*	4812.5	(17^-)	3816.6	(15^-)	(E2)	Mult.: R_{DCO}=1.20 *21* (1995Pa26).
1000# *1*		4899.6+x	(23^+)	3899.6+x	(21^+)	(E2)#	
1061.7 *3*	10 *1*	5727.3		4665.1			

† From 1995Pa26, unless otherwise noted.
‡ From angular correlations and DCO measurements in 1995Pa26, unless otherwise noted. For the chosen geometry, R_{DCO} approx. equals to 1 for stretched quadrupole transitions and approx. 0.65 for stretched dipole transitions (1995Pa26).
# From 1998StZY. Uncertainty in Eγ is estimated by the evaluators.

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Level Scheme

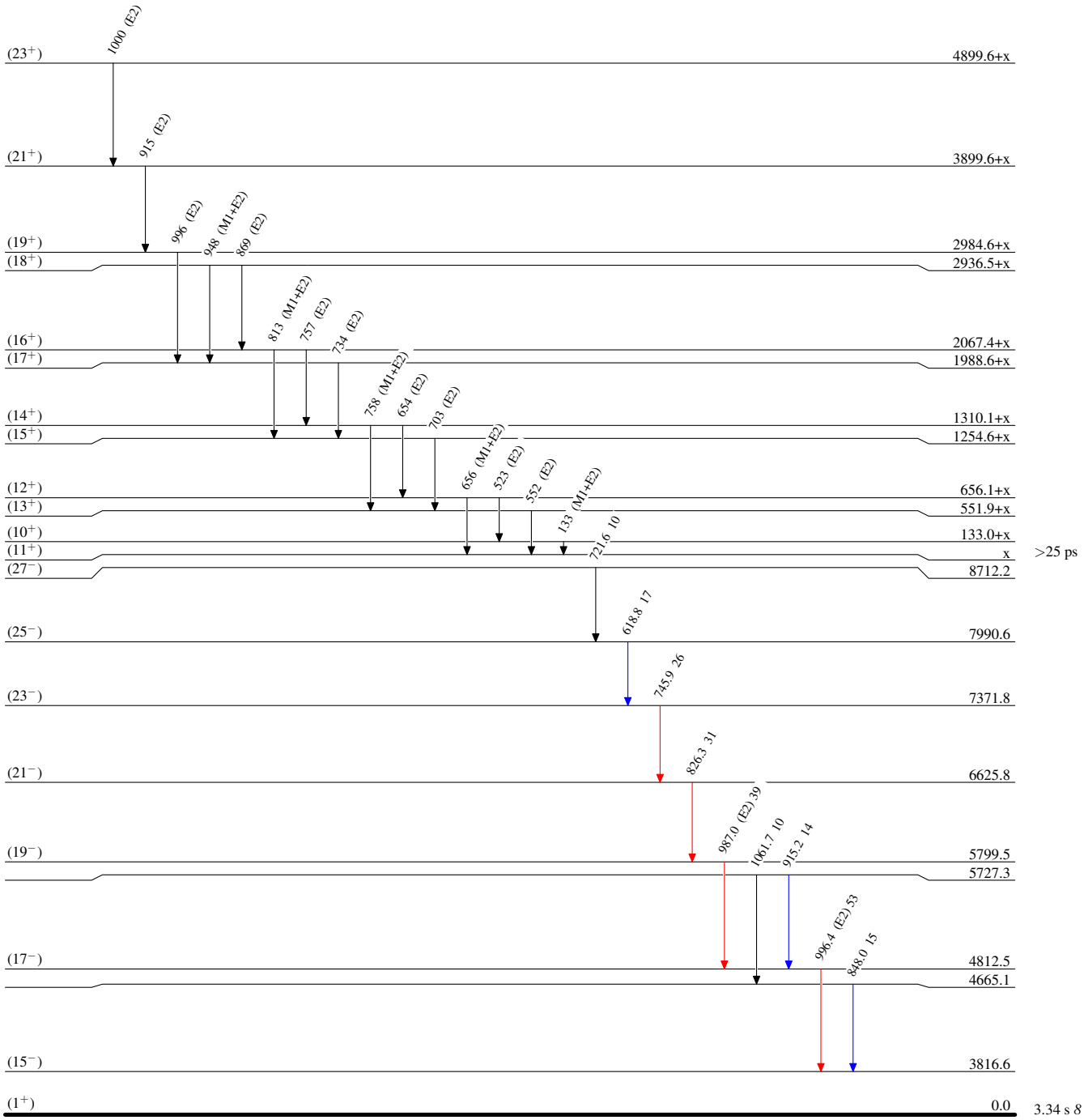
Intensities: Type not specified

Legend

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

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

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

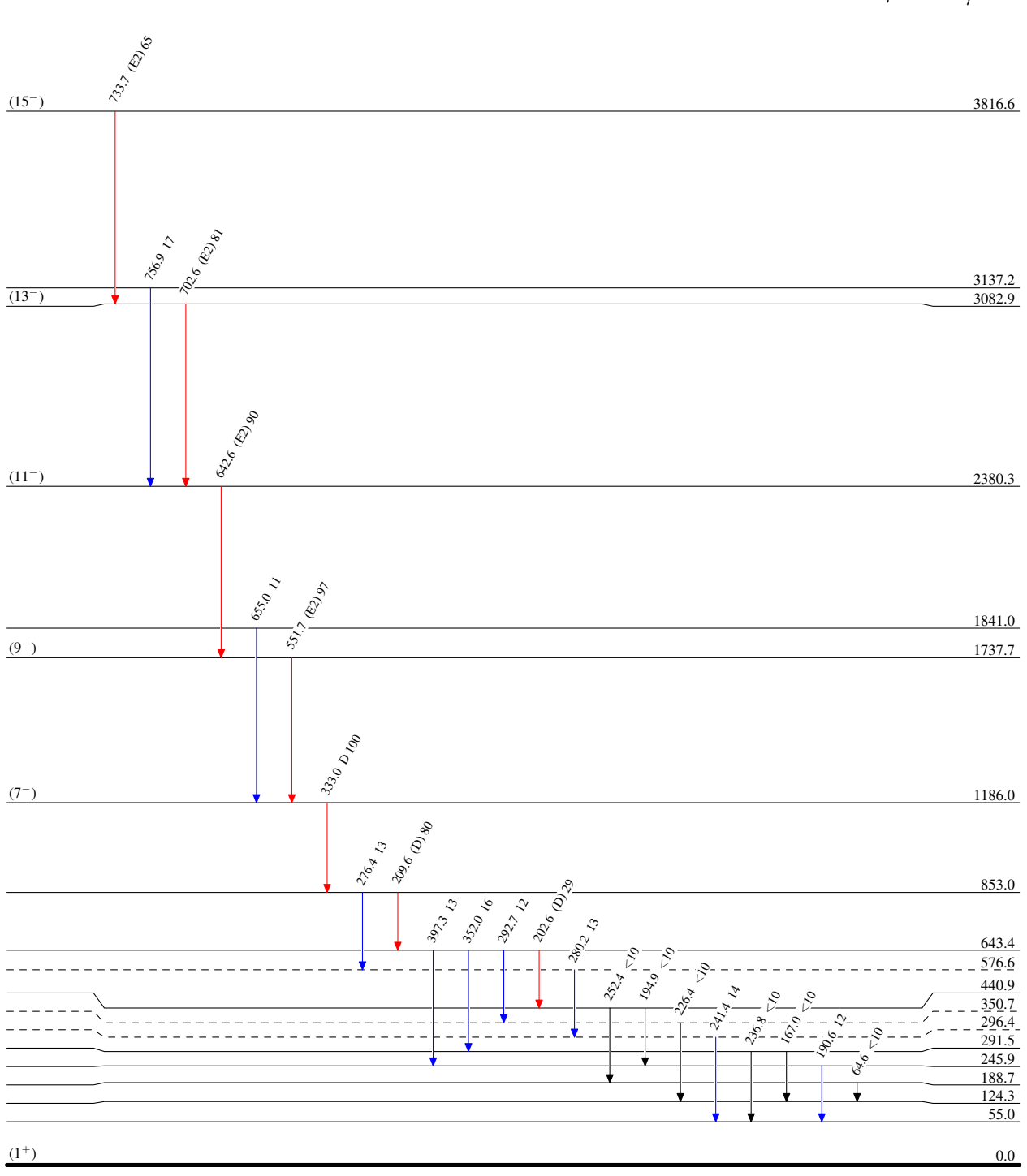


$^{112}_{53}I_{59}$

^{58}Ni(^{58}Ni,3pnγ) 1995Pa26,1998StZY

Level Scheme (continued)

Intensities: Type not specified



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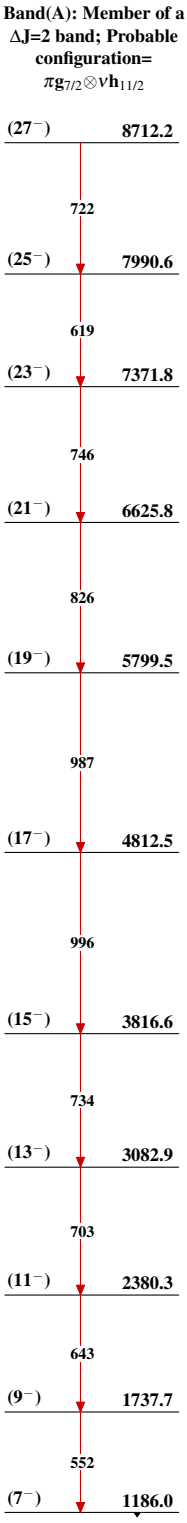
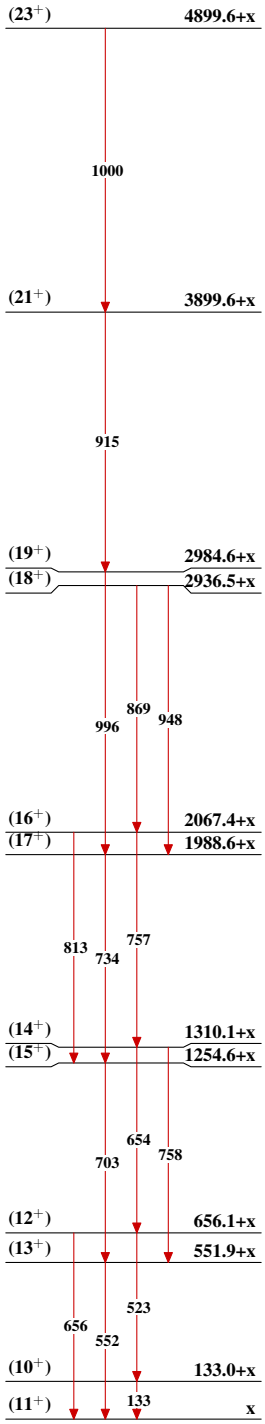


$^{112}_{53}I_{59}$

^{58}Ni(^{58}Ni,3pnγ) 1995Pa26,1998StZY (continued)

Band(B): Member of a ΔJ=2/ΔJ=1 band; Probable configuration= $\pi h_{11/2} \otimes \nu h_{11/2}$



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