

$^{12}\text{C}(^{77}\text{Se},3n\gamma), ^{60}\text{Ni}(^{30}\text{Si},2p2n\gamma)$ 1995Mo02,1991Ch40

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Alexandru Negret, Balraj Singh		NDS 124, 1 (2015)	30-Nov-2014

1995Mo02: $^{12}\text{C}(^{77}\text{Se},3n\gamma)$ E=260 MeV. Four Compton-suppressed Ge detectors (efficiency 20%) were placed at 56° and 124° and a HE213 neutron detector at 0° . Measured $E\gamma$, $I\gamma$, $n\gamma$ coincidence, $\gamma(\theta)$ in both singles and coin modes, logarithmic slope of $\gamma(\theta)$ at 56° , g factors from transient field technique.

1991Ch40 (also **1993Li26**): $^{60}\text{Ni}(^{30}\text{Si},2p2n\gamma)$ E=135 MeV. Measured $\gamma\gamma$ coincidence, angular correlation using Compton-suppressed Ge detectors. $T_{1/2}$ measured by Doppler shift attenuation method.

 ^{86}Zr Levels

E(level)	J^π [†]	$T_{1/2}$ [‡]	Comments
0.0 [#]	0 ⁺		
752.0 [#] 10	2 ⁺		
1667.0 [#] 15	4 ⁺		
2670.0 [#] 17	6 ⁺		
2706.0 ^a 17	5 ⁻		g=+0.46 21 (1995Mo02, average for 5 ⁻ , 7 ⁻ and 9 ⁻ levels).
3272.0 ^b 19	6 ⁻		
3299.0 [#] 19	8 ⁺		g=-1.05 64 (1995Mo02)
3424.0 ^a 18	7 ⁻		
3533.0 [@] 19	8 ⁺		g=+1.06 22 (1995Mo02, average for 8 ⁺ and 10 ⁺ levels).
4134.0 ^b 19	(8 ⁻)		
4327.0 [#] 20	10 ⁺		g=-0.48 96 (1995Mo02)
4419.0 [@] 19	10 ⁺		
4430.0 ^a 19	9 ⁻		
5067.0 ^b 20	(10 ⁻)		E(level): based on ordering of 933-908 cascade suggested by 2000Do04. Reversed ordering in 1991Ch40 gave E(level)=5042.
5389.0 ^a 22	11 ⁻		
5397.0 [#] 21	12 ⁺		g=-0.35 85 (1995Mo02)
5525.0 [@] 21	12 ⁺		g=+0.55 13 (1995Mo02)
5975.0 ^b 22	(12 ⁻)		
6322.0 [#] 23	14 ⁺		g=+1.86 61 (1995Mo02)
6339.0 ^a 24	13 ⁻		
6753.0 [@] 23	14 ⁺		
7016.1 ^{&} 24	15 ⁺	0.55 ps +14-2	
7397.0 [#] 24	16 ⁺	0.59 ps +14-2	
8249.3 ^{&} 25	17 ⁺	0.15 ps +10-2	
8650.5 [#] 25	18 ⁺	0.23 ps +5-2	
9892 ^{&} 3	19 ⁺	0.07 ps +8-2	
10143 [#] 3	20 ⁺	0.28 ps +8-3	
12062 [#] 3	22 ⁺	0.06 ps +7-3	
14150 [#] 3	24 ⁺	0.06 ps +8-4	

[†] As proposed by 1991Ch40. See Adopted Levels also.

[‡] By DSAM (1991Ch40).

[#] Band(A): γ -sequence based on ground state.

[@] Band(B): Band based on 8⁺. Alignment in $\pi g9/2$ shell is indicated with slightly oblate or spheroid shape (1995Mo02).

Continued on next page (footnotes at end of table)

$^{12}\text{C}(^{77}\text{Se},3n\gamma), ^{60}\text{Ni}(^{30}\text{Si},2p2n\gamma)$ **1995Mo02,1991Ch40 (continued)** ^{86}Zr Levels (continued)

& Band(C): γ -sequence based on 15^+ (1991Ch40).

^a Band(D): γ -sequence based on 5^- (1991Ch40).

^b Band(E): γ -sequence based on 6^- (1991Ch40).

 $\gamma(^{86}\text{Zr})$

E_γ^\dagger	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ^\dagger	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π
234	16	3533.0	8^+	3299.0	8^+	950		6339.0	13^-	5389.0	11^-
251		10143	20^+	9892	19^+	959		5389.0	11^-	4430.0	9^-
381		7397.0	16^+	7016.1	15^+	978		5397.0	12^+	4419.0	10^+
401		8650.5	18^+	8249.3	17^+	1003	55	2670.0	6^+	1667.0	4^+
566		3272.0	6^-	2706.0	5^-	1006	8	4430.0	9^-	3424.0	7^-
^x 612 [#]						1028	14	4327.0	10^+	3299.0	8^+
629	40	3299.0	8^+	2670.0	6^+	1039	29	2706.0	5^-	1667.0	4^+
694		7016.1	15^+	6322.0	14^+	1070	9 [‡]	5397.0	12^+	4327.0	10^+
710		4134.0	(8^-)	3424.0	7^-	1075		7397.0	16^+	6322.0	14^+
718	14	3424.0	7^-	2706.0	5^-	1106	6 [‡]	5525.0	12^+	4419.0	10^+
752	100	752.0	2^+	0.0	0^+	1120		4419.0	10^+	3299.0	8^+
754		3424.0	7^-	2670.0	6^+	1198		5525.0	12^+	4327.0	10^+
852		8249.3	17^+	7397.0	16^+	1228		6753.0	14^+	5525.0	12^+
862		4134.0	(8^-)	3272.0	6^-	1233		8249.3	17^+	7016.1	15^+
863		3533.0	8^+	2670.0	6^+	1242		9892	19^+	8650.5	18^+
886	12	4419.0	10^+	3533.0	8^+	1254		8650.5	18^+	7397.0	16^+
908 [@]		5975.0	(12^-)	5067.0	(10^-)	1493		10143	20^+	8650.5	18^+
915	83	1667.0	4^+	752.0	2^+	1643		9892	19^+	8249.3	17^+
925	4	6322.0	14^+	5397.0	12^+	1918		12062	22^+	10143	20^+
933		5067.0	(10^-)	4134.0	(8^-)	2088		14150	24^+	12062	22^+

[†] From 1995Mo02.

[‡] Estimated I_γ for the contaminated line.

[#] Placement from a 5042, 10^- level is not supported by 2000Do04.

[@] Ordering of 933-908 cascade is taken from 2000Do04, reverse ordering is given in 1991Ch40.

^x γ ray not placed in level scheme.

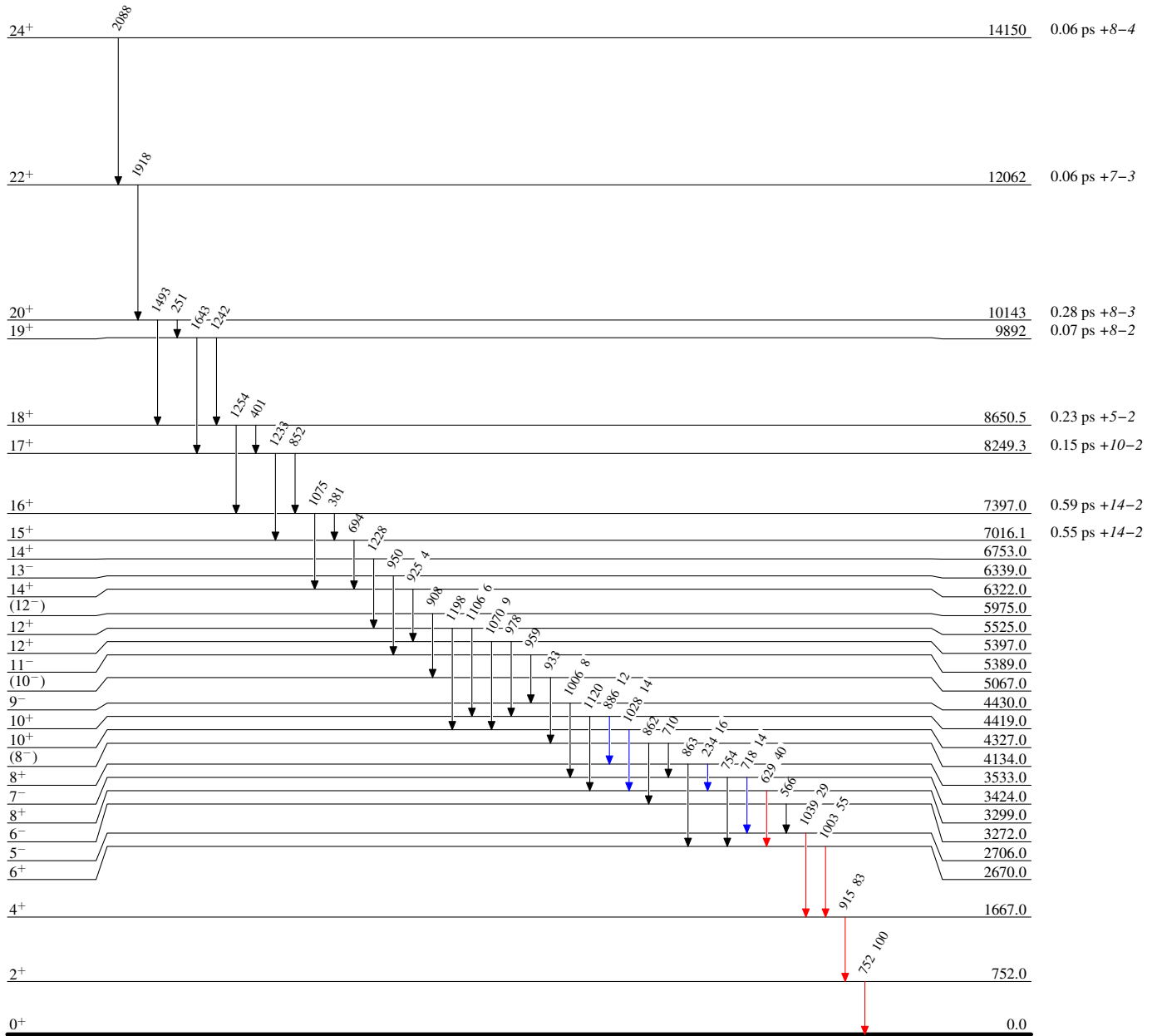
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Level Scheme

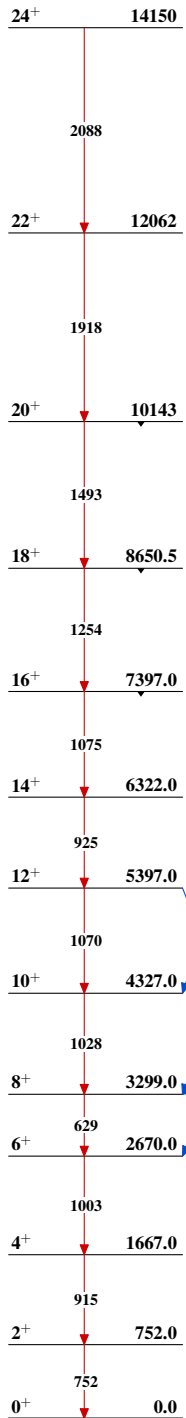
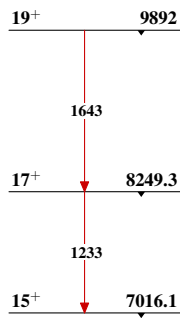
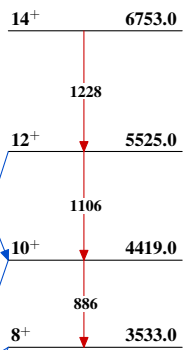
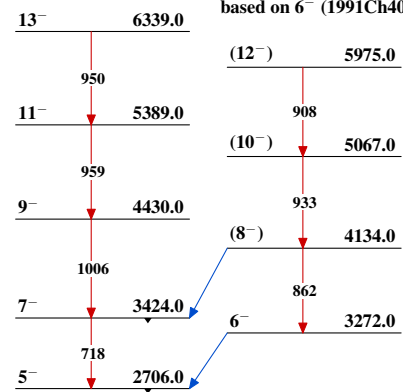
Intensities: Relative I_γ

Legend

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



$^{86}_{40}\text{Zr}_{46}$

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based on ground stateBand(C): γ -sequence
based on 15^+ (1991Ch40)Band(B): Band based on 8^+ Band(D): γ -sequence
based on 5^- (1991Ch40)Band(E): γ -sequence
based on 6^- (1991Ch40)