

$^{116}\text{Cs} \beta^+$  decay (3.85 s) 1980Ma16

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 111, 717 (2010)	1-Dec-2009

Parent:  $^{116}\text{Cs}$ : E=100 SY;  $J^\pi=4^+,5,6$ ;  $T_{1/2}=3.85$  s 13;  $Q(\beta^+)=10979.0$  SY;  $\% \beta^+$  decay=100.0

The level scheme is as proposed by 1980Ma16.

Produced from  $\text{La}(^3\text{He},\text{X})$ , on-line mass separation.

Measured:  $\gamma$  (semi),  $\gamma\gamma$  (semi),  $\beta\gamma$ .

Other measurements: 1976BaXV, 1978Da07.

See  $^{116}\text{Cs}$  Adopted Levels for ( $\beta^+$ )-delayed proton and  $\alpha$  branching.

 $^{116}\text{Xe}$  Levels

E(level)	$J^\pi$	$T_{1/2}$	E(level)	$J^\pi$	E(level)	$J^\pi$	E(level)
0.	$0^+$	56 s 2	1474.2 <sup>#</sup>	( $3^+$ )	2085.5 <sup>#</sup>	( $5^+$ )	2605.6
393.5 <sup>†</sup>	$2^+$		1532.9 <sup>†</sup>	$6^+$	2117.2 <sup>#</sup>	( $6^+$ )	2991.7
917.8 <sup>†</sup>	$4^+$		1557.0 <sup>#</sup>	( $4^+$ )	2210.3 <sup>†</sup>	( $8^+$ )	
1015.8 <sup>‡</sup>	( $2^+$ )		1838.8 <sup>‡</sup>	( $4^+$ )	2444.1 <sup>#</sup>		
1321.5 <sup>#</sup>	( $2^+$ )		1979.3 <sup>#</sup>		2498.4 <sup>‡</sup>	( $6^+$ )	

<sup>†</sup> Band(A): g.s. band.

<sup>‡</sup> Band(B):  $\beta^-$ -band, not seen in  $^{58}\text{Ni}(^64\text{Zn},2p\alpha\gamma)$ .

<sup>#</sup> Band(C):  $\gamma$ -band.

 $\varepsilon, \beta^+$  radiations

E(decay)	E(level)	$I\beta^+$ <sup>†</sup>	$I\varepsilon$ <sup>†</sup>	Log ft	$I(\varepsilon + \beta^+)$ <sup>†</sup>	Comments
(8087 SY)	2991.7	3.8 6	0.118 19	5.97 7	3.9 6	av $E\beta=3086.71$ ; $\varepsilon K=0.02596$ ; $\varepsilon L=0.003426$
(8473 SY)	2605.6	1.7 4	0.044 11	6.35 11	1.7 4	av $E\beta=3273.82$ ; $\varepsilon K=0.022115$ ; $\varepsilon L=0.002918$
(8580 SY)	2498.4	2.4 5	0.062 13	6.21 9	2.5 5	av $E\beta=3325.85$ ; $\varepsilon K=0.021184$ ; $\varepsilon L=0.002795$
(8634 SY)	2444.1	3.5 5	0.087 13	6.07 7	3.6 5	av $E\beta=3352.22$ ; $\varepsilon K=0.020733$ ; $\varepsilon L=0.002735$
(8868 SY)	2210.3	3.5 5	0.080 11	6.13 7	3.6 5	av $E\beta=3465.83$ ; $\varepsilon K=0.018928$
(8961 SY)	2117.2	6.8 7	0.147 15	5.97 5	6.9 7	av $E\beta=3511.10$ ; $\varepsilon K=0.018267$
(8993 SY)	2085.5	4.1 7	0.089 15	6.10 8	4.2 7	av $E\beta=3526.53$ ; $\varepsilon K=0.018049$
(9099 SY)	1979.3	7.0 7	0.144 15	5.90 5	7.1 7	av $E\beta=3578.21$ ; $\varepsilon K=0.017344$
(9240 SY)	1838.8	3.8 8		6.21 10	3.8 8	av $E\beta=3646.63$
(9522 SY)	1557.0	6.0 22		6.08 16	6.0 22	av $E\beta=3784.00$
(9546 SY)	1532.9	17.3 22	0.30 4	5.9 3	17.6 22	av $E\beta=3795.76$ ; $\varepsilon K=0.014750$
(9604 SY)	1474.2	5.7 10		6.12 8	5.7 10	av $E\beta=3824.40$
(10063 SY)	1015.8	5.1 13		6.28 12	5.1 13	av $E\beta=4048.31$
(10161 SY)	917.8	29. 6		5.55 10	29. 6	av $E\beta=4096.24$

<sup>†</sup> Absolute intensity per 100 decays.

 $\gamma(^{116}\text{Xe})$ 

$I\gamma$  normalization: from  $\Sigma (I(\gamma+ce)$  to g.s.+393.5, excluding  $393.5\gamma=100$ .

Continued on next page (footnotes at end of table)

$^{116}\text{Cs}\beta^+$  decay (3.85 s) **1980Ma16** (continued) $\gamma(^{116}\text{Xe})$  (continued)

$E_\gamma$	$I_\gamma^\ddagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	$E_\gamma$	$I_\gamma^\ddagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$
<sup>x</sup> 269.6 4	14 3					<sup>x</sup> 823.0 8	4 2				
<sup>x</sup> 322.2 4	40 5					874.9 6	16 3	2991.7		2117.2	(6 <sup>+</sup> )
<sup>x</sup> 345.9 4	13 3					<sup>x</sup> 903.7 8	35 7				
<sup>x</sup> 360.2 4	10 3					905.9 8	25 5	2991.7		2085.5	(5 <sup>+</sup> )
393.5 2	$1.0 \times 10^3 \dagger$ 1	393.5	2 <sup>+</sup>	0.	0 <sup>+</sup>	911.2 4	38 5	2444.1		1532.9	6 <sup>+</sup>
458.3 3	30 4	1474.2	(3 <sup>+</sup> )	1015.8	(2 <sup>+</sup> )	921.4 6	9 3	1838.8	(4 <sup>+</sup> )	917.8	4 <sup>+</sup>
<sup>x</sup> 465.4 3	12 3					927.9 8	4 2	1321.5	(2 <sup>+</sup> )	393.5	2 <sup>+</sup>
517.3 4	25 5	1838.8	(4 <sup>+</sup> )	1321.5	(2 <sup>+</sup> )	965.6 6	16 4	2498.4	(6 <sup>+</sup> )	1532.9	6 <sup>+</sup>
524.3 2	800 50	917.8	4 <sup>+</sup>	393.5	2 <sup>+</sup>	<sup>x</sup> 969.4 6	6 3				
<sup>x</sup> 528.5 4	20 5					<sup>x</sup> 1008.5 6	6 3				
541.2 3	61 6	1557.0	(4 <sup>+</sup> )	1015.8	(2 <sup>+</sup> )	1015.8 4	35 4	1015.8	(2 <sup>+</sup> )	0.	0 <sup>+</sup>
552.9 6	9 2	2085.5	(5 <sup>+</sup> )	1532.9	6 <sup>+</sup>	<sup>x</sup> 1033.9 8	20 5				
556.6 4	15 2	1474.2	(3 <sup>+</sup> )	917.8	4 <sup>+</sup>	<sup>x</sup> 1035.9 8	10 3				
560.2 3	73 6	2117.2	(6 <sup>+</sup> )	1557.0	(4 <sup>+</sup> )	<sup>x</sup> 1044.9 6	11 3				
584.2 4	16 3	2117.2	(6 <sup>+</sup> )	1532.9	6 <sup>+</sup>	1061.5 4	75 7	1979.3		917.8	4 <sup>+</sup>
611.3 3	60 5	2085.5	(5 <sup>+</sup> )	1474.2	(3 <sup>+</sup> )	1072.7 6	18 4	2605.6		1532.9	6 <sup>+</sup>
615.1 3	320 20	1532.9	6 <sup>+</sup>	917.8	4 <sup>+</sup>	1080.7 4	75 7	1474.2	(3 <sup>+</sup> )	393.5	2 <sup>+</sup>
622.3 3	110 10	1015.8	(2 <sup>+</sup> )	393.5	2 <sup>+</sup>	<sup>x</sup> 1164.3 8	16 4				
639.3 3	75 7	1557.0	(4 <sup>+</sup> )	917.8	4 <sup>+</sup>	<sup>x</sup> 1168.0 8	30 5				
<sup>x</sup> 656.3 6	7 2					<sup>x</sup> 1247.0 8	20 4				
659.5 6	10 3	2498.4	(6 <sup>+</sup> )	1838.8	(4 <sup>+</sup> )	1321.5 8	20 4	1321.5	(2 <sup>+</sup> )	0.	0 <sup>+</sup>
677.4 6	38 5	2210.3	(8 <sup>+</sup> )	1532.9	6 <sup>+</sup>	<sup>x</sup> 1441.0 8	9 3				
<sup>x</sup> 684.1 6	10 2					1446.0 8	16 4	1838.8	(4 <sup>+</sup> )	393.5	2 <sup>+</sup>
<sup>x</sup> 706.6 6	10 2										

<sup>†</sup>  $I_\gamma=1000$  52 from intensity balance at 393.5 level.

<sup>‡</sup> For absolute intensity per 100 decays, multiply by 0.094 5.

<sup>x</sup>  $\gamma$  ray not placed in level scheme.

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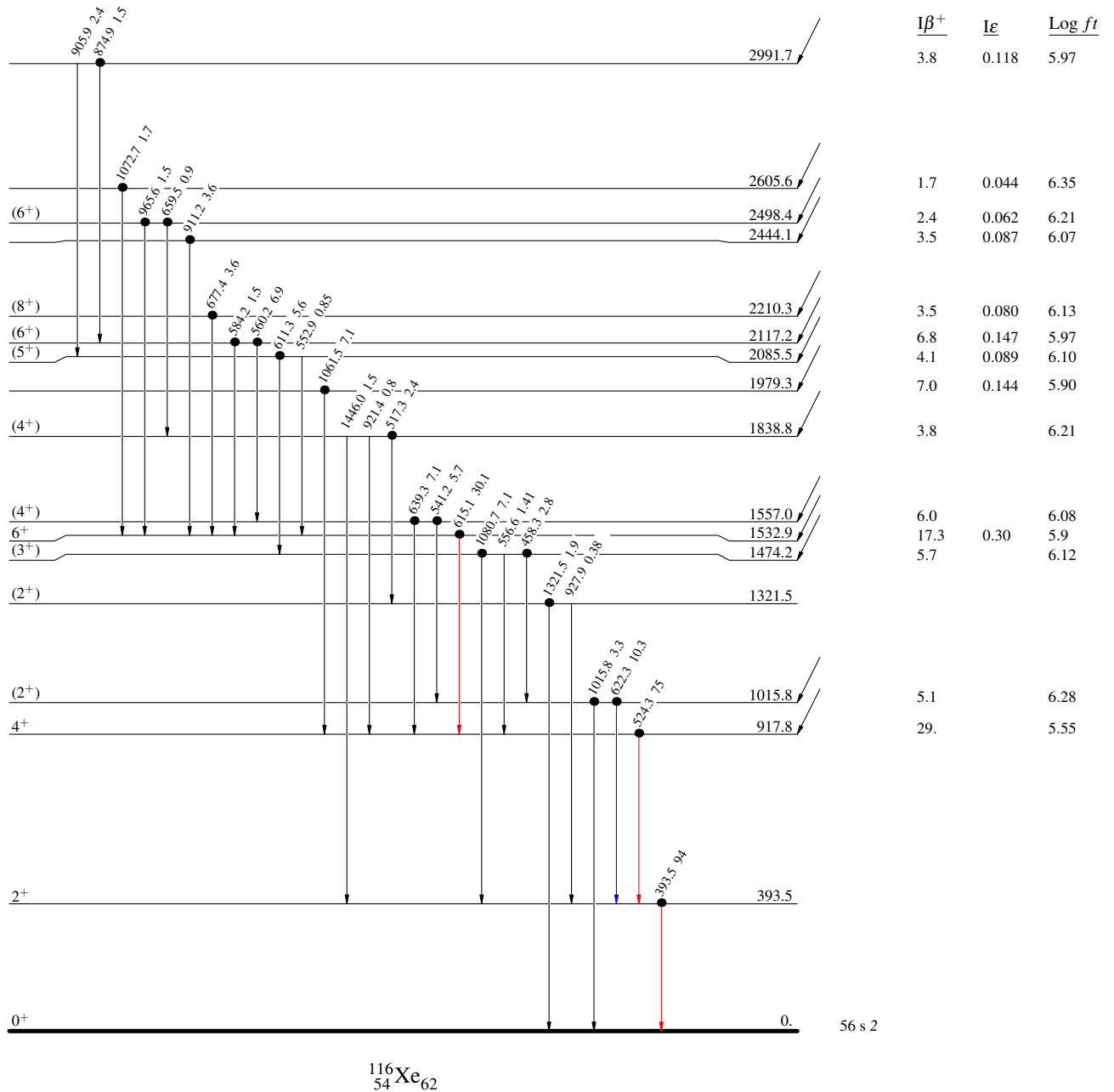
Decay Scheme

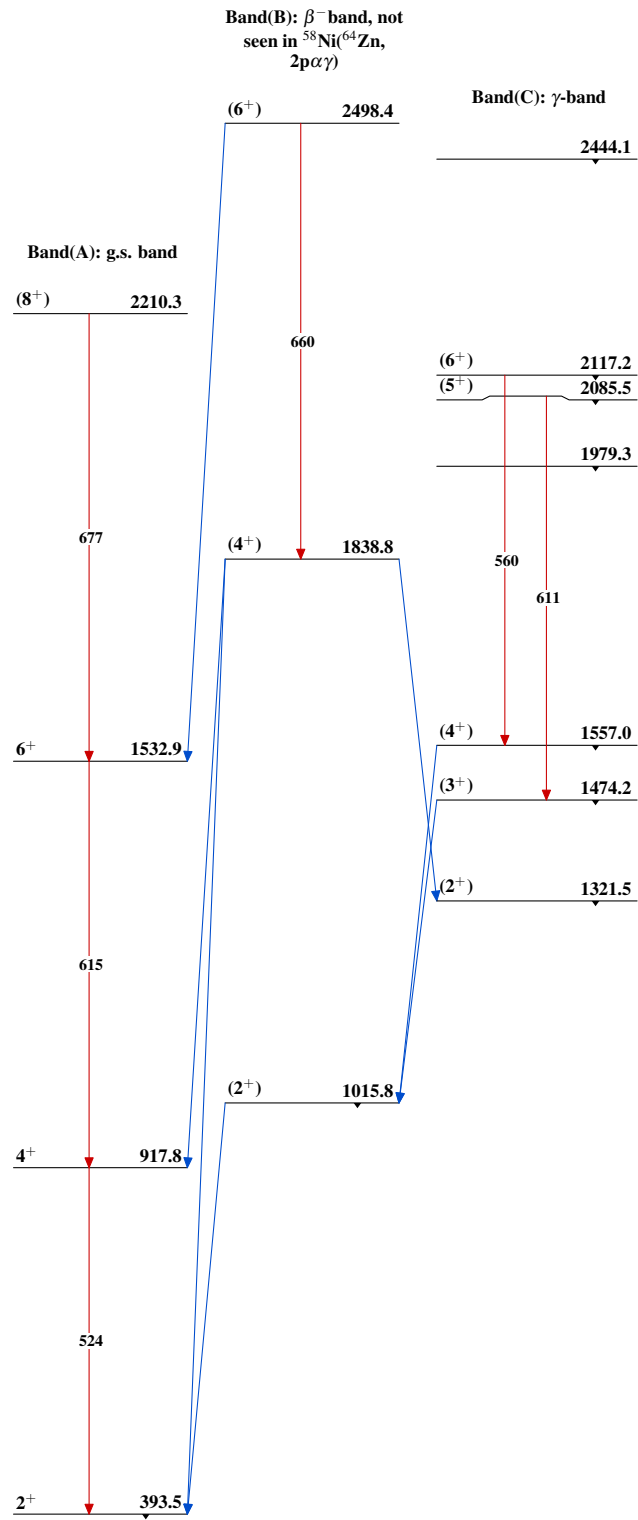
Legend

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

Intensities:  $I_\gamma$  per 100 parent decays

$^{116}_{55}\text{Cs}_{61}$   $4^+_{5.6}$   $100$   $3.85 \text{ s } 13$   
 $Q_e = 10979.0 \text{ SY}$   
 $\% \epsilon + \% \beta^+ = 100$



$^{116}\text{Cs}$   $\beta^+$  decay (3.85 s) 1980Ma16 $^{116}_{54}\text{Xe}_{62}$