

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	H. Iimura, J. Katakura, S. Ohya		NDS 180, 1 (2022)	1-Oct-2021

Q(β⁻)=-6940 SY; S(n)=10330 SY; S(p)=960 SY; Q(α)=1800 SY [2021Wa16](#)

ΔQ(β⁻)=360, ΔS(n)=360, ΔS(p)=280, ΔQ(α)=360 ([2021WA16](#)).

Observed β-delayed protons with E(p)=2.1 to 5.0 MeV and with E(p)=2.0 to 6.4 MeV ([1983Ni05](#)).

¹²⁶Pr Levels

Cross Reference (XREF) Flags

A ⁹²Mo(⁴⁰Ca,αpnγ)

E(level)	J ^π †	T _{1/2}	XREF	Comments
0.0	≥4	3.14 s 22		%ε+%β ⁺ =100; %εp=? T _{1/2} : from 1995Os03 . Other values: 3.0 s 4 (1988Ba42) and 3.2 s 6 (1983Ni05). J ^π : possible ε+β ⁺ feeding of 6 ⁺ and 4 ⁺ levels in ¹²⁶ Ce (see 1995Os03 for partial level scheme for ¹²⁶ Pr decay to ¹²⁶ Ce).
0+x			A	Additional information 1.
0+y @	(6 ⁺)		A	Additional information 2.
68.2+y # 10	(7 ⁺)		A	
105.5+x † 5	(5 ⁺)		A	
173.6+y @ 11	(8 ⁺)		A	
273.3+x † 6	(7 ⁺)		A	
316.6+y # 11	(9 ⁺)		A	
484.0+y @ 11	(10 ⁺)		A	
553.2+x † 6	(9 ⁺)		A	
694.5+y # 11	(11 ⁺)		A	
920.0+y @ 11	(12 ⁺)		A	
946.3+x † 6	(11 ⁺)		A	
1193.8+y # 11	(13 ⁺)		A	
1445.1+x † 7	(13 ⁺)		A	
1477.7+y @ 11	(14 ⁺)		A	
1805.3+y # 11	(15 ⁺)		A	
2039.6+x † 7	(15 ⁺)		A	
2148.6+y @ 11	(16 ⁺)		A	
2517.8+y # 11	(17 ⁺)		A	
2721.5+x † 7	(17 ⁺)		A	
2921.0+y @ 11	(18 ⁺)		A	
3320.0+y # 11	(19 ⁺)		A	
3485.2+x † 8	(19 ⁺)		A	
3783.4+y @ 11	(20 ⁺)		A	
4204.5+y # 11	(21 ⁺)		A	
4328.7+x † 8	(21 ⁺)		A	
4731.4+y @ 11	(22 ⁺)		A	
5171.7+y # 11	(23 ⁺)		A	
5251.5+x † 8	(23 ⁺)		A	
5769.0+y @ 11	(24 ⁺)		A	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

¹²⁶Pr Levels (continued)

E(level)	J ^π †	XREF	E(level)	J ^π †	XREF	E(level)	J ^π †	XREF
6226.4+y [#] 12	(25 ⁺)	A	8499.5+x [‡] 10	(29 ⁺)	A	12444.1+x [‡] 13	(35 ⁺)	A
6254.6+x [‡] 8	(25 ⁺)	A	8613.2+y [#] 13	(29 ⁺)	A	13923.1+x [‡] 17	(37 ⁺)	A
6907.0+y [@] 15	(26 ⁺)	A	9738.0+x [‡] 11	(31 ⁺)	A	15500.1+x [‡] 20	(39 ⁺)	A
7337.7+x [‡] 9	(27 ⁺)	A	9933.2+y [#] 16	(31 ⁺)	A	17151.1+x ^{?‡} 16	(41 ⁺)	A
7373.2+y [#] 12	(27 ⁺)	A	11051.5+x [‡] 12	(33 ⁺)	A			
8153.0+y ^{?@} 14	(28 ⁺)	A	11284.2+y [#] 19	(33 ⁺)	A			

† As proposed by 2002Ha20 based on the systematics of neighboring odd-odd Pr nuclides. 2001Pe17 suggested that the spins of band B and band C were higher by 2 than those of 2002Ha20, but this assignment would cause a severe discontinuity in the energy level systematics.

‡ Band(A): $\pi h_{11/2} \nu h_{9/2}$, $\alpha=1$. There is a possibility that this band belongs to another nuclide.

Band(B): $\pi h_{11/2} \nu h_{11/2}$, $\alpha=1$.

@ Band(C): $\pi h_{11/2} \nu h_{11/2}$, $\alpha=0$.

$\gamma(^{126}\text{Pr})$

E _i (level)	J ^π _i	E _γ	I _γ [†]	E _f	J ^π _f	Mult. [‡]
68.2+y	(7 ⁺)	68.2	100	0+y	(6 ⁺)	D
105.5+x	(5 ⁺)	105.5	5 100	0+x		
173.6+y	(8 ⁺)	105.5	5 100	68.2+y	(7 ⁺)	D,Q
273.3+x	(7 ⁺)	167.8	2 100	105.5+x	(5 ⁺)	Q
316.6+y	(9 ⁺)	143.1	2 100 5	173.6+y	(8 ⁺)	D,Q
		248.4	2 26 3	68.2+y	(7 ⁺)	
484.0+y	(10 ⁺)	167.4	2 100 4	316.6+y	(9 ⁺)	D,Q
		310.4	2 30 4	173.6+y	(8 ⁺)	
553.2+x	(9 ⁺)	279.9	2 100	273.3+x	(7 ⁺)	Q
694.5+y	(11 ⁺)	210.6	2 100 3	484.0+y	(10 ⁺)	D,Q
		377.8	2 58 6	316.6+y	(9 ⁺)	Q
920.0+y	(12 ⁺)	225.5	2 100 3	694.5+y	(11 ⁺)	D,Q
		435.9	2 94 3	484.0+y	(10 ⁺)	Q
946.3+x	(11 ⁺)	393.1	2 100	553.2+x	(9 ⁺)	Q
1193.8+y	(13 ⁺)	273.8	2 85 3	920.0+y	(12 ⁺)	D,Q
		499.5	2 100 3	694.5+y	(11 ⁺)	Q
1445.1+x	(13 ⁺)	498.8	2 100	946.3+x	(11 ⁺)	Q
1477.7+y	(14 ⁺)	283.7	2 44 6	1193.8+y	(13 ⁺)	D,Q
		557.7	2 100 3	920.0+y	(12 ⁺)	Q
1805.3+y	(15 ⁺)	327.4	2 45 4	1477.7+y	(14 ⁺)	
		611.6	2 100 8	1193.8+y	(13 ⁺)	Q
2039.6+x	(15 ⁺)	594.5	2 100	1445.1+x	(13 ⁺)	Q
2148.6+y	(16 ⁺)	343.5	2 40 5	1805.3+y	(15 ⁺)	
		670.9	2 100 7	1477.7+y	(14 ⁺)	Q
2517.8+y	(17 ⁺)	369.1	2 43 5	2148.6+y	(16 ⁺)	
		712.4	2 100 5	1805.3+y	(15 ⁺)	
2721.5+x	(17 ⁺)	681.9	2 100	2039.6+x	(15 ⁺)	Q
2921.0+y	(18 ⁺)	403.4	2 30 2	2517.8+y	(17 ⁺)	
		772.5	2 100 9	2148.6+y	(16 ⁺)	
3320.0+y	(19 ⁺)	399.1	2 29 6	2921.0+y	(18 ⁺)	
		802.0	2 100 5	2517.8+y	(17 ⁺)	
3485.2+x	(19 ⁺)	763.7	2 100	2721.5+x	(17 ⁺)	Q
3783.4+y	(20 ⁺)	463	31 4	3320.0+y	(19 ⁺)	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{126}\text{Pr})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ^\dagger	E_f	J_f^π	Mult. [‡]
3783.4+y	(20 ⁺)	862.4 2	100 5	2921.0+y	(18 ⁺)	
4204.5+y	(21 ⁺)	422	25 2	3783.4+y	(20 ⁺)	
		884.5 2	100 5	3320.0+y	(19 ⁺)	
4328.7+x	(21 ⁺)	843.5 2	100	3485.2+x	(19 ⁺)	Q
4731.4+y	(22 ⁺)	948.0 2	100	3783.4+y	(20 ⁺)	
5171.7+y	(23 ⁺)	967.2 2	100	4204.5+y	(21 ⁺)	
5251.5+x	(23 ⁺)	922.8 2	100	4328.7+x	(21 ⁺)	Q
5769.0+y	(24 ⁺)	1037.6 2	100	4731.4+y	(22 ⁺)	
6226.4+y	(25 ⁺)	1054.7 2	100	5171.7+y	(23 ⁺)	
6254.6+x	(25 ⁺)	1003.1 2	100	5251.5+x	(23 ⁺)	
6907.0+y	(26 ⁺)	1138	100	5769.0+y	(24 ⁺)	
7337.7+x	(27 ⁺)	1083.1 2	100	6254.6+x	(25 ⁺)	
7373.2+y	(27 ⁺)	1146.8 2	100	6226.4+y	(25 ⁺)	
8153.0+y?	(28 ⁺)	1246 [#]	100	6907.0+y	(26 ⁺)	
8499.5+x	(29 ⁺)	1161.8 5	100	7337.7+x	(27 ⁺)	
8613.2+y	(29 ⁺)	1240.0 5	100	7373.2+y	(27 ⁺)	
9738.0+x	(31 ⁺)	1238.5 5	100	8499.5+x	(29 ⁺)	
9933.2+y	(31 ⁺)	1320	100	8613.2+y	(29 ⁺)	
11051.5+x	(33 ⁺)	1313.5 5	100	9738.0+x	(31 ⁺)	
11284.2+y	(33 ⁺)	1351	100	9933.2+y	(31 ⁺)	
12444.1+x	(35 ⁺)	1392.5 5	100	11051.5+x	(33 ⁺)	
13923.1+x	(37 ⁺)	1479	100	12444.1+x	(35 ⁺)	
15500.1+x	(39 ⁺)	1577	100	13923.1+x	(37 ⁺)	
17151.1+x?	(41 ⁺)	1651 [#]	100	15500.1+x	(39 ⁺)	

[†] Averaged relative photon branching between 2001Pe17 and 2002Ha20.

[‡] From DCO in $^{92}\text{Mo}(^{40}\text{Ca},\alpha p n\gamma)$. D corresponds to $\Delta J=1$, and Q to $\Delta J=2$.

[#] Placement of transition in the level scheme is uncertain.

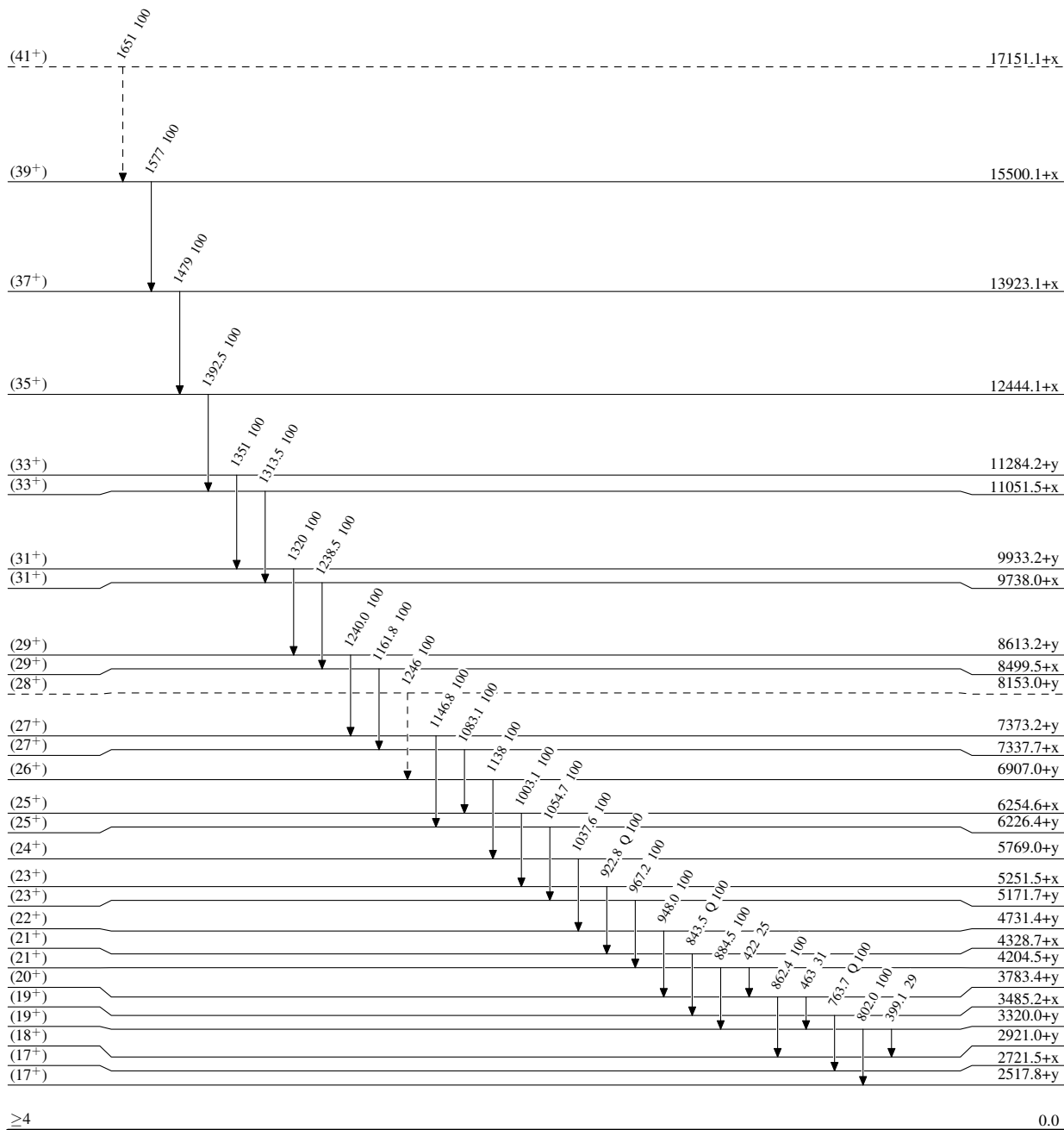
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

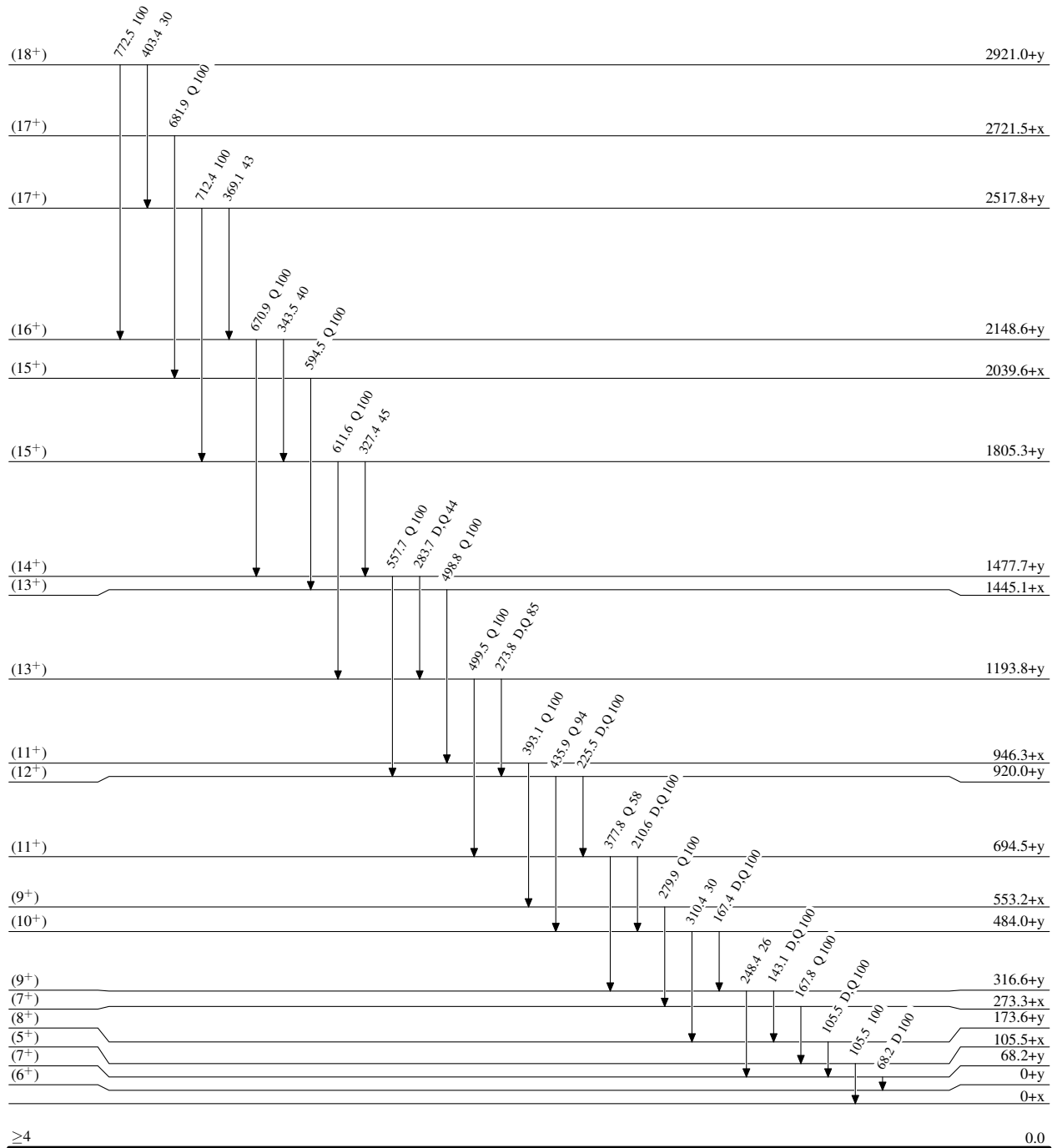
-----▶ γ Decay (Uncertain)



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

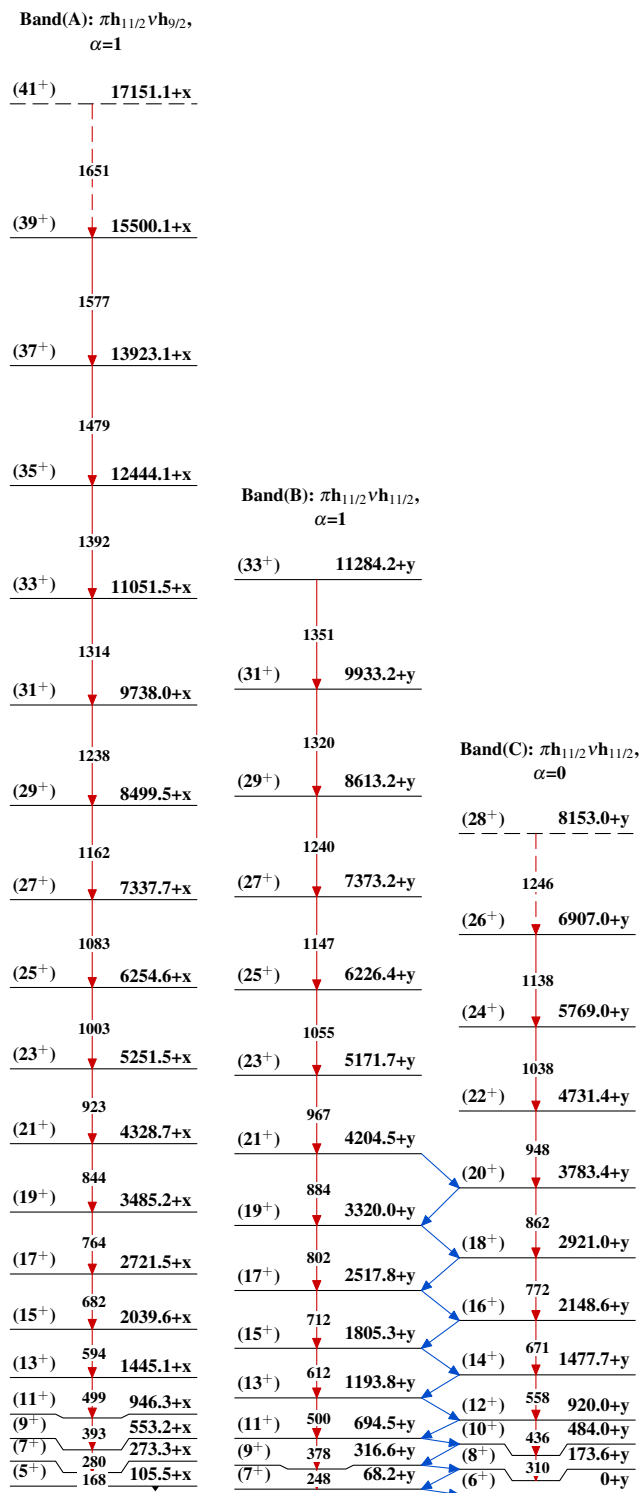


≥4

0.0

3.14 s 22

Adopted Levels, Gammas

 $^{126}_{59}\text{Pr}_{67}$