

⁷⁰Ge(¹²C,2npγ),⁶³Cu(¹⁹F,2npγ) 1982Pa20

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 135, 193 (2016)	31-May-2016

1982Pa20 (also 1981Pa02,1986LiZQ): ⁶³Cu(¹⁹F,2npγ) E=46-62 MeV and ⁷⁰Ge(¹²C,2npγ) E=33-48 MeV. Measured γ, γγ, γ(θ), T_{1/2} by γ(t), RDDS and DSA methods.

⁷⁹Rb Levels

E(level) [†]	J ^π [‡]	T _{1/2} [#]	Comments
0.0&	5/2 ⁺		
39.40 7	(3/2 ⁻)		
96.78& 9	9/2 ⁺	18 ns 4	T _{1/2} : from γ(t).
146.93@a 9	(7/2 ⁺)		
174.36 ^b 18	(5/2 ⁻)		
597.58& 14	13/2 ⁺	8.2 ps 4	
643.95@a 10	(11/2 ⁺)	5.7 ps 3	
680.06 ^b 21	(9/2 ⁻)	6.4 ps 17	
1349.3 ^b 3	(13/2 ⁻)	1.3 ps 3	
1353.18& 17	(17/2 ⁺)	0.83 ps 14	
1454.16@a 23	(15/2 ⁺)	0.90 ps 14	
2164.7 ^b 3	(17/2 ⁻)	0.52 ps 15	
2315.29& 20	(21/2 ⁺)	0.34 ps 7	
2509.7@a 6	(19/2 ⁺)		
3110.7 ^b 4	(21/2 ⁻)	0.24 ps 7	
3457.1& 3	(25/2 ⁺)	0.17 ps 4	
4202.7 ^b 11	(25/2 ⁻)	0.14 ps 7	
4773.1& 11	(29/2 ⁺)	<0.21 ps	
6270.1& 23	(33/2 ⁺)		

[†] From least-squares fit to E_γ data.

[‡] From Adopted Levels.

[#] From RDDS and DSAM (1982Pa20).

@ Energy is ≈50 keV higher than proposed by 1982Pa20 due to the placement of the cascade above 96.7 level rather above 46.7 level as proposed by 1982Pa20.

& Band(A): 3/2[431] band, α=+1/2.

a Band(a): 3/2[431] band, α=-1/2.

b Band(B): K^π=3/2⁻ band, α=+1/2.

γ(⁷⁹Rb)

E _γ	I _γ	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [‡]	α [#]	Comments
39.41 7		39.40	(3/2 ⁻)	0.0	5/2 ⁺			E _γ : from Adopted Gammas.
96.7 1		96.78	9/2 ⁺	0.0	5/2 ⁺			
135.2 4	44 2	174.36	(5/2 ⁻)	39.40	(3/2 ⁻)			
147.0 1		146.93	(7/2 ⁺)	0.0	5/2 ⁺			E _γ : from Adopted Gammas.
174.3 2	7 2	174.36	(5/2 ⁻)	0.0	5/2 ⁺			
497.1 [†] 1	16 2	643.95	(11/2 ⁺)	146.93	(7/2 ⁺)			A ₂ =+0.17 4; A ₄ =+0.02 4
500.8 1	100 1	597.58	13/2 ⁺	96.78	9/2 ⁺	(E2)	0.00341	A ₂ =+0.223 6; A ₄ =-0.007 8

Continued on next page (footnotes at end of table)

$^{70}\text{Ge}(^{12}\text{C},2\text{np}\gamma), ^{63}\text{Cu}(^{19}\text{F},2\text{np}\gamma)$ 1982Pa20 (continued) $\gamma(^{79}\text{Rb})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	$\alpha^\#$	Comments
								$\alpha(\text{K})=0.00301\ 5$; $\alpha(\text{L})=0.000338\ 5$; $\alpha(\text{M})=5.56\times 10^{-5}\ 8$ $\alpha(\text{N})=6.23\times 10^{-6}\ 9$; $\alpha(\text{O})=2.57\times 10^{-7}\ 4$
505.7 1	51 1	680.06	(9/2 ⁻)	174.36 (5/2 ⁻)				
547.1 [†] 1	16 2	643.95	(11/2 ⁺)	96.78 9/2 ⁺				
669.2 2	35 1	1349.3	(13/2 ⁻)	680.06 (9/2 ⁻)	E2	1.48×10^{-3}	$A_2=+0.267\ 16$; $A_4=-0.039\ 19$ $\alpha(\text{K})=0.001308\ 19$; $\alpha(\text{L})=0.0001439\ 21$; $\alpha(\text{M})=2.37\times 10^{-5}\ 4$ $\alpha(\text{N})=2.67\times 10^{-6}\ 4$; $\alpha(\text{O})=1.126\times 10^{-7}\ 16$	
755.6 1	76 1	1353.18	(17/2 ⁺)	597.58 13/2 ⁺				$A_2=+0.181\ 9$; $A_4=-0.013\ 11$
810.2 [†] 2	17 1	1454.16	(15/2 ⁺)	643.95 (11/2 ⁺)				$A_2=+0.23\ 4$; $A_4=0.00\ 5$
815.4 1	21 1	2164.7	(17/2 ⁻)	1349.3 (13/2 ⁻)	E2			$A_2=+0.27\ 3$; $A_4=-0.07\ 4$
946.0 2	11 1	3110.7	(21/2 ⁻)	2164.7 (17/2 ⁻)				
962.1 1	57 2	2315.29	(21/2 ⁺)	1353.18 (17/2 ⁺)				
1055.5 [†] 5	6 1	2509.7	(19/2 ⁺)	1454.16 (15/2 ⁺)				$A_2=+0.29\ 11$; $A_4=-0.04\ 14$
1092 1	2 1	4202.7	(25/2 ⁻)	3110.7 (21/2 ⁻)				
1141.8 2	20 2	3457.1	(25/2 ⁺)	2315.29 (21/2 ⁺)				
1316 1	3 1	4773.1	(29/2 ⁺)	3457.1 (25/2 ⁺)				
1497 2		6270.1	(33/2 ⁺)	4773.1 (29/2 ⁺)				

[†] 1055.5 γ -810.2 γ -547.1 γ cascade is placed above the 96.7 isomer as proposed by 1990Sk02, 1993Ho15 and 1996Sm07.

[‡] From $\gamma(\theta)$ and RUL.

[#] From BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" appr.

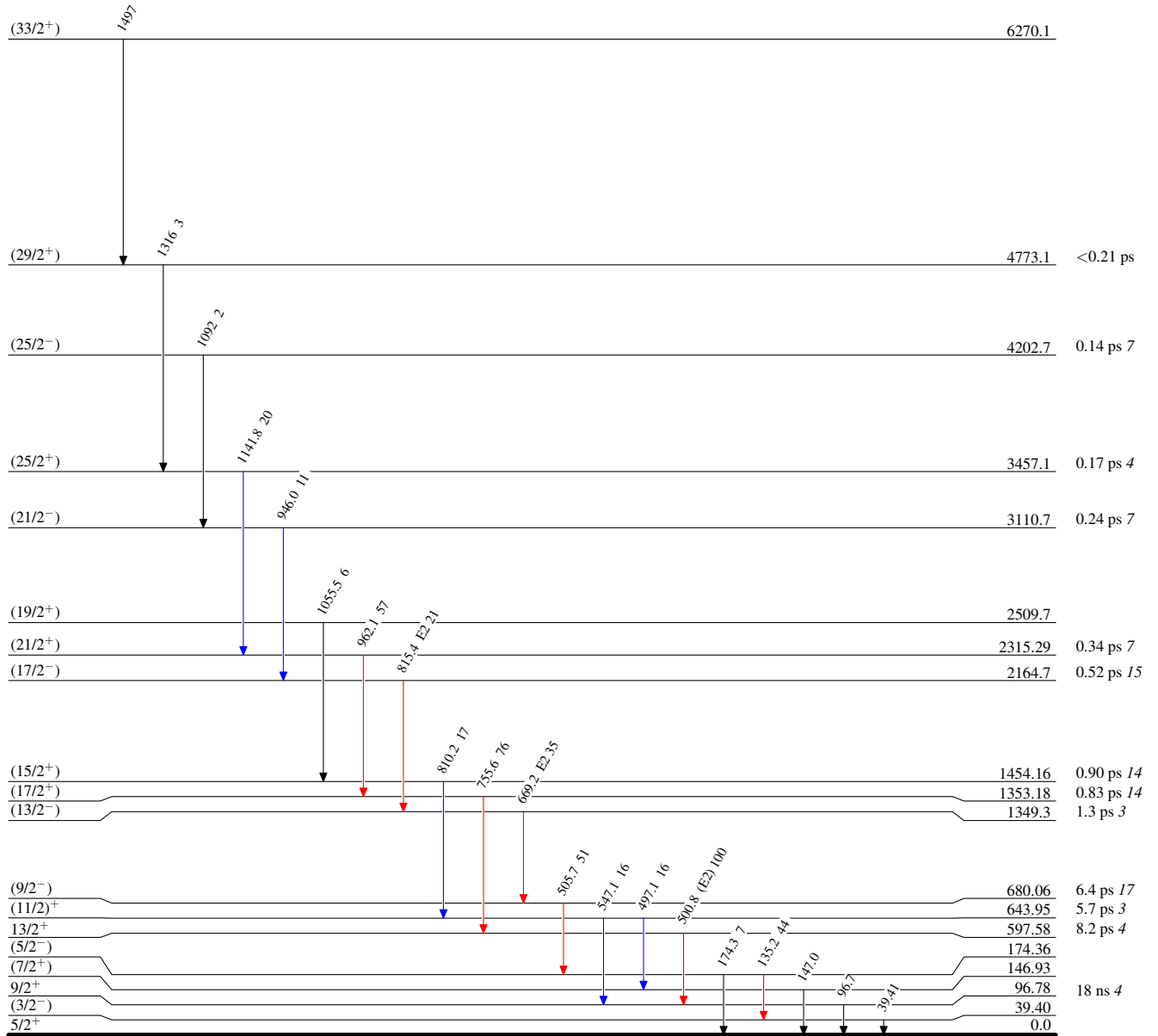
$^{70}\text{Ge}(^{12}\text{C},2\text{np}\gamma), ^{63}\text{Cu}(^{19}\text{F},2\text{np}\gamma)$ 1982Pa20

Level Scheme

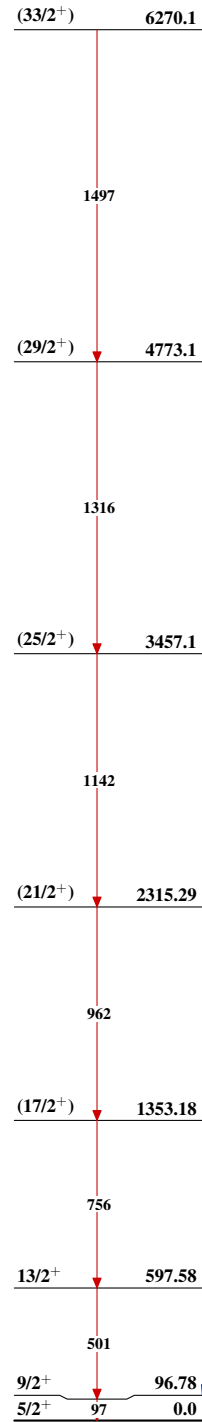
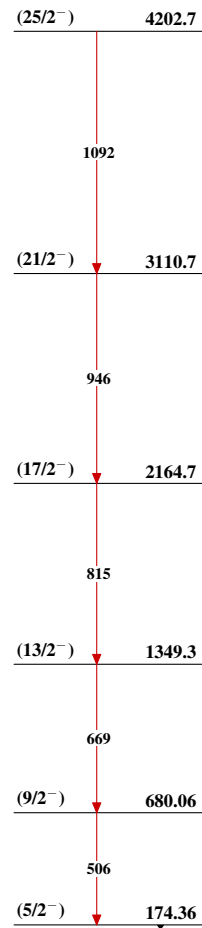
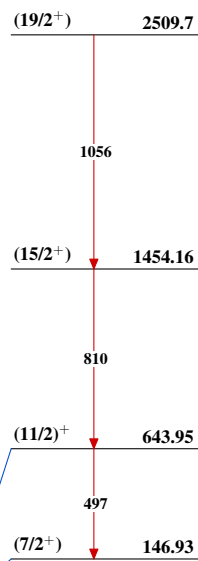
Intensities: Relative I_γ

Legend

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



$^{79}\text{Rb}_{42}$

$^{70}\text{Ge}(^{12}\text{C},2\text{np}\gamma), ^{63}\text{Cu}(^{19}\text{F},2\text{np}\gamma)$ 1982Pa20Band(A): $3/2[431]$ band,
 $\alpha=+1/2$ Band(B): $K^\pi=3/2^-$ band,
 $\alpha=+1/2$ Band(a): $3/2[431]$ band,
 $\alpha=-1/2$  $^{79}_{37}\text{Rb}_{42}$