^{64}Zn(^{40}Ca,α3pnγ) 1990Pi01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni	NDS 109, 2501 (2008)	1-Apr-2008

E(^{40}Ca)=167 MeV.
Measured: γ, $\gamma\gamma$, $\gamma(\theta)$, γ-n.

^{96}Rh Levels

E(level)	J$^{\pi}$[†]	Comments
0.0	6^+	
52.0	3^+	
125.6	7^+	
176.7	$(2)^+$	
714.6	$(8)^+$	
773.5?		E(level): the relative order of γ's in the cascade 131.1γ-647.9γ is not established. If the 131.1γ is the lowest in this cascade, E(level)=256.7 instead of 773.5.
775.4	(2^+)	
904.6		
938.8	1^+	
1274.7	1^+	
1296.5		
1392.8	9^+	
1555.0	8^+	
1656.7		
1919.4	10^+	
2019.3	11^+	
2105.6	$8^{(-)}$	
2132.4	$9^{(-)}$	
2264.4?		
2289.2	$10^{(-)}$	
2320.9	$(10)^+$	
2533.6	$(12)^+$	
2536.7		
2585.6	12^+	
2675.3	11^+	
2724.6	$11^{(-)}$	
2801.0		
3294.0	$12^{(-)}$	
3642.7	$13^{(-)}$	
3743.8	$(14)^+$	
3960.4?		
4161.6	$14^{(-)}$	
4195.0?		
4227.7		
4424.2	$15^{(-)}$	
4546.6		
5017.0	$(16)^+$	
5560.1	$(15)^+$	

[†] Based on $\gamma(\theta)$ and shell model expectations for $J^{\pi}=3^+$ and 6^+ for the 52 and 0.0 isomers.

^{64}Zn(^{40}Ca,α3pnγ) 1990Pi01 (continued)

$\gamma(^{96}Rh)$

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
(26.8)		2132.4	$9^{(-)}$	2105.6	$8^{(-)}$		E_γ: from E(levels). Not observed. Existence inferred from $\gamma\gamma$.
99.82 *15*	≈23	2019.3	11^+	1919.4	10^+	D	Mult.: A_2=−0.04, A_4=+0.11 *16*.
124.7 *4*		176.7	$(2)^+$	52.0	3^+		
125.62 *15*	≈123	125.6	7^+	0.0	6^+	D	Mult.: A_2=−0.19 *5*, A_4=+0.08 *10*.
131.1 *4*	4.0 *6*	904.6		773.5?		D	Mult.: A_2=−0.59 *30* if A_4=0.0.
141.61 *25*	1.2 *3*	2675.3	11^+	2533.6	$(12)^+$		
156.88 *15*	31 *4*	2289.2	$10^{(-)}$	2132.4	$9^{(-)}$	D	Mult.: A_2=−0.19 *8*, A_4=−0.13 *15*.
212.72 *20*	1.4 *7*	2533.6	$(12)^+$	2320.9	$(10)^+$		
216.6[‡] *3*	1.6 *5*	3960.4?		3743.8	$(14)^+$		
262.7 *3*	21 *4*	4424.2	$15^{(-)}$	4161.6	$14^{(-)}$		
264.3 *3*	3.7 *10*	2801.0		2536.7			
336.1		1274.7	1^+	938.8	1^+		
348.53 *25*	19.8 *11*	3642.7	$13^{(-)}$	3294.0	$12^{(-)}$	D+Q	Mult.: A_2=−0.52 *8*, A_4=−0.17 *15*.
404.30 *25*	5.7 *8*	2536.7		2132.4	$9^{(-)}$		Mult.: A_2=+0.41 *48* if A_4=0.0.
435.36 *25*	18.9 *11*	2724.6	$11^{(-)}$	2289.2	$10^{(-)}$	D+Q	Mult.: A_2=−0.37 *17*, A_4=−0.11 *30*. δ: −0.34≤δ≤+0.06 or δ>1.
451.2[‡] *5*	3.6 *12*	4195.0?		3743.8	$(14)^+$		Mult.: A_2=−0.09 *43* if A_4=0.0.
475.56 *20*	3.7 *5*	2132.4	$9^{(-)}$	1656.7			
484.0 *3*	6.7 *9*	4227.7		3743.8	$(14)^+$		
499.7		1274.7	1^+	775.4	(2^+)		
514.30 *20*	74 *3*	2533.6	$(12)^+$	2019.3	11^+	Q	Mult.: A_2=+0.24, A_4=−0.21 *12*.
518.75 *25*	15.4 *12*	4161.6	$14^{(-)}$	3642.7	$13^{(-)}$	D	Mult.: A_2=−0.26 *28* if A_4=0.0.
526.72 *20*	34.9 *9*	1919.4	10^+	1392.8	9^+	D	Mult.: A_2=−0.38 *7*, A_4=−0.00 *14*.
566.3 *4*	7.9 *11*	2585.6	12^+	2019.3	11^+	D	Mult.: A_2=−0.82 *33* if A_4=0.0.
569.5 *4*	11.5 *11*	3294.0	$12^{(-)}$	2724.6	$11^{(-)}$		
577.5 *3*	14.7 *19*	2132.4	$9^{(-)}$	1555.0	8^+	D	Mult.: A_2=−0.16 *13*, A_4=+0.32 *22*.
589.0 *4*	15.2 *9*	714.6	$(8)^+$	125.6	7^+	D+Q	Mult.: A_2=+0.28 *15* if A_4=0.0.
622.83 *25*	4.5 *11*	1919.4	10^+	1296.5			
626.7 *2*	48 *3*	2019.3	11^+	1392.8	9^+	Q	Mult.: A_2=+0.20 *10*, A_4=−0.08 *10*.
647.9 *5*	4.3 *12*	773.5?		125.6	7^+		
723.4		775.4	(2^+)	52.0	3^+		
739.6 *3*	21 *3*	2132.4	$9^{(-)}$	1392.8	9^+	D+Q	Mult.: A_2=+0.49 *21*, A_4=+0.78 *35*.
762.1 *3*		938.8	1^+	176.7	$(2)^+$		
781.44 *25*	4.9 *6*	4424.2	$15^{(-)}$	3642.7	$13^{(-)}$		
802.8 *4*	6.1 *13*	4546.6		3743.8	$(14)^+$		
840.2 *3*	5.9 *8*	1555.0	8^+	714.6	$(8)^+$	D+Q	Mult.: A_2=+0.14 *27* if A_4=0.0.
867.4 *4*	2.7 *7*	4161.6	$14^{(-)}$	3294.0	$12^{(-)}$		
871.6[‡] *5*	6 *3*	2264.4?		1392.8	9^+		
918.2 *3*	6.6 *7*	3642.7	$13^{(-)}$	2724.6	$11^{(-)}$	Q	Mult.: A_2=+0.27 *34* if A_4=0.0.
928.2 *4*	7.1 *8*	2320.9	$(10)^+$	1392.8	9^+	D	Mult.: A_2=−0.14 *26* if A_4=0.0.
942.1 *4*	4.6 *9*	1656.7		714.6	$(8)^+$		
1004.72 *20*	14 *4*	3294.0	$12^{(-)}$	2289.2	$10^{(-)}$		
1098.0 *3*		1274.7	1^+	176.7	$(2)^+$		
1170.9 *3*	7.2 *8*	1296.5		125.6	7^+		
1210.17 *20*	41 *2*	3743.8	$(14)^+$	2533.6	$(12)^+$	Q	Mult.: A_2=+0.22 *12*, A_4=+0.02 *21*.
1223.4		1274.7	1^+	52.0	3^+		
1267.13 *20*	100.0 *18*	1392.8	9^+	125.6	7^+	Q	Mult.: A_2=+0.29 *6*, A_4=+0.03 *10*.
1273.2 *3*	3.2 *8*	5017.0	$(16)^+$	3743.8	$(14)^+$	Q	Mult.: A_2=+0.71 *44* if A_4=0.0.
1282.6 *4*	3.6 *13*	2675.3	11^+	1392.8	9^+		
1429.53 *25*	11.5 *14*	1555.0	8^+	125.6	7^+	D+Q	δ: +0.31≤δ≤+5.1.
1628.32 *20*	4.0 *12*	4161.6	$14^{(-)}$	2533.6	$(12)^+$	Q	Mult.: A_2=+0.23 *17* if A_4=0.0.

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^{64}Zn(^{40}Ca,α3pnγ) 1990Pi01 (continued)

$\gamma(^{96}Rh)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
1816.27 *25*	5.3 *10*	5560.1	$(15)^+$	3743.8	$(14)^+$	D	Mult.: A_2=−0.23 *28* if A_4=0.0.
1980.0 *3*	5.9 *7*	2105.6	$8^{(-)}$	125.6	7^+	D	Mult.: A_2=−0.27 *27* if A_4=0.0.

[†] From $\gamma(\theta)$ data.
[‡] Placement of transition in the level scheme is uncertain.

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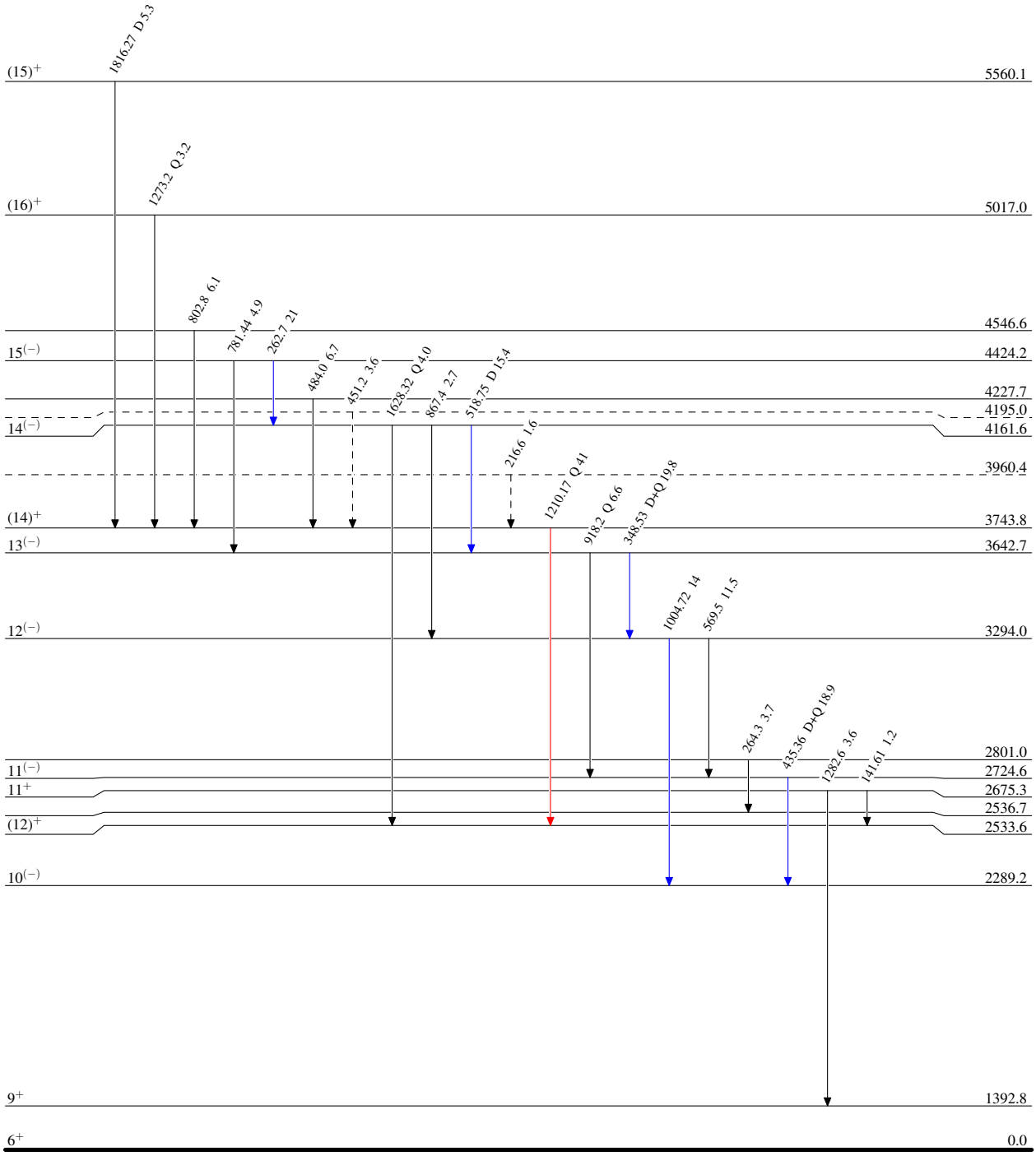
Level Scheme

Intensities: Type not specified

Legend

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



$^{96}_{45}Rh_{51}$

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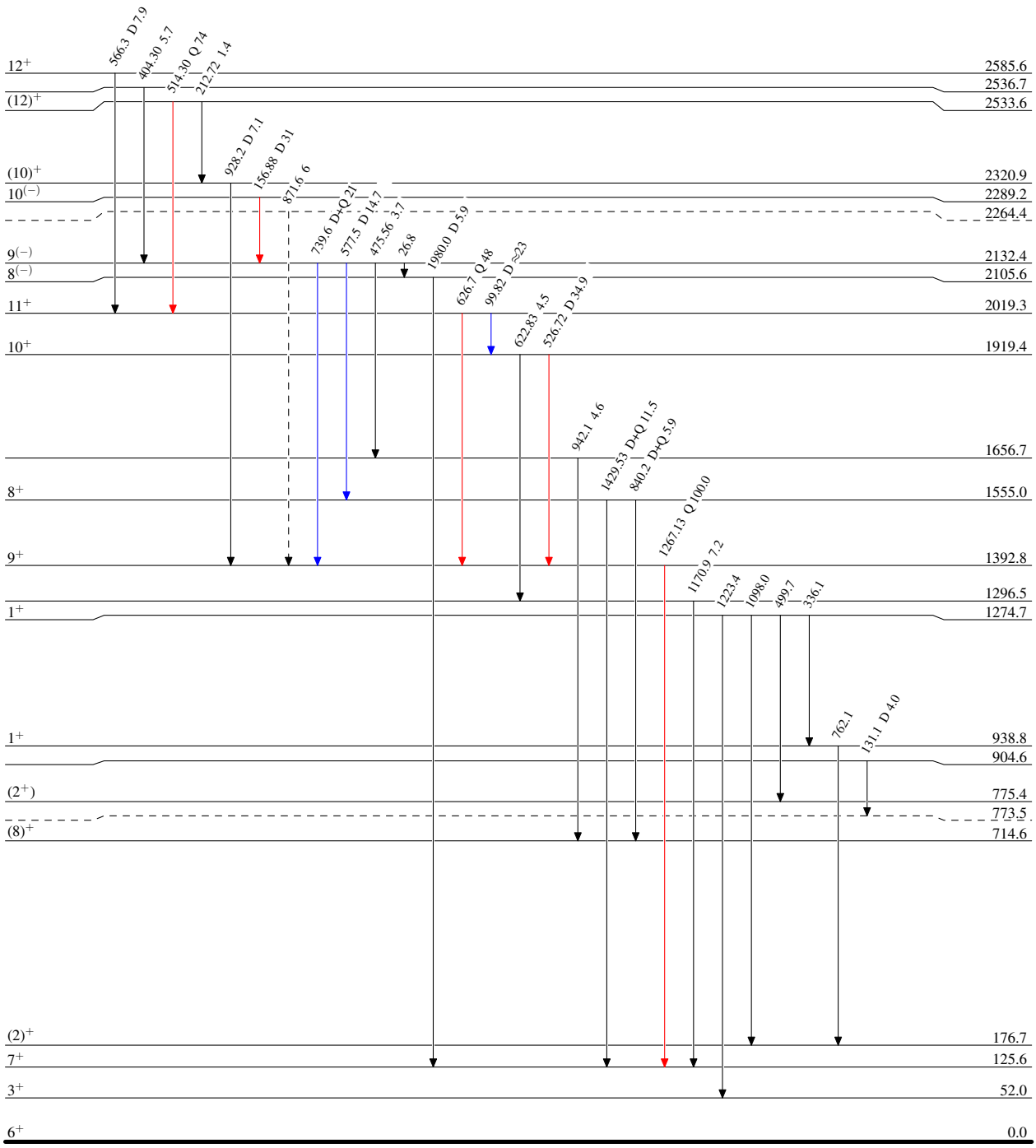
Level Scheme (continued)

Intensities: Type not specified

Legend

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



$^{96}_{45}Rh_{51}$

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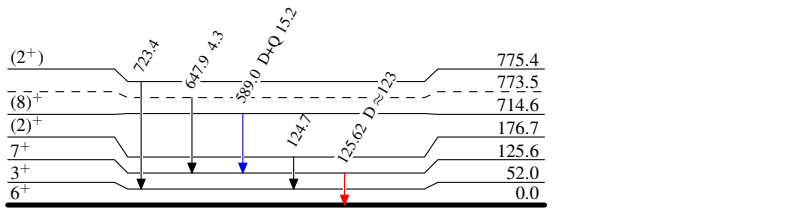
Level Scheme (continued)

Intensities: Type not specified



$^{96}_{45}Rh_{51}$