

¹⁰⁵Pd(³⁵Cl,2n2αγ) 1999Ko21,1997Br17

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

1999Ko21 (also 1999Ko19): E=173 MeV. Measured E_γ, I_γ, γγ, γγ(θ)(DCO) using GAMMASPHERE spectrometer with 57 (for thin target experiment) and 97 (for backed target experiment) HPGe detectors. The charged particles were identified with the MICROBALL detector array.

1997Br17 (also 1998Ko34): E=180 MeV. Measured γ, γγ, γγ(particle) coin using GAMMASPHERE array of 58 HPGe detectors and MICROBALL for charged particles. 1998Ko34 report Q(intrinsic) measurement from lifetime data by Doppler-shift attenuation method.

¹³⁰Pr Levels

E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]
0+x [#]	(6)	1081.7+x ^{&} 7	(11 ⁺)	3588.0+x [@] 10	(18 ⁺)	7318.5+x [@] 13	(26 ⁺)
177.8+x 7		1167.8+x [@] 9	(10 ⁺)	3677.2+x ^{&} 8	(19 ⁺)	7609.6+x ^{&} 12	(27 ⁺)
184.2+x ^b 8	(7 ⁺)	1285+x ^c	(12 ⁻)	3915+x ^c	(20 ⁻)	7644+x ^c	(28 ⁻)
274.3+x ^a 7	(8 ⁺)	1550+x ^d	(13 ⁻)	4324+x ^d	(21 ⁻)	8185+x ^d	(29 ⁻)
323.1+x 10		1582.3+x ^{&} 7	(13 ⁺)	4417.6+x [@] 10	(20 ⁺)	8447.1+x [@] 15	(28 ⁺)
384.1+x ^b 10	(9 ⁺)	1623.5+x [@] 9	(12 ⁺)	4522.1+x ^{&} 9	(21 ⁺)	8741+x ^c	(30 ⁻)
455.6+x ^{&} 7	(7 ⁺)	1833+x ^c	(14 ⁻)	4749+x ^c	(22 ⁻)	8829.4+x ^{&} 14	(29 ⁺)
470.3+x 7	(7 ⁺)	2136+x ^d	(15 ⁻)	5192+x ^d	(23 ⁻)	9316+x ^d	(31 ⁻)
515.0+x ^a 8	(10 ⁺)	2180.6+x [@] 9	(14 ⁺)	5315.1+x [@] 10	(22 ⁺)	9668.7+x [@] 16	(30 ⁺)
539.2+x [@] 9	(6 ⁺)	2195.4+x ^{&} 8	(15 ⁺)	5450.0+x ^{&} 9	(23 ⁺)	9905+x ^c	(32 ⁻)
645+x		2456+x ^c	(16 ⁻)	5649+x ^c	(24 ⁻)	10127.9+x ^{&} 15	(31 ⁺)
708.0+x ^{&} 7	(9 ⁺)	2797+x ^d	(17 ⁻)	6124+x ^d	(25 ⁻)	10514+x ^d	(33 ⁻)
741.1+x ^b 11	(11 ⁺)	2838.4+x [@] 9	(16 ⁺)	6278.7+x [@] 12	(24 ⁺)	10986.6+x [@] 17	(32 ⁺)
803.6+x [@] 9	(8 ⁺)	2899.9+x ^{&} 8	(17 ⁺)	6479.8+x ^{&} 11	(25 ⁺)	11509.4+x ^{&} 16	(33 ⁺)
823+x ^c	(10 ⁻)	3150+x ^c	(18 ⁻)	6613+x ^c	(26 ⁻)	11780+x ^d	(35 ⁻)
1041+x ^d	(11 ⁻)	3528+x ^d	(19 ⁻)	7121+x ^d	(27 ⁻)	12349.0+x [@] 18	(34 ⁺)

[†] Add≈62 keV to each level energy to match these levels with those in Adopted Levels.

[‡] As proposed by 1999Ko21 and 1997Br17. Spins of signature partners starting at 10⁻ are less by one unit in Adopted Levels.

[#] x should be replaced by 62+x to match these levels with those in Adopted Levels.

[@] Band(A): πh_{11/2}ν(f_{7/2},h_{9/2}), α=0.

[&] Band(a): πh_{11/2}ν(f_{7/2},h_{9/2}), α=1.

^a Band(B): πh_{11/2}νh_{11/2}, α=0.

^b Band(b): πh_{11/2}νh_{11/2}, α=1.

^c Band(C): πg_{9/2}9/2[404]νh_{11/2}7/2[523], α=0. highly-deformed band with large dynamic moment of inertia and Q(intrinsic)=6.1 4, β₂=0.35 3 (1998Ko34). This band and its signature partner form strongly-coupled bands (1997Br17).

^d Band(c): πg_{9/2}9/2[404]νh_{11/2}7/2[523], α=1. See comments for its signature partner.

γ(¹³⁰Pr)

DCO ratios correspond to gating on ΔJ=2, Q transitions.

¹⁰⁵Pd(³⁵Cl,2n2αγ) **1999Ko21,1997Br17** (continued)

γ(¹³⁰Pr) (continued)

<u>E_γ[†]</u>	<u>I_γ</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.</u>	<u>Comments</u>
90.0		274.3+x	(8 ⁺)	184.2+x	(7 ⁺)		
110.0		384.1+x	(9 ⁺)	274.3+x	(8 ⁺)		
131.0		515.0+x	(10 ⁺)	384.1+x	(9 ⁺)		
145.0 [‡]		323.1+x		177.8+x			
178		823+x	(10 ⁻)	645+x			
178.1 [‡]		177.8+x		0+x	(6)		
181.2 2	≈18	455.6+x	(7 ⁺)	274.3+x	(8 ⁺)		
184.2 2	100	184.2+x	(7 ⁺)	0+x	(6)		
193.6 6	5 1	708.0+x	(9 ⁺)	515.0+x	(10 ⁺)	D+Q	DCO=0.8 2 (ΔJ=1 gated).
196.3		470.3+x	(7 ⁺)	274.3+x	(8 ⁺)		
215.9 [‡]	<5	539.2+x	(6 ⁺)	323.1+x			
218		1041+x	(11 ⁻)	823+x	(10 ⁻)		
226.0		741.1+x	(11 ⁺)	515.0+x	(10 ⁺)		
237.7 2	17 2	708.0+x	(9 ⁺)	470.3+x	(7 ⁺)	Q	DCO=1.0 1.
241.1		515.0+x	(10 ⁺)	274.3+x	(8 ⁺)		
244		1285+x	(12 ⁻)	1041+x	(11 ⁻)		
252.2 2	22 2	708.0+x	(9 ⁺)	455.6+x	(7 ⁺)	Q	DCO=1.0 1.
264.4 2	22 4	803.6+x	(8 ⁺)	539.2+x	(6 ⁺)	Q	DCO=0.9 1.
265		1550+x	(13 ⁻)	1285+x	(12 ⁻)		
277.8 2	10 3	455.6+x	(7 ⁺)	177.8+x			
284		1833+x	(14 ⁻)	1550+x	(13 ⁻)		
292.5		470.3+x	(7 ⁺)	177.8+x			
302		2136+x	(15 ⁻)	1833+x	(14 ⁻)		
321		2456+x	(16 ⁻)	2136+x	(15 ⁻)		
333.2 6	7 1	803.6+x	(8 ⁺)	470.3+x	(7 ⁺)		
348.3 [‡]	<2	803.6+x	(8 ⁺)	455.6+x	(7 ⁺)		
357.2		741.1+x	(11 ⁺)	384.1+x	(9 ⁺)		
364.2 2	21 4	1167.8+x	(10 ⁺)	803.6+x	(8 ⁺)	Q	DCO=1.1 2.
371		645+x		274.3+x	(8 ⁺)		
373.7 2	41 3	1081.7+x	(11 ⁺)	708.0+x	(9 ⁺)	Q	DCO=1.0 1. DCO=1.5 4 (ΔJ=1 gated).
433.9 2	16 1	708.0+x	(9 ⁺)	274.3+x	(8 ⁺)	D+Q	DCO=0.5 1. DCO=1.0 2 (ΔJ=1 gated).
455.4 [‡]	<1	455.6+x	(7 ⁺)	0+x	(6)		
455.7 2	20 2	1623.5+x	(12 ⁺)	1167.8+x	(10 ⁺)	Q	DCO=1.0 1.
462		1285+x	(12 ⁻)	823+x	(10 ⁻)		
500.6 2	44 3	1582.3+x	(13 ⁺)	1081.7+x	(11 ⁺)	Q	DCO=1.0 1. DCO=1.8 3 (ΔJ=1 gated).
509		1550+x	(13 ⁻)	1041+x	(11 ⁻)		
548		1833+x	(14 ⁻)	1285+x	(12 ⁻)		
557.1 2	19 3	2180.6+x	(14 ⁺)	1623.5+x	(12 ⁺)	Q	DCO=0.9 1.
566.3 6	5 1	1081.7+x	(11 ⁺)	515.0+x	(10 ⁺)		
586		2136+x	(15 ⁻)	1550+x	(13 ⁻)		
613.1 2	41 3	2195.4+x	(15 ⁺)	1582.3+x	(13 ⁺)	Q	DCO=0.9 1. DCO=2.0 2 (ΔJ=1 gated).
623		2456+x	(16 ⁻)	1833+x	(14 ⁻)		
657.8 2	16 2	2838.4+x	(16 ⁺)	2180.6+x	(14 ⁺)	Q	DCO=1.0 2.
661		2797+x	(17 ⁻)	2136+x	(15 ⁻)		
694		3150+x	(18 ⁻)	2456+x	(16 ⁻)		
704.5 2	39 3	2899.9+x	(17 ⁺)	2195.4+x	(15 ⁺)	Q	DCO=1.1 1.
729		3528+x	(19 ⁻)	2797+x	(17 ⁻)		
749.6 2	14 1	3588.0+x	(18 ⁺)	2838.4+x	(16 ⁺)	Q	DCO=0.9 2.
765		3915+x	(20 ⁻)	3150+x	(18 ⁻)		
777.3 2	36 3	3677.2+x	(19 ⁺)	2899.9+x	(17 ⁺)	Q	DCO=1.2 1.
798		4324+x	(21 ⁻)	3528+x	(19 ⁻)		
829.6 2	12 1	4417.6+x	(20 ⁺)	3588.0+x	(18 ⁺)	Q	DCO=0.9 3.
834		4749+x	(22 ⁻)	3915+x	(20 ⁻)		
844.9 2	25 3	4522.1+x	(21 ⁺)	3677.2+x	(19 ⁺)	Q	DCO=1.1 2.
868		5192+x	(23 ⁻)	4324+x	(21 ⁻)		

Continued on next page (footnotes at end of table)

$^{105}\text{Pd}(^{35}\text{Cl},2\text{n}2\alpha\gamma)$ **1999Ko21,1997Br17** (continued) $\gamma(^{130}\text{Pr})$ (continued)

E_γ^\dagger	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
897.5 2	11 1	5315.1+x	(22 ⁺)	4417.6+x	(20 ⁺)		
900		5649+x	(24 ⁻)	4749+x	(22 ⁻)		
927.9 2	15 2	5450.0+x	(23 ⁺)	4522.1+x	(21 ⁺)	Q	DCO=0.9 2.
932		6124+x	(25 ⁻)	5192+x	(23 ⁻)		
963.6 6	9 1	6278.7+x	(24 ⁺)	5315.1+x	(22 ⁺)		
964		6613+x	(26 ⁻)	5649+x	(24 ⁻)		
997		7121+x	(27 ⁻)	6124+x	(25 ⁻)		
1029.8 6	6 1	6479.8+x	(25 ⁺)	5450.0+x	(23 ⁺)		
1031		7644+x	(28 ⁻)	6613+x	(26 ⁻)		
1039.8 6	4 1	7318.5+x	(26 ⁺)	6278.7+x	(24 ⁺)		
1064		8185+x	(29 ⁻)	7121+x	(27 ⁻)		
1097		8741+x	(30 ⁻)	7644+x	(28 ⁻)		
1128.6 6	2 1	8447.1+x	(28 ⁺)	7318.5+x	(26 ⁺)		
1129.8 6	5 1	7609.6+x	(27 ⁺)	6479.8+x	(25 ⁺)		
1131		9316+x	(31 ⁻)	8185+x	(29 ⁻)		
1164		9905+x	(32 ⁻)	8741+x	(30 ⁻)		
1198		10514+x	(33 ⁻)	9316+x	(31 ⁻)		
1219.8 6	4 1	8829.4+x	(29 ⁺)	7609.6+x	(27 ⁺)		
1221.6 6	≈1	9668.7+x	(30 ⁺)	8447.1+x	(28 ⁺)		
1266		11780+x	(35 ⁻)	10514+x	(33 ⁻)		
1298.5 6	2 1	10127.9+x	(31 ⁺)	8829.4+x	(29 ⁺)		
1317.9 6	<1	10986.6+x	(32 ⁺)	9668.7+x	(30 ⁺)		
1362.4 6	<1	12349.0+x	(34 ⁺)	10986.6+x	(32 ⁺)		
1381.5 6	<1	11509.4+x	(33 ⁺)	10127.9+x	(31 ⁺)		

[†] $\Delta(E_\gamma)=0.2$ keV for strong $I_\gamma \geq 10$ and 0.6 keV for $I_\gamma < 10$.

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

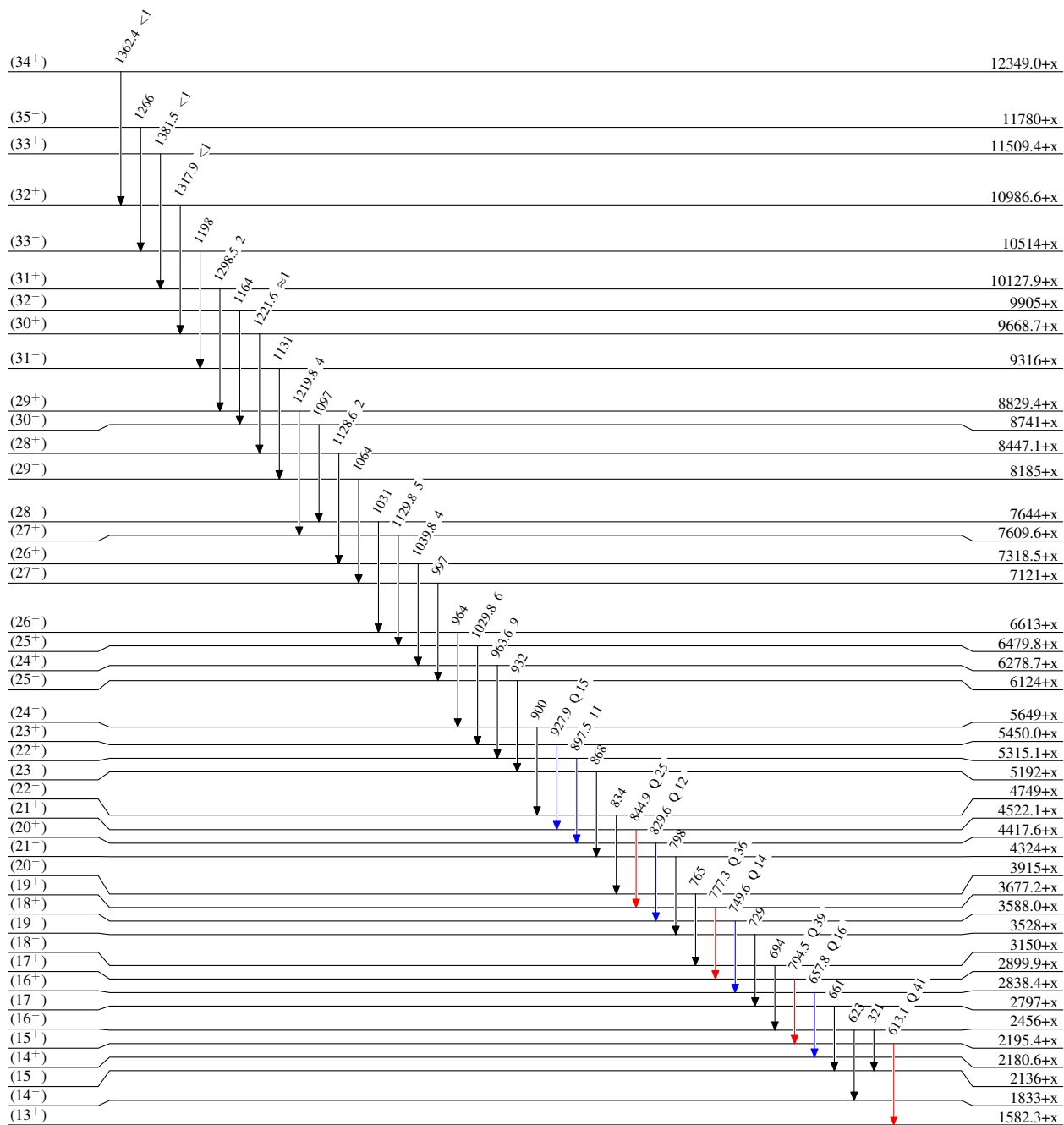
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Level Scheme

Intensities: Relative I_γ

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}



¹³⁰Pr₇₁

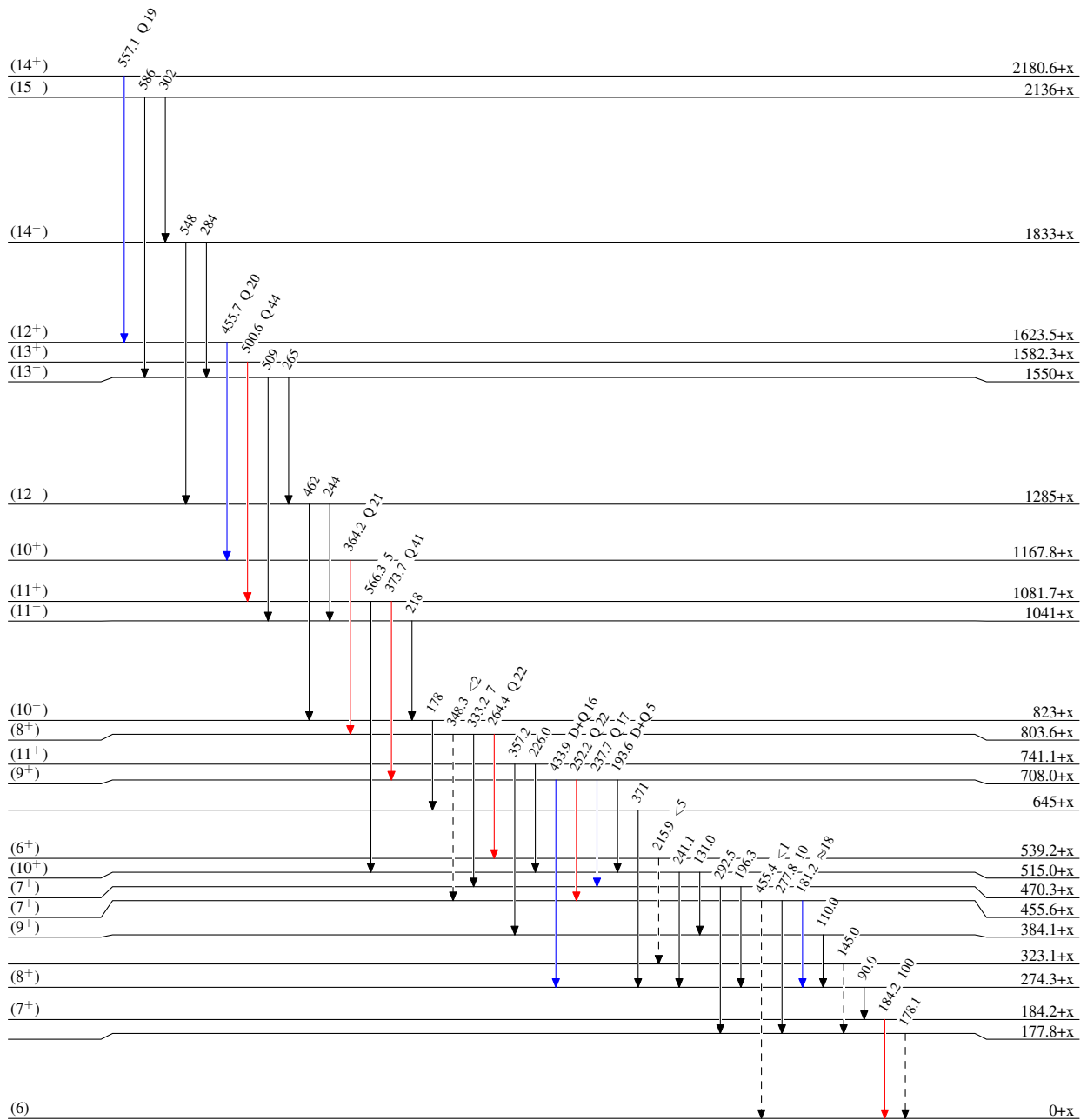
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Legend

Level Scheme (continued)

Intensities: Relative I_γ

- ▶ I_γ < 2% × I_γ^{max}
- ▶ I_γ < 10% × I_γ^{max}
- ▶ I_γ > 10% × I_γ^{max}
- - -▶ γ Decay (Uncertain)



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