^{88}Sr(α,nγ) 1971Gl06,1990An34

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 114, 1293 (2013)	1-Sep-2013

Other: 1976Ba02.

1971Gl06: E=10.3, 11.8, 13.5 MeV. Natural and 99%-enriched targets. Ge(Li), FWHM=3.5 to 5 keV at 1200 keV. θ=90°. Measured γ-spectra and γ-ray excitation functions.

1976Ba02: E=16 MeV, pulsed beam. Measured α-γ(θ,H,t), α-γ(t); α-γ(θ); deduced $T_{1/2}$, g-factor for $(15/2)^-$ 2288 level.

1990An34: E=9.75-10.8 MeV; measured $T_{1/2}$ by DSAM.

^{91}Zr Levels

E(level)‡	J$^\pi$†	$T_{1/2}$#	Comments
0	$5/2^+$		
1204.9 *8*	$1/2^+$	0.62 ps *14*	$1/2^+$ from γ excit (1971Gl06).
1466.3 *9*	$5/2^+$	0.32 ps *10*	$5/2^+$ from γ excit (1971Gl06).
1881.8 *10*	$7/2^+$	0.17 ps *7*	$7/2^+$ from γ excit (1971Gl06).
2041.4 *10*	$3/2^+$	0.069 ps *35*	$3/2^+$ from γ excit (1971Gl06).
2131.5 *9*	$(9/2)^+$	0.24 ps *7*	$9/2^+$ from γ excit (1971Gl06).
2170.1 *9*	$(11/2)^-$		$11/2^-$ or $13/2^-$ from γ excit (1971Gl06).
2189.0 *12*	$(5/2)^-$		$5/2^+$ from γ excit (1971Gl06).
2200.5 *10*	$7/2^+$		$7/2^+$ from γ excit (1971Gl06).
2260.3 *12*	$(13/2)^-$		$13/2^-$ from γ excit (1971Gl06).
2288.4 *16*	$(15/2)^-$	29.0 ns *8*	g=+0.70 *1* $T_{1/2}$ from γ(t) and g-factor from α-γ(θ,H,t) for 90γ and 2170γ, respectively.
2321.3 *12*	$(11/2)^-$		$11/2^-$ from γ excit (1971Gl06).
2355.9 *17*	$(1/2)^-$		$1/2^+$ from γ excit (1971Gl06).
2366.8 *11*			$7/2^-$ suggested from γ excit (1971Gl06), but data appear unreliable.
2394.9 *12*	$(9/2)^-$		$9/2^-$ from γ excit (1971Gl06).
2534.0 *14*	$(3/2^+,5/2^+)$		
2556.0 *15*	$1/2^+$		$1/2^+$ from γ excit (1971Gl06).
2578.0 *15*	$(3/2)^-$		$5/2^+$ from two-point γ excit suggested in 1971Gl06, but data appear consistent with J=3/2 also.
2641.0 *16*	$(3/2)^-$		$3/2^-$ from γ excit (1971Gl06).
2694.0 *16*	$(3/2)^-$		$3/2^-$ from two-point γ excit suggested in 1971Gl06, but data do not appear to exclude J=5/2 or 7/2.
2765.7 *15*	$(13/2)^-$		
2775.0 *16*	$(5/2)^-$		$3/2^-$ from γ excit (1971Gl06).
2790.8 *14*			
2811.0 *16*	$(7/2^+)$		$9/2^-$ from two-point γ excit suggested by 1971Gl06, but data do not appear to exclude J=7/2 or possibly 5/2.
2826.0 *16*	$3/2^+,5/2^+$		
2914.3 *12*	$(9/2^+)$		$9/2^+$ from γ excit (1971Gl06).
3009.1 *20*	$5/2^-,7/2^-$		
3017.1 *20*			
3085.1 *20*	$3/2^+$		

† From Adopted Levels. J$^\pi$ values from Hauser-Feshbach analysis of two- or three-point excitation functions (1971Gl06) are given under comments.

‡ From least-squares fit to Eγ.

From DSAM (1990An34), except as noted.

^{88}Sr(α,nγ) 1971Gl06,1990An34 (continued)

$\gamma(^{91}Zr)$

The decay scheme was constructed by assuming that γ's with energies greater than 2 MeV correspond to g.s. transitions.

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
(28.1[@] *2*)		2288.4	$(15/2)^-$	2260.3	$(13/2)^-$	
61.2 *10*		2321.3	$(11/2)^-$	2260.3	$(13/2)^-$	
90.3 *8*	36	2260.3	$(13/2)^-$	2170.1	$(11/2)^-$	A_2<0 (1976Ba02) so ΔJ=0,1.
151.1 *8*	13	2321.3	$(11/2)^-$	2170.1	$(11/2)^-$	
224.8 *7*	7	2394.9	$(9/2)^-$	2170.1	$(11/2)^-$	
415.9[&][a] *7*	4	2811.0	$(7/2^+)$	2394.9	$(9/2)^-$	I(416γ):I(2811γ)=6:15 at E(p)=13.5 MeV.
444.4[#] *9*	2	2765.7	$(13/2)^-$	2321.3	$(11/2)^-$	I(444γ):I(477γ)=5:20 at E(p)=13.5 MeV.
[x]450.8 *9*	2					
477.3[#] *7*	6	2765.7	$(13/2)^-$	2288.4	$(15/2)^-$	I(444γ):I(477γ)=5:20 at E(p)=13.5 MeV.
652.2[#] *9*	7	2534.0	$(3/2^+,5/2^+)$	1881.8	$7/2^+$	
659.3[#] *10*	6	2790.8		2131.5	$(9/2)^+$	
782.8 *8*	9	2914.3	$(9/2^+)$	2131.5	$(9/2)^+$	
1151.0 *15*	14	2355.9	$(1/2)^-$	1204.9	$1/2^+$	
1204.9 *8*	67	1204.9	$1/2^+$	0	$5/2^+$	
1466.3 *9*	100	1466.3	$5/2^+$	0	$5/2^+$	
1881.8 *10*	55	1881.8	$7/2^+$	0	$5/2^+$	
2041.4 *10*	40	2041.4	$3/2^+$	0	$5/2^+$	
2131.5 *9*	55	2131.5	$(9/2)^+$	0	$5/2^+$	
2170.1 *9*	66	2170.1	$(11/2)^-$	0	$5/2^+$	A_2>0 (1976Ba02).
2189.0 *12*	23	2189.0	$(5/2)^-$	0	$5/2^+$	
2200.5 *10*	35	2200.5	$7/2^+$	0	$5/2^+$	
2366.8 *11*	27	2366.8		0	$5/2^+$	
2556.0 *15*	14	2556.0	$1/2^+$	0	$5/2^+$	
2578.0 *15*	19	2578.0	$(3/2)^-$	0	$5/2^+$	
2641.0 *16*	19	2641.0	$(3/2)^-$	0	$5/2^+$	
2694.0 *16*	14	2694.0	$(3/2)^-$	0	$5/2^+$	
2775.0 *16*	13	2775.0	$(5/2)^-$	0	$5/2^+$	
2811.0 *16*	12	2811.0	$(7/2^+)$	0	$5/2^+$	I(416γ):I(2811γ)=6:15 at E(p)=13.5 MeV.
2826.0 *16*	6	2826.0	$3/2^+,5/2^+$	0	$5/2^+$	
3009.0 *20*	8	3009.1	$5/2^-,7/2^-$	0	$5/2^+$	
3017.0 *20*	4	3017.1		0	$5/2^+$	
3085.0 *20*	4	3085.1	$3/2^+$	0	$5/2^+$	

[†] From 1971Gl06.
[‡] From natural target measurement at E=11.8 MeV (1971Gl06). See 1971Gl06 for intensities at 10.3 MeV and 13.5 MeV.
[#] Unplaced by 1971Gl06 but placement is known from other reaction data.
[@] Transition not observed by 1971Gl06; Eγ is adopted value.
[&] Probably misplaced by 1971Gl06 since B(E2)(W.u.)=47000 from Γ in (γ,γ') if $J^\pi=5/2^-$.
[a] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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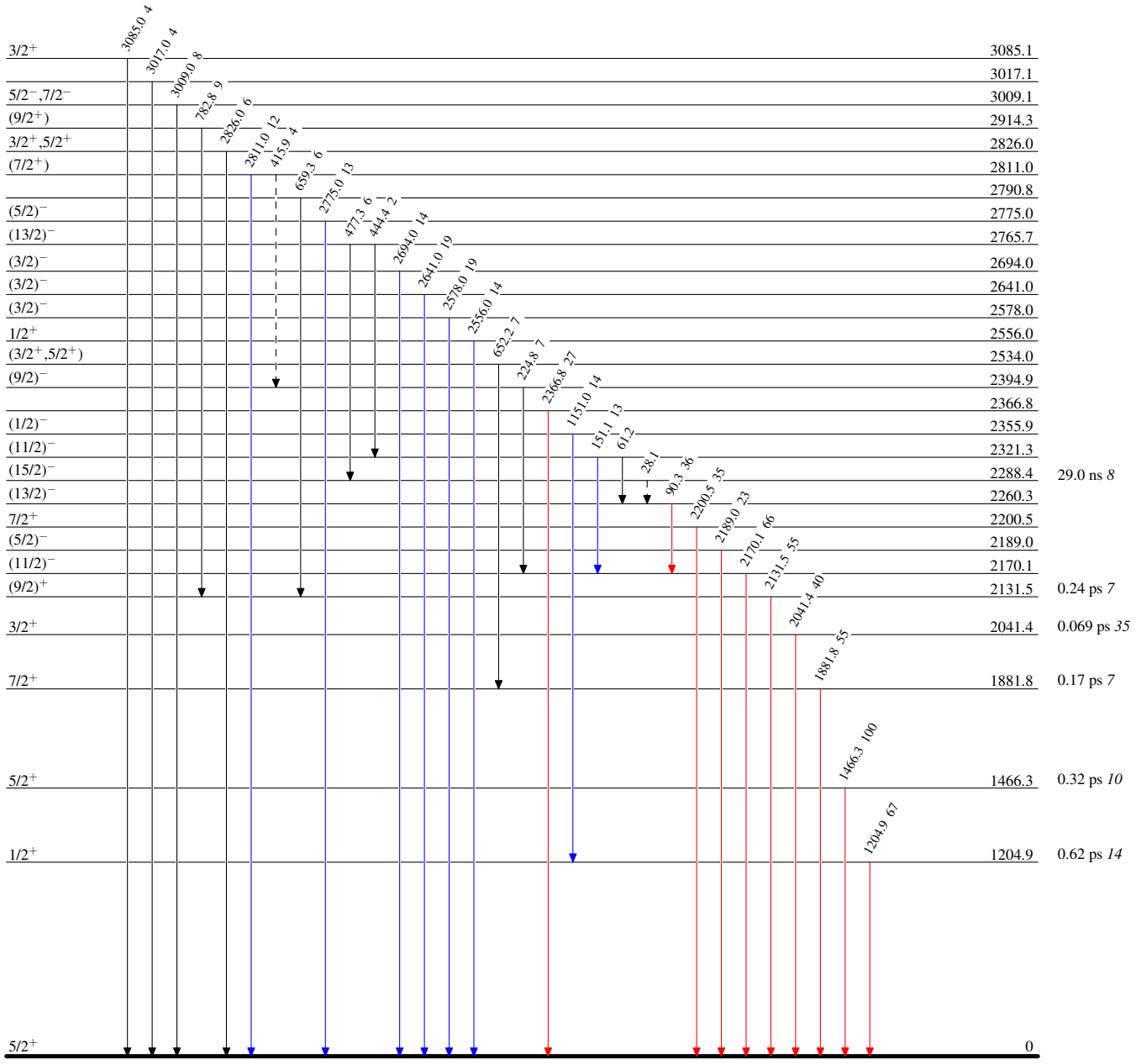
Level Scheme

Intensities: Relative Iγ for Eα=11.8 MeV.

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)



$^{91}_{40}Zr_{51}$