Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 110, 1 (2009)	20-Nov-2008

Q(β^-)=4163 *12*; S(n)=6550 *15*; S(p)=9222 *17*; Q(α)=−2526 *16* 2017Wa10
S(2n)=11883 *15*; S(2p)=2.114×10^4 *17* 2017Wa10
Additional information 1.
Mass separated fission product from spontaneous fission of ^{252}Cf. Atomic number identified but mass number less secure. See ^{151}Ce 'Adopted Levels'. 1987MaZY identify ^{151}Pr from mass separated fission fragment.
Mass measurement (Penning-trap method): 2006Sa56 (also 2004Cl07).
Additional information 2.

^{151}Pr Levels

Cross Reference (XREF) Flags

A ^{151}Ce β^- decay (1.76 s)
B ^{151}Ce β^- decay (1.02 s):?
C ^{252}Cf SF decay

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	(3/2$^-$)	18.90 s *7*	A	%β^-=100 T$_{1/2}$: from γ(t) in ^{151}Pr β^- (1990An31). Others: 22.4 s *15* (1978PiZQ), 15 s *6* (1987MaZY), 4.0 s *7* (1970WiZN). 1987MaZY suggest that 4.0-s activity (1970WiZN) is from ^{152}Pr. J$^\pi$: probable allowed or first forbidden β^- decay to (1/2)$^-$, (3/2)$^-$ and (5/2)$^-$ levels in ^{151}Nd. Negative parity is suggested by Nilsson model assignment.
0+x			BC	
35.10 *10*	(7/2$^+$)	>10 μs	A	J$^\pi$: γ to (3/2$^-$) from a long-lived level makes E1, M1 and E2 less likely. T$_{1/2}$: estimate from ratio of $\beta\gamma$ coin events/singles events (2006Ko25) in ^{151}Ce decay (1.76 s).
38.93 *8*			A	
96.0+x *3*		20 ns *8*	BC	T$_{1/2}$: from (fragment)(fragment)(x ray)γ(t) (1974ClZW).
178.2+x *4*			C	
282.2+x *5*			C	
362.06 *8*			A	
402.62 *17*			A	
417.5+x *6*			C	
467.73 *22*			A	
595.4+x[#] *7*	(11/2$^-$)[‡]		C	
636.81 *17*			A	
683.3+x[#] *7*	(15/2$^-$)[‡]		C	
914.5+x[#] *8*	(19/2$^-$)[‡]		C	
1218.2+x[#] *8*	(23/2$^-$)[‡]		C	
1602.5+x[#] *9*	(27/2$^-$)[‡]		C	
2063.4+x[#] *9*	(31/2$^-$)[‡]		C	
2591.9+x[#] *10*	(35/2$^-$)[‡]		C	

[†] From Eγ's, assuming Δ(Eγ)=0.3 keV for each γ ray when not stated.
[‡] Possible members of πh$_{11/2}$ band.
[#] Band(A): πh$_{11/2}$ band.

Adopted Levels, Gammas (continued)

$\gamma(^{151}Pr)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	α[‡]
35.10	(7/2$^+$)	35.1 *1*	100	0.0	(3/2$^-$)	[M2]	264
38.93		38.9 *1*	100	0.0	(3/2$^-$)		
96.0+x		96.0		0+x			
178.2+x		82.2		96.0+x			
282.2+x		104.0		178.2+x			
362.06		323.1 *1*	63 *6*	38.93			
		362.1 *1*	100 *8*	0.0	(3/2$^-$)		
402.62		40.6 *3*	61 *5*	362.06			
		363.7 *2*	32 *5*	38.93			
		402.5 *4*	100 *11*	0.0	(3/2$^-$)		
417.5+x		135.3		282.2+x			
467.73		428.8 *2*	100	38.93			
595.4+x	(11/2$^-$)	177.9		417.5+x			
636.81		597.9 *3*	16 *3*	38.93			
		636.8 *2*	100 *7*	0.0	(3/2$^-$)		
683.3+x	(15/2$^-$)	87.9		595.4+x	(11/2$^-$)		
914.5+x	(19/2$^-$)	231.2		683.3+x	(15/2$^-$)		
1218.2+x	(23/2$^-$)	303.7		914.5+x	(19/2$^-$)		
1602.5+x	(27/2$^-$)	384.3		1218.2+x	(23/2$^-$)		
2063.4+x	(31/2$^-$)	460.9		1602.5+x	(27/2$^-$)		
2591.9+x	(35/2$^-$)	528.5		2063.4+x	(31/2$^-$)		

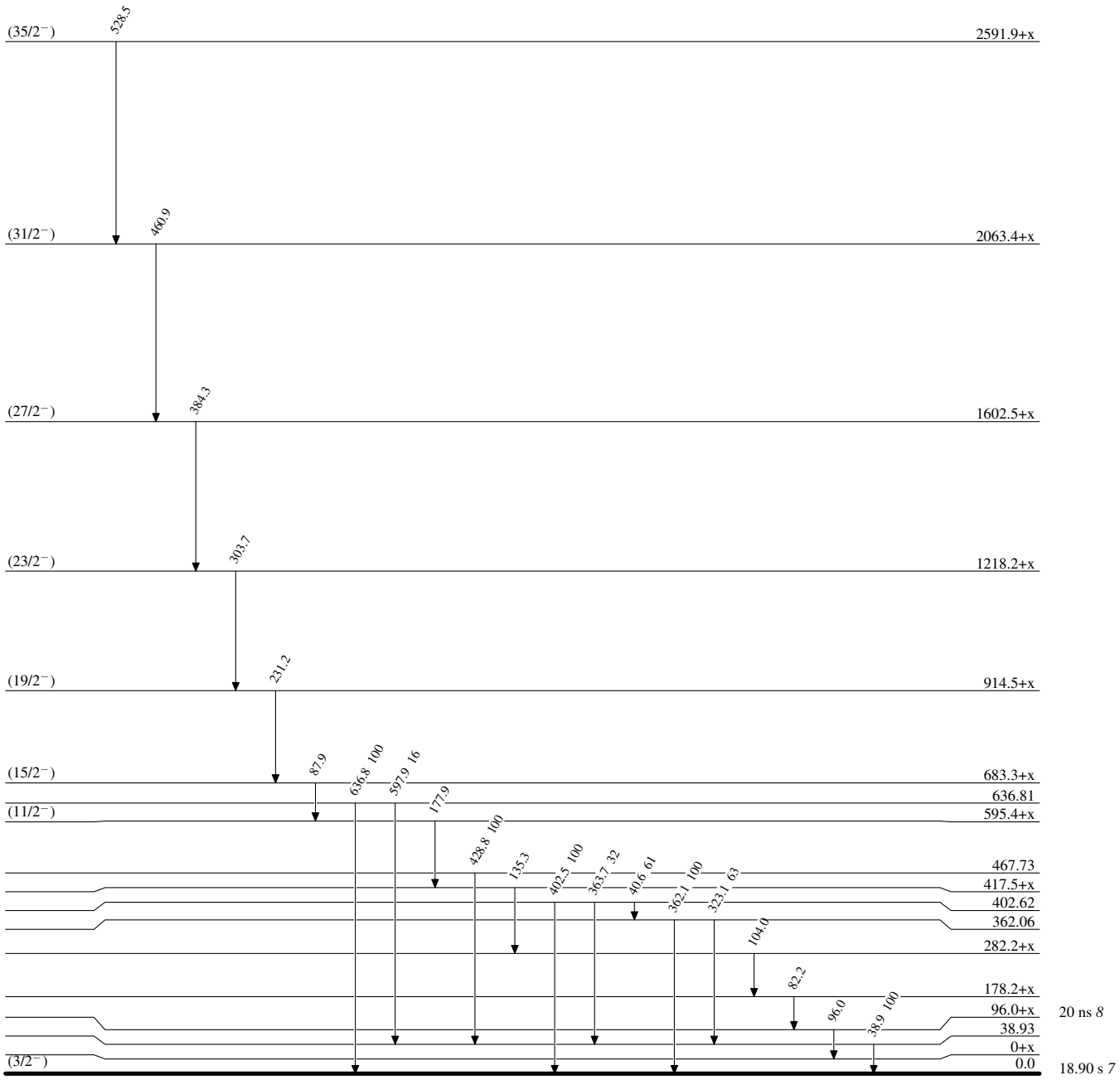
[†] From either ^{151}Ce β^- decay (1.76 s) or ^{252}Cf SF decay. Levels are independently populated in the two datasets.

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

Adopted Levels, Gammas

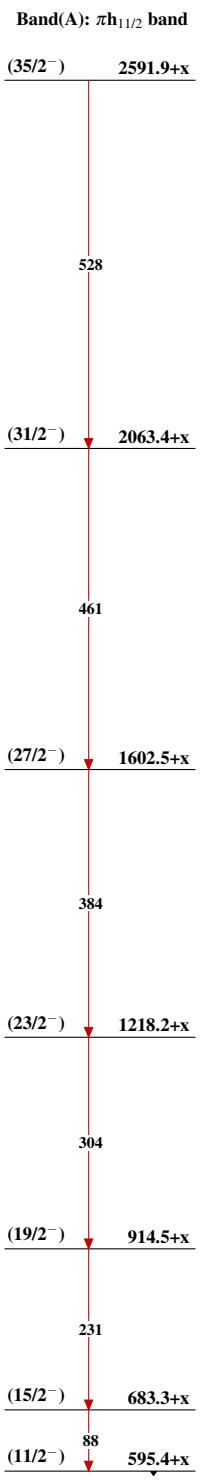
Level Scheme

Intensities: Relative photon branching from each level



$^{151}_{59}Pr_{92}$

Adopted Levels, Gammas



$^{151}_{59}Pr_{92}$