

⁵⁹Co(¹⁹F,αpnγ), ⁶⁵Cu(¹²C,αnγ) **1994Do11**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni		NDS 111,1 (2010)	1-May-2009

E(¹⁹F)=55 MeV, E(¹²C)=50 MeV. Measured γγ coin, DCO ratios, lifetimes.

⁷²As Levels

E(level)	J ^π	E(level)	J ^π	T _{1/2} [†]	E(level)	J ^π	T _{1/2} [†]
0.	2 ⁻	981.08& 25	8 ⁽⁺⁾		2516.8 ^a 4	10 ⁽⁻⁾	
45.97 11	1 ⁺	1179.0 4			2925.0 5	(11 ⁻)	
213.59 8	3 ⁺	1346.3 ^a 3	(7 ⁻)		3043.8 ^a 4	(11 ⁻)	
309.69 8	4 ⁻	1401.8& 3	9 ⁽⁺⁾		3151.2& 4	(12 ⁺)	0.22 [‡] ps 7
362.79 22	5 ⁽⁻⁾	1665.5 ^a 3	8 ⁽⁻⁾		3445.6 ^a 5	12 ⁽⁻⁾	
562.82 24	7 ⁽⁻⁾	1875.0& 3	10 ⁽⁺⁾	0.76 ps 14	3504.7& 4	13 ⁽⁺⁾	0.17 ps 5
662.7 3		2133.7 ^a 4	(9 ⁻)		4777.7& 11	(15 ⁺)	0.22 [‡] ps 7
828.2 3	(6 ⁺ ,7 ⁻)	2307.6& 4	11 ⁽⁺⁾	0.27 [@] ps 16	6087.9& 12		0.29 [#] ps 10
834.0 ^a 3	6 ⁽⁻⁾	2326.4 5	10 ⁽⁻⁾				

[†] By DSAM.

[‡] T_{1/2} of the doublet: 1273γ+1276γ.

[#] Effective T_{1/2}.

[@] From T_{1/2}(432γ)=0.42 ps 14, and T_{1/2}(906γ)=0.73 ps 35.

& Band(A): proposed a π=+ band.

^a Band(B): No connections to π=+ band observed, π=- proposed.

γ(⁷²As)

E _γ	I _γ	E _i (level)	J _i ^π	E _f	J _f ^π	R(DCO) [‡]
45.9 2		45.97	1 ⁺	0.	2 ⁻	
53.1 2		362.79	5 ⁽⁻⁾	309.69	4 ⁻	
96.1 1		309.69	4 ⁻	213.59	3 ⁺	
152.7 2	2.6 6	981.08	8 ⁽⁺⁾	828.2	(6 ⁺ ,7 ⁻)	1.4 4
167.6 1		213.59	3 ⁺	45.97	1 ⁺	
200.0 1	100 5	562.82	7 ⁽⁻⁾	362.79	5 ⁽⁻⁾	
213.6 1		213.59	3 ⁺	0.	2 ⁻	
265.2 2	2.8 5	828.2	(6 ⁺ ,7 ⁻)	562.82	7 ⁽⁻⁾	
271.1 2	4.4 5	834.0	6 ⁽⁻⁾	562.82	7 ⁽⁻⁾	0.74 10
299.9 2	16 2	662.7		362.79	5 ⁽⁻⁾	
309.7 1		309.69	4 ⁻	0.	2 ⁻	
319.3 2	1.9 5	1665.5	8 ⁽⁻⁾	1346.3	(7 ⁻)	0.51 9
350.8 2	6.4 8	1179.0		828.2	(6 ⁺ ,7 ⁻)	
353.7 3	0.9 4	3504.7	13 ⁽⁺⁾	3151.2	(12 ⁺)	
383.0 3	2.0 5	2516.8	10 ⁽⁻⁾	2133.7	(9 ⁻)	0.40 12
418.3 1	33 3	981.08	8 ⁽⁺⁾	562.82	7 ⁽⁻⁾	0.67 9
420.7 2	12 2	1401.8	9 ⁽⁺⁾	981.08	8 ⁽⁺⁾	0.50 6
432.6 2	7.3 8	2307.6	11 ⁽⁺⁾	1875.0	10 ⁽⁺⁾	0.55 6
465.5 2	16 2	828.2	(6 ⁺ ,7 ⁻)	362.79	5 ⁽⁻⁾	
468.2 3	3.2 7	2133.7	(9 ⁻)	1665.5	8 ⁽⁻⁾	0.63 11
471.2 2	8.8 9	834.0	6 ⁽⁻⁾	362.79	5 ⁽⁻⁾	0.57 8
473.6 4	1.0 6	1875.0	10 ⁽⁺⁾	1401.8	9 ⁽⁺⁾	0.47 14
512.0& 3	4 2	1346.3	(7 ⁻)	834.0	6 ⁽⁻⁾	

Continued on next page (footnotes at end of table)

$^{59}\text{Co}(^{19}\text{F},\alpha\text{pn}\gamma), ^{65}\text{Cu}(^{12}\text{C},\alpha\text{n}\gamma)$ 1994Do11 (continued) $\gamma(^{72}\text{As})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.†	R(DCO)‡
526.9 3	1.9 5	3043.8	(11 ⁻)	2516.8	10 ⁽⁻⁾		
598.6 2	3.2 7	2925.0	(11 ⁻)	2326.4	10 ⁽⁻⁾		0.43 9
^x 756.7							
783.5 2	2.1 4	1346.3	(7 ⁻)	562.82	7 ⁽⁻⁾		
787.4 2	4.2 6	2133.7	(9 ⁻)	1346.3	(7 ⁻)		
831.5 2	8.4 9	1665.5	8 ⁽⁻⁾	834.0	6 ⁽⁻⁾		1.13 13
843.7 3	1.1 5	3151.2	(12 ⁺)	2307.6	11 ⁽⁺⁾		0.57 12
851.3 2	5.2 7	2516.8	10 ⁽⁻⁾	1665.5	8 ⁽⁻⁾		0.84 15
893.9 2	12 2	1875.0	10 ⁽⁺⁾	981.08	8 ⁽⁺⁾		1.0 [#]
905.7 2	3.8 7	2307.6	11 ⁽⁺⁾	1401.8	9 ⁽⁺⁾	E2	0.82 11
910.2 3	4.3 7	3043.8	(11 ⁻)	2133.7	(9 ⁻)		
924.6 3	4.2 7	2326.4	10 ⁽⁻⁾	1401.8	9 ⁽⁺⁾		0.31 8
928.8 3	3.6 7	3445.6	12 ⁽⁻⁾	2516.8	10 ⁽⁻⁾		0.98 15
^x 1065.2							
1197.0 3	3.7 7	3504.7	13 ⁽⁺⁾	2307.6	11 ⁽⁺⁾	E2	0.97 10
1273 1	3 1	4777.7	(15 ⁺)	3504.7	13 ⁽⁺⁾	E2	0.89 [@] 12
1276.3 4	4 1	3151.2	(12 ⁺)	1875.0	10 ⁽⁺⁾	E2	0.89 [@] 12
1310.2 4	1.4 5	6087.9		4777.7	(15 ⁺)		

† From DCO ratio and RUL.

‡ Average DCO ratios deduced from $^{59}\text{Co}(^{19}\text{F},\alpha\text{pn}\gamma)$ reaction. They are used in J^π assignments in the Adopted Levels.

Assumed to be a stretched E2 transition.

@ Effective composite value for unresolved lines.

& Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

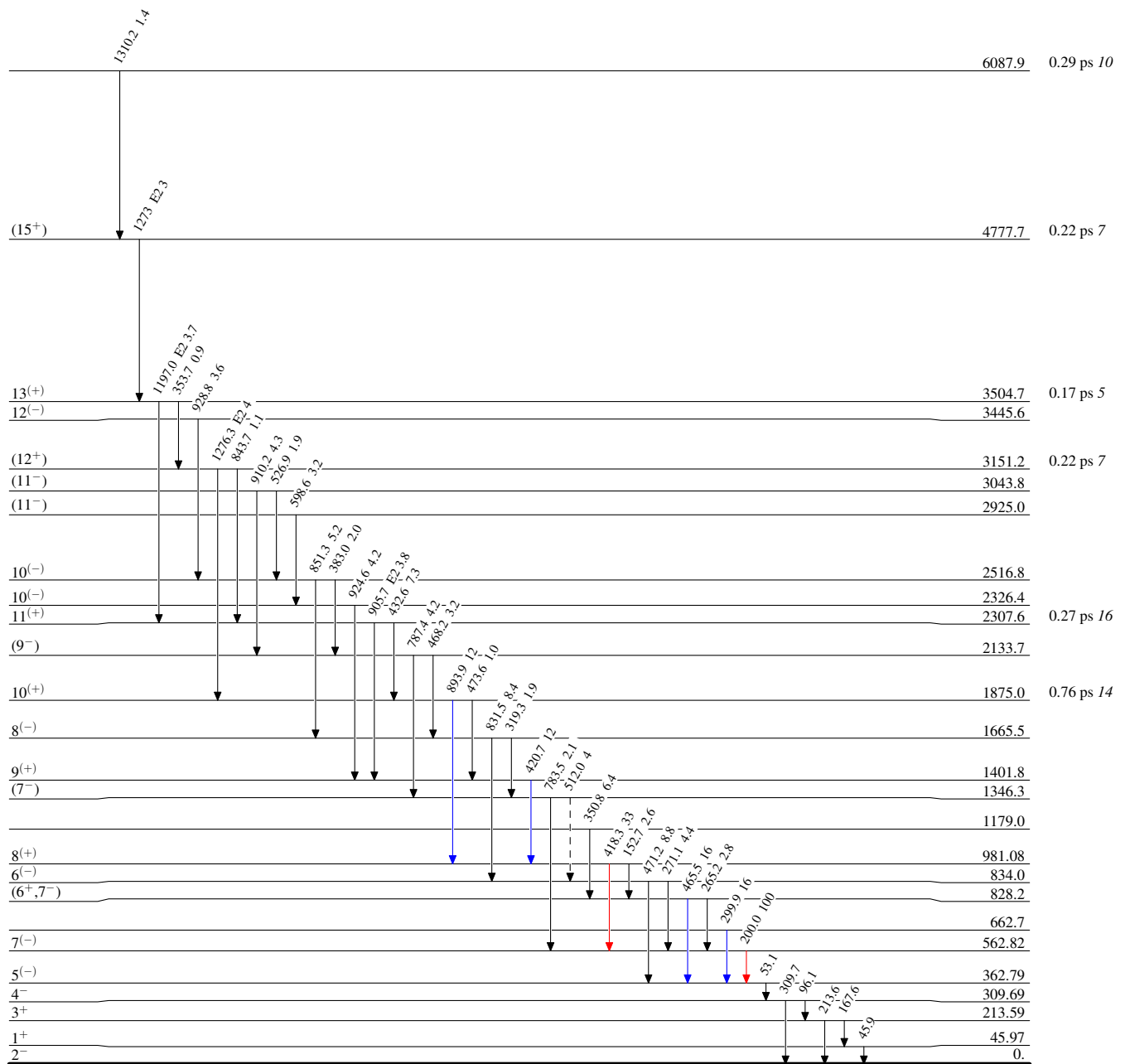
$^{59}\text{Co}(^{19}\text{F},\alpha\text{pn}\gamma), ^{65}\text{Cu}(^{12}\text{C},\alpha\text{n}\gamma)$ 1994Do11

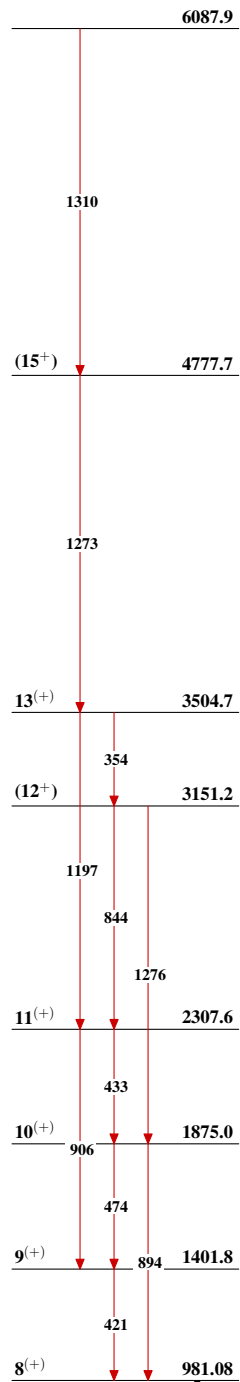
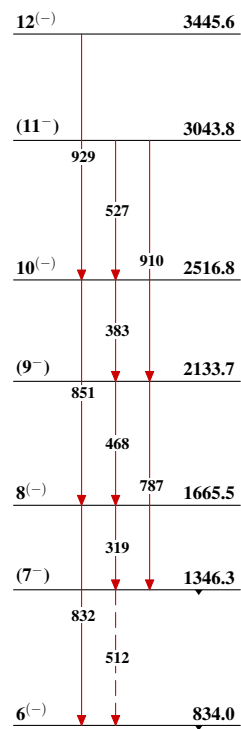
Legend

Level Scheme

Intensities: Relative I_γ

- ▶ $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- ▶ $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- ▶ $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - -▶ γ Decay (Uncertain)

 $^{72}_{33}\text{As}_{39}$

$^{59}\text{Co}(^{19}\text{F},\alpha\text{pn}\gamma), ^{65}\text{Cu}(^{12}\text{C},\alpha\text{n}\gamma)$ 1994Do11Band(A): Proposed a $\pi=+$ bandBand(B): No connections to $\pi=+$ band observed, $\pi=-$ proposed $^{72}_{33}\text{As}_{39}$