^{58}Ni(^{50}Cr,3pγ) 1999De50,1998Ka54,1995De51

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, J. Timar and Z. Elekes	NDS 161, 1 (2019)	1-Apr-2019

1999De50, 1995De51: Facility: INFN XTU Tandem; Beam: E(^{58}Ni)=210 MeV; Target: ^{50}Cr; Detectors: Recoil Mass Separator (CAMEL), 40 GASP type HPGe, 40 ΔE-E Si-ball detectors (ISIS); Measured: particle-γ coinc, γ, γ-γ coinc., Eγ; Deduced: ^{105}In level scheme, band structures.

1998Ka54: Facility: INFN XTU Tandem; Beam: E(^{50}Cr)=205 MeV; Targets: one 1.2 mg/cm^2 foil enriched to 99.9% in ^{58}Ni, one 0.45 mg/cm^2 ^{58}Ni evaporated on 50 mg/cm^2 Au backing; Detectors: 40 GASP HPGe with AC shields, plunger with 12.3 mg/cm^2 thich Au stopper; Measured: γ, γ-γ coinc., Eγ, Iγ, γ(t); Deduced: level scheme, $T_{1/2}$.

Others: 1997Ko51, 1992Is02.

^{105}In Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	Comments
0.0[d]	9/2$^+$		
992.0[d] *9*	11/2$^+$		
1342.0[d] *9*	13/2$^+$		
1827.0[d] *13*	17/2$^+$	416 ps *28*	
2098.8[d] *15*	19/2$^+$	2.61 ps *12*	
2939.2[d] *15*	21/2$^+$	0.52 ps *10*	
3082.9 *17*			
3346.1[d] *15*	23/2$^+$	1.59 ps *28*	
3631.7[d] *17*	25/2$^+$	4.09 ps *14*	
3655.0[&] *15*	19/2$^-$	<1.4 ps	
3828.6[&] *15*	21/2$^-$	0.55 ps *7*	
3960.1[&] *16*	23/2$^-$	1.73 ps *14*	
3972.7 *16*	21/2$^-$		
4311.7 *18*	23/2$^-$		
4358.1[&] *16*	25/2$^-$	<1.4 ps	
4491.3[d] *17*	29/2$^+$	0.97[@] ps *21*	J$^\pi$: 27/2$^{(+)}$ in 1997Ko51.
4955.8 *18*	25/2$^-$		
5048.2[&] *17*	27/2$^-$	<0.35 ps	
5251.8[d] *17*	29/2$^{(+)}$		
5275.8 *17*	27/2$^-$		
5356.8 *18*			
5490.4[&] *17*	29/2$^-$	1.04[@] ps *28*	
5623.1[a] *17*	29/2$^-$	0.62[@] ps *14*	
5893.1[&] *17*	31/2$^-$		
6004.8 *18*			
6023.2[a] *17*	31/2$^-$		
6127.5 *18*			
6385.2[&] *18*	33/2$^-$		
6588.2[a] *17*	33/2$^-$		
7058.5[a] *18*	35/2$^-$		
7109.6[&] *18*	(35/2$^-$)		
7557.5[a] *18*	37/2$^-$		
7743.4[&] *18*			
7803.2[b] *18*	33/2$^{(+)}$		
8099.3[b] *18*	35/2$^{(+)}$		

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^{58}Ni(^{50}Cr,3pγ) 1999De50,1998Ka54,1995De51 (continued)

^{105}In Levels (continued)

E(level)[†]	J$^\pi$[‡]	Comments
8483.4[a] *19*	39/2$^-$	
8555.4[b] *18*	37/2$^{(+)}$	
8566.0[&] *20*	39/2$^-$	
8921.0 *20*		
9134.4[b] *19*	39/2$^{(+)}$	
9301.7[a] *20*	41/2$^-$	
9460.9[c] *20*	41/2$^{(+)}$	
9650.4[b] *20*	41/2$^{(+)}$	
10155.4[b] *22*	43/2$^{(+)}$	
10200.7[a] *22*	43/2$^-$	
10558.5[c] *21*	45/2$^{(+)}$	E(level): 10522 in Figure 1 of 1999De50 seems to be a misprint.
10827.4[b] *24*	45/2$^{(+)}$	
11790[b] *3*	47/2$^{(+)}$	
11844.5[c] *23*	49/2$^{(+)}$	
13349.5[c] *25*	53/2$^{(+)}$	
15287[c] *3*	57/2$^{(+)}$	

[†] From least-squares fit to Eγ's; Δ(Eγ)=1 keV assumed by the evaluators.
[‡] From 1999De50.
[#] From RDDS and DSAM in 1998Ka54.
[@] Effective half-life from 1998Ka54.
[&] Band(A): 19/2$^-$, ΔJ=1 band.
[a] Band(B): 29/2$^-$, ΔJ=1 band.
[b] Band(C): 33/2$^{(+)}$, ΔJ=1 band.
[c] Band(D): 41/2$^{(+)}$ band.
[d] Seq.(E): γ sequence based on 9/2$^+$, g.s.

γ(^{105}In)

E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.
131[@]	3960.1	23/2$^-$	3828.6	21/2$^-$	E1	400	6023.2	31/2$^-$	5623.1	29/2$^-$	
174	3828.6	21/2$^-$	3655.0	19/2$^-$	(M1)	403	5893.1	31/2$^-$	5490.4	29/2$^-$	
215	5490.4	29/2$^-$	5275.8	27/2$^-$		407	3346.1	23/2$^+$	2939.2	21/2$^+$	
263	3346.1	23/2$^+$	3082.9		E2	442	5490.4	29/2$^-$	5048.2	27/2$^-$	
270[‡]	5893.1	31/2$^-$	5623.1	29/2$^-$		449[#]	7557.5	37/2$^-$	7109.6	(35/2$^-$)	
272	2098.8	19/2$^+$	1827.0	17/2$^+$	M1	456	8555.4	37/2$^{(+)}$	8099.3	35/2$^{(+)}$	
286	3631.7	25/2$^+$	3346.1	23/2$^+$	M1	461	6588.2	33/2$^-$	6127.5		
296	8099.3	35/2$^{(+)}$	7803.2	33/2$^{(+)}$		470	7058.5	35/2$^-$	6588.2	33/2$^-$	
308	5356.8		5048.2	27/2$^-$		483	3828.6	21/2$^-$	3346.1	23/2$^+$	(E1)
317	3972.7	21/2$^-$	3655.0	19/2$^-$	(M1)	485	1827.0	17/2$^+$	1342.0	13/2$^+$	E2
320	5275.8	27/2$^-$	4955.8	25/2$^-$		492	6385.2	33/2$^-$	5893.1	31/2$^-$	
339	4311.7	23/2$^-$	3972.7	21/2$^-$	(M1)	499	7557.5	37/2$^-$	7058.5	35/2$^-$	
347	5623.1	29/2$^-$	5275.8	27/2$^-$		505	10155.4	43/2$^{(+)}$	9650.4	41/2$^{(+)}$	
350	1342.0	13/2$^+$	992.0	11/2$^+$	M1	516	9650.4	41/2$^{(+)}$	9134.4	39/2$^{(+)}$	
362[#]	6385.2	33/2$^-$	6023.2	31/2$^-$		522[#]	7109.6	(35/2$^-$)	6588.2	33/2$^-$	
398	4358.1	25/2$^-$	3960.1	23/2$^-$		533[#]	6023.2	31/2$^-$	5490.4	29/2$^-$	

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^{58}Ni(^{50}Cr,3pγ) 1999De50,1998Ka54,1995De51 (continued)

$\gamma(^{105}In)$ (continued)

E_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	Comments
565[#]	6588.2	33/2$^-$	6023.2	31/2$^-$			E_γ: not shown in level scheme of 1999De50.
575	5623.1	29/2$^-$	5048.2	27/2$^-$			
579	9134.4	39/2$^{(+)}$	8555.4	37/2$^{(+)}$			
583	6588.2	33/2$^-$	6004.8				
614[‡]	3960.1	23/2$^-$	3346.1	23/2$^+$			
634	7743.4		7109.6	(35/2$^-$)			
644	4955.8	25/2$^-$	4311.7	23/2$^-$			
647	6004.8		5356.8				
672	10827.4	45/2$^{(+)}$	10155.4	43/2$^{(+)}$			
673[#]	7058.5	35/2$^-$	6385.2	33/2$^-$			
684[#]	7743.4		7058.5	35/2$^-$			
690	5048.2	27/2$^-$	4358.1	25/2$^-$			
696[#]	6588.2	33/2$^-$	5893.1	31/2$^-$			
725	7109.6	(35/2$^-$)	6385.2	33/2$^-$			
736[#]	9301.7	41/2$^-$	8566.0	39/2$^-$			
739[#]	8483.4	39/2$^-$	7743.4				
760	5251.8	29/2$^{(+)}$	4491.3	29/2$^+$			
771	6127.5		5356.8				
818	9301.7	41/2$^-$	8483.4	39/2$^-$			
823	8566.0	39/2$^-$	7743.4				
840	2939.2	21/2$^+$	2098.8	19/2$^+$	M1+E2		
860	4491.3	29/2$^+$	3631.7	25/2$^+$			
888	3828.6	21/2$^-$	2939.2	21/2$^+$			
899	10200.7	43/2$^-$	9301.7	41/2$^-$			
918	5275.8	27/2$^-$	4358.1	25/2$^-$			
927	8483.4	39/2$^-$	7557.5	37/2$^-$			
957	6004.8		5048.2	27/2$^-$			
963	11790	47/2$^{(+)}$	10827.4	45/2$^{(+)}$			
975	6023.2	31/2$^-$	5048.2	27/2$^-$			
978	9460.9	41/2$^{(+)}$	8483.4	39/2$^-$			
984	3082.9		2098.8	19/2$^+$			
992	992.0	11/2$^+$	0.0	9/2$^+$	M1+E2	0.5 *1*	
1000	5490.4	29/2$^-$	4491.3	29/2$^+$			
1012[‡]	4358.1	25/2$^-$	3346.1	23/2$^+$			
1021	3960.1	23/2$^-$	2939.2	21/2$^+$	E1		
1034	3972.7	21/2$^-$	2939.2	21/2$^+$	(E1)		
1088	5048.2	27/2$^-$	3960.1	23/2$^-$			
1098[#]	6588.2	33/2$^-$	5490.4	29/2$^-$			
1098	10558.5	45/2$^{(+)}$	9460.9	41/2$^{(+)}$			
1112	2939.2	21/2$^+$	1827.0	17/2$^+$			
1132	5490.4	29/2$^-$	4358.1	25/2$^-$			
1165[‡]	7058.5	35/2$^-$	5893.1	31/2$^-$			
1167[‡]	9650.4	41/2$^{(+)}$	8483.4	39/2$^-$			
1172[#]	7557.5	37/2$^-$	6385.2	33/2$^-$			
1248	3346.1	23/2$^+$	2098.8	19/2$^+$			
1265	5623.1	29/2$^-$	4358.1	25/2$^-$			
1286	11844.5	49/2$^{(+)}$	10558.5	45/2$^{(+)}$			
1336	6588.2	33/2$^-$	5251.8	29/2$^{(+)}$			
1342	1342.0	13/2$^+$	0.0	9/2$^+$	E2		
1363	8921.0		7557.5	37/2$^-$			
1497[‡]	8555.4	37/2$^{(+)}$	7058.5	35/2$^-$			
1505	13349.5	53/2$^{(+)}$	11844.5	49/2$^{(+)}$			

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^{58}Ni(^{50}Cr,3pγ) 1999De50,1998Ka54,1995De51 (continued)

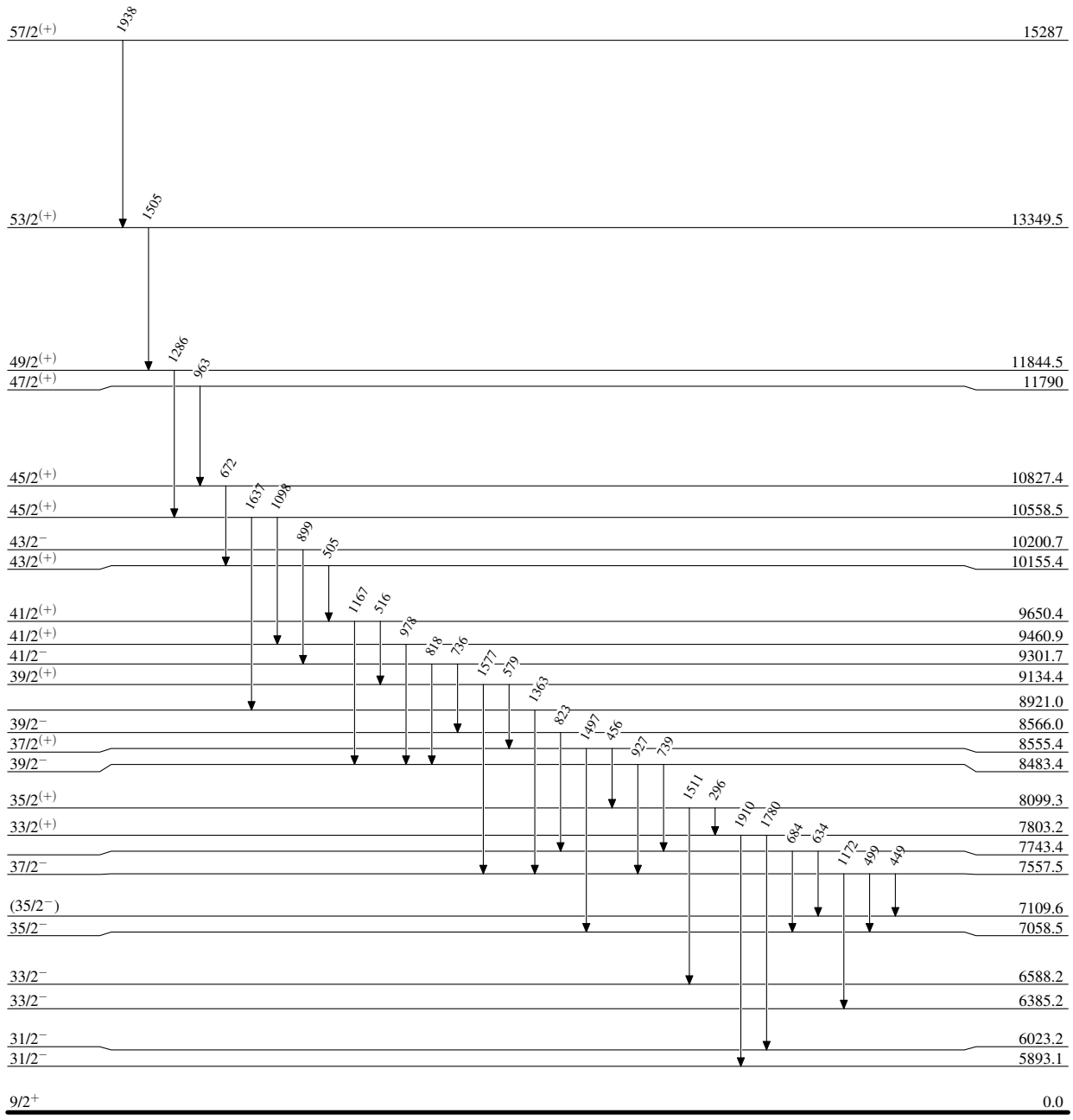
$\gamma(^{105}In)$ (continued)

E_γ †	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.
1511‡	8099.3	$35/2^{(+)}$	6588.2	$33/2^-$	1730@#	3828.6	$21/2^-$	2098.8	$19/2^+$	(E1)
1556	3655.0	$19/2^-$	2098.8	$19/2^+$	1780‡	7803.2	$33/2^{(+)}$	6023.2	$31/2^-$	
1577‡	9134.4	$39/2^{(+)}$	7557.5	$37/2^-$	1828	3655.0	$19/2^-$	1827.0	$17/2^+$	(E1)
1620	5251.8	$29/2^{(+)}$	3631.7	$25/2^+$	1910‡	7803.2	$33/2^{(+)}$	5893.1	$31/2^-$	
1637	10558.5	$45/2^{(+)}$	8921.0		1938	15287	$57/2^{(+)}$	13349.5	$53/2^{(+)}$	
1644	5275.8	$27/2^-$	3631.7	$25/2^+$						

† From 1999De50, unless otherwise stated.
‡ From level-energy difference. Eγ not given in 1999De50.
# From level scheme of 1995De51.
@ Ordering of 131-1730 cascade is adopted from 1999De50 and 1997Ko51. Reversed order was proposed in 1992Is02 and 1995De51.

^{58}Ni(^{50}Cr,3pγ) 1999De50,1998Ka54,1995De51

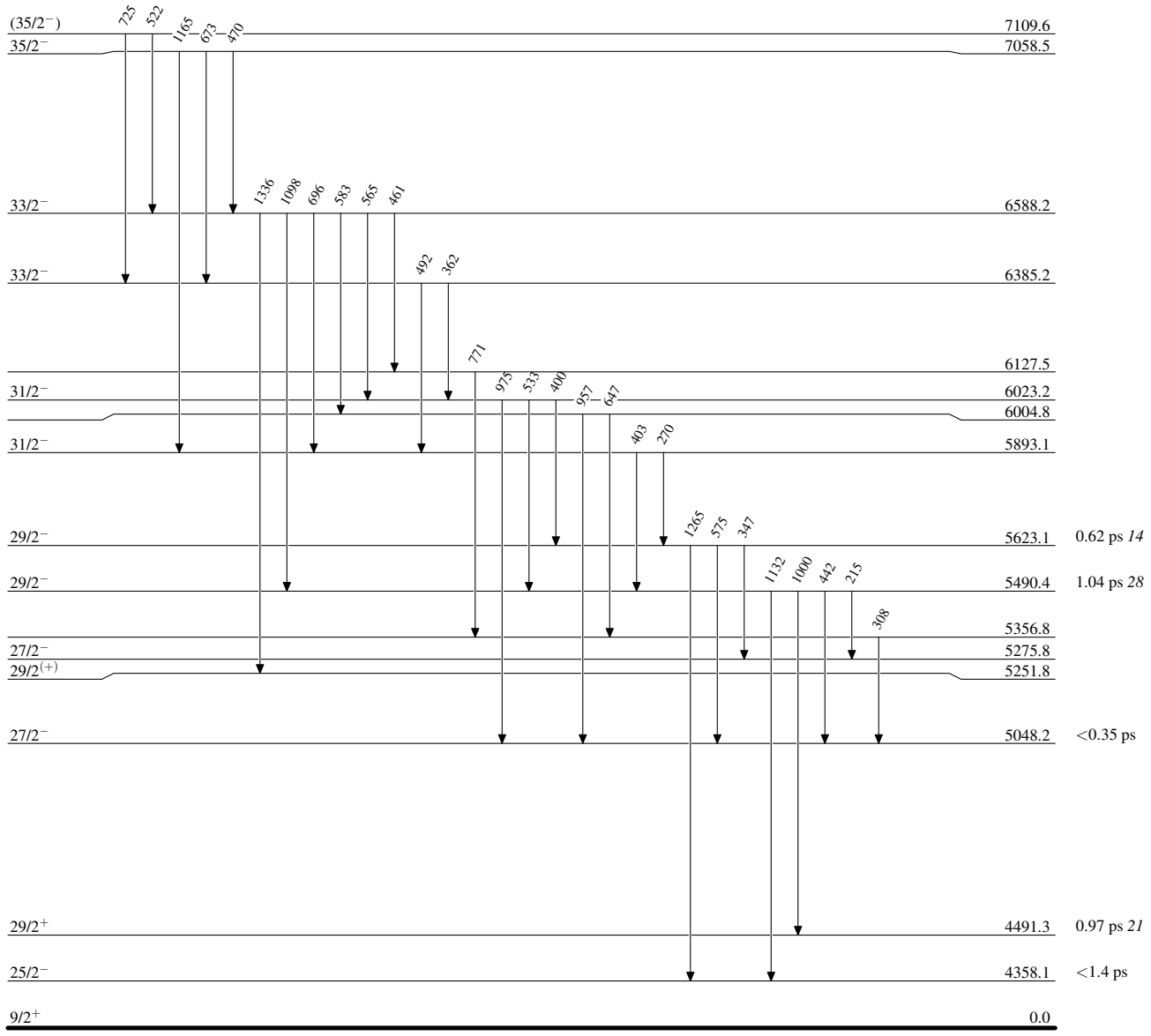
Level Scheme



$^{105}_{49}In_{56}$

^{58}Ni(^{50}Cr,3pγ) 1999De50,1998Ka54,1995De51

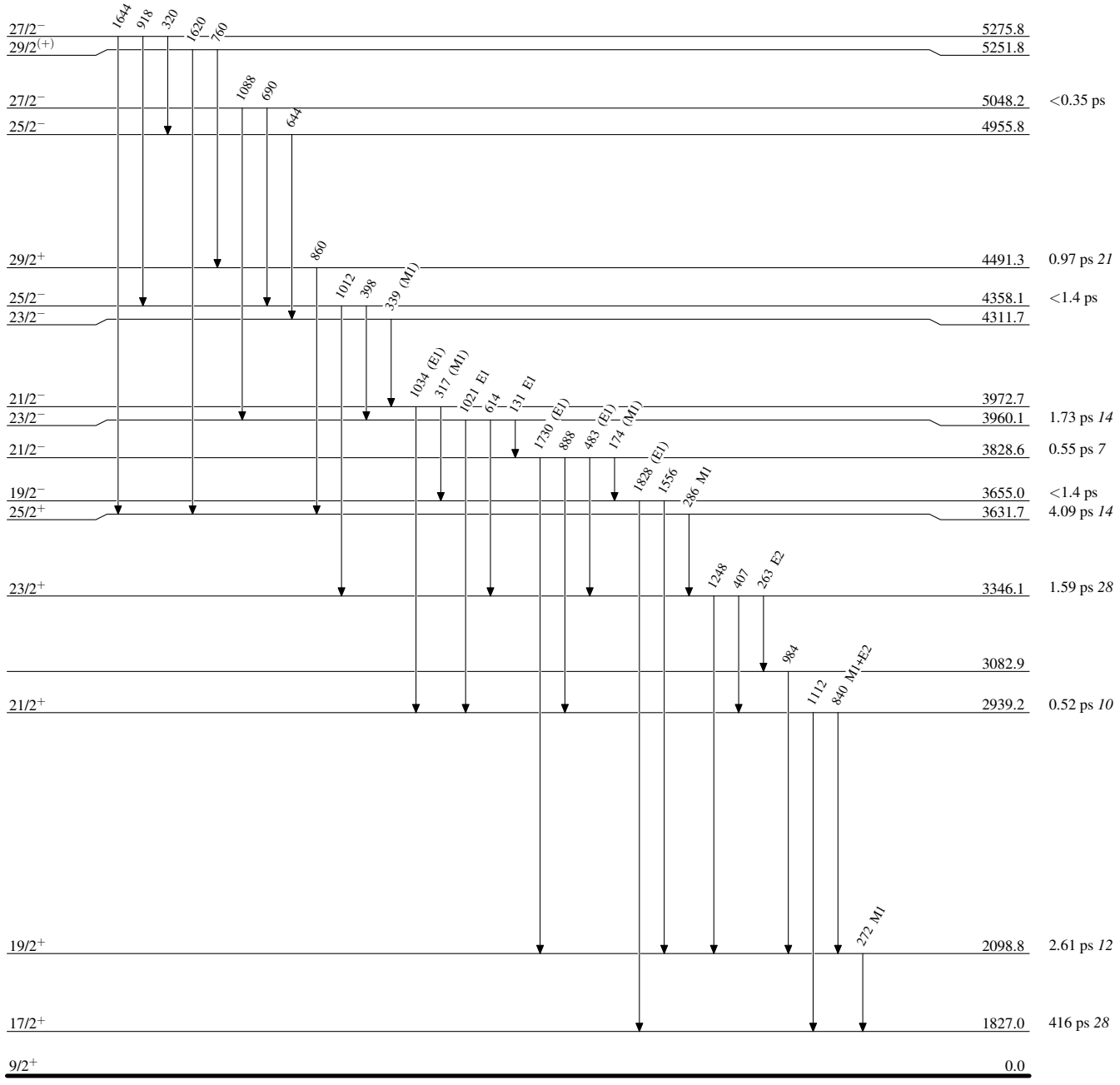
Level Scheme (continued)



$^{105}_{49}In_{56}$

^{58}Ni(^{50}Cr,3pγ) 1999De50,1998Ka54,1995De51

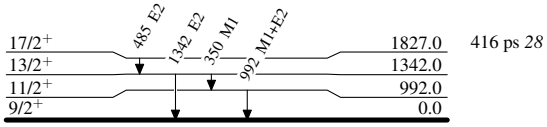
Level Scheme (continued)



$^{105}_{49}In_{56}$

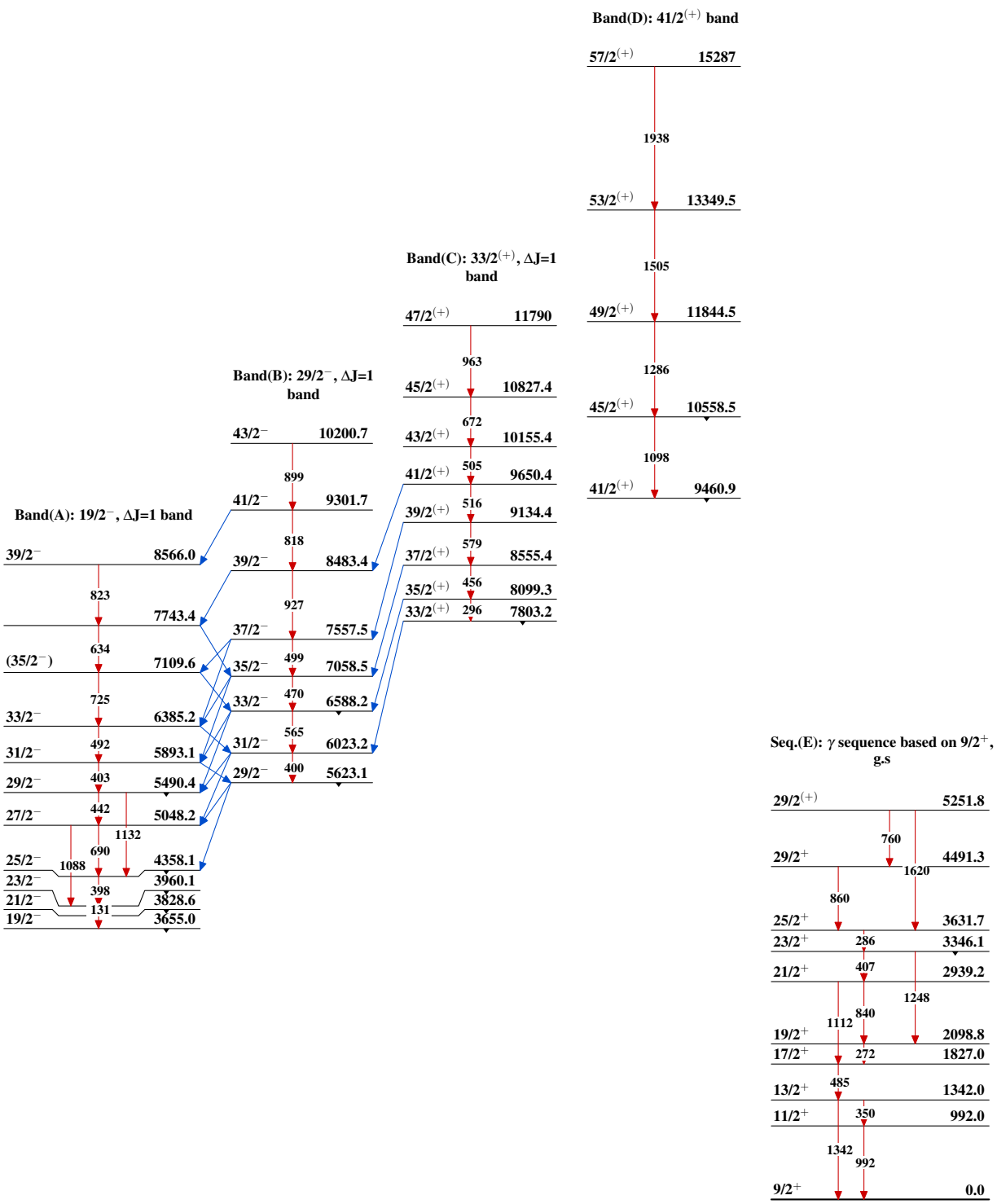
^{58}Ni(^{50}Cr,3pγ) 1999De50,1998Ka54,1995De51

Level Scheme (continued)



$^{105}_{49}In_{56}$

$^{58}Ni(^{50}Cr,3p\gamma)$ 1999De50,1998Ka54,1995De51



$^{105}_{49}In_{56}$