The continuity of prime numbers can lead to even continuity

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Absrtact : n continuous prime numbers can combine a group of continuous even numbers. If an adjacent prime number is followed, the even number will continue.
For example, if we take prime number **3**, we can get even number **6**. If we follow an adjacent prime number **5**, we can get even numbers by using **3** and **5**: **6, 8** and **10.**
If a group of continuous prime numbers **3,5,7,11,... P**, we can get a group of continuous even numbers **6,8,10,12,..., 2n**. Then if an adjacent prime number q is followed, the original group of even numbers **6,8,10,12,..., 2n** will be finitely extended to **2 (n + 1)** or more adjacent even numbers. My purpose is to prove that the continuity of prime numbers will lead to even continuity as long as **2 (n + 1)** can be extended.
If the continuity of even numbers is discontinuous, it violates the Bertrand Chebyshev theorem of prime numbers.
Because there are infinitely many prime numbers: **3, 5, 7, 11,...**
We can get infinitely many continuous even numbers: **6,8,10,12,...**

Key words: prime even continuity; Bertrand Chebyshev theorem; Ascending and descending; Extreme law; Mathematical complete induction

1 Preface

1.1 The whole proof begins with the ascent

Rule ①: the minimum odd prime number is **3**
Rule ②: add two odd prime numbers.(any combination of two odd primes).
Rule ③: odd prime number can be quoted repeatedly.
Rule ④:meet the previous provisions, and all prime combination to the maximum(for

example, 10 = 5 + 5 must be: 10 = 5 + 5 = 3 + 7,
For another example, the combination of 90 must be: 90 = 43 + 47 = 37 + 53 = 31 + 59 = 29 + 61 = 23 + 67 = 19 + 71 = 17 + 73 = 11 + 79 = 7 + 83)..
Rule ⑤: $P_a + P_b = 2S$, and $P_b + P_a = 2S$, Delete one and leave only one.

1.2 I can quote the minimum odd prime number **3**

The results are as follows

3+3=6

5 + 1 = 6 (it is stipulated that **1** is not a prime number, which is deleted because it violates regulation 2)

∴ The unique formula: **3 + 3 = 6 .**(comply with Rule 4: all prime numbers are quoted to the maximum).

According to the rules, the prime number 3 uses the maximum combination, and can only get:

3 + 3 = 6

How to make **6** continuous to **8**?

If we take the adjacent prime number **P** greater than 3,

we can get **P-3 ⩾ 2** Special record is (a)

From **3 + 3 = 6,** ⇒ **3 + (3 + 2) = 6 + 2**

If **(3 + 2) = P**, the proposition holds when the even number is **8**

Extreme law ⇒ Assumption: **(3+2)≠p**

∵ **p-3≠2.**

∴ **(a): {p-3⩾2,p-3≠2}→(p-3>2)→(p-3⩾4)**

∴ **p>2×3**

∴ **p>2×3>3**

The results of Bertrand Chebyshev theorem are as follows:

(2×3)>(prime number p_1)>3.

∴ **(p>2×3>3)⇒(p>p_1>3)⇒** (P and 3 are adjacent prime numbers) contradiction.

Negation hypothesis.

∴ **(3+2)=p**, ∴ **3+p=8**.

∴ **6→8**

The proof process uses the known prime number, and the sieve method is not used in the derivation process,

Prime number theorem and Bertrand Chebyshev theorem.

By quoting the prime number theorem, we get a finite number of continuous prime numbers, and then generate even numbers according to the requirements of this manuscript.

Use the extreme rule again , Force even numbers to continue.

2 nouns and definitions, citing theorems

2.1 ϕ_1: Definition of prime number: prime number refers to the natural number with no other factors except 1 and itself in the natural number greater than **1**.

2.2 ϕ_2: Extreme law : **A** may or may not be true. What conclusion can we get if we only prove that **A** is not true.

$\{A \mid A=x, A=y\}, (A=x) \Rightarrow$ (QED). Take: $A \neq x$, only prove the **A=y** conclusion.

2.3 ϕ_3: [**References cited** [1]] Bertrand Chebyshev theorem: if the integer **n > 3**, then there is at least one prime **P**, which conforms to $n < p < 2n-2$. Another slightly weaker argument is: for all integers n greater than **1**, there is at least one prime P, which conforms to $n < p < 2n$.

2.4 ϕ_4: In this paper, the even number generation rules are as follows

① Only odd primes are allowed as elements.
② Only two prime numbers can be added.(any combination of two odd primes).
③ Two prime numbers can be used repeatedly: **(3 + 3)**, or **(3 + 5)**, or **(P + P)**.
④ meet the previous provisions, and all prime combination to the maximum(for example, 10 = 5 + 5 must be: 10 = 5 + 5 = 3 + 7,
For another example, the combination of 90 must be: 90 = 43 + 47 = 37 + 53 = 31 + 59 = 29 + 61 = 23 + 67 = 19 + 71 = 17 + 73 = 11 + 79 = 7 + 83)..
⑤ Take only one of$(p_a+p_b)$and(p_b+p_a) .

2.5 ϕ_5: [**References cited** [2]] The theorem of infinite number of primes:

the n bit after each prime can always find another prime.
For example, **3** is followed by **5** and **13** is followed by **17**; There must be an adjacent prime p_i after the prime **P**.

2.6 ϕ_6: Here we only discuss the following cases: prime number sequence and even number sequence

(ϕ_5) $\Rightarrow$ Prime number sequence: **3, 5, 7, 11, 13, 17, 19, 23，…**

Even number sequence: **6, 8, 10, 12, 14, 16, 18, 20，…**

Explain ϕ_6 in today's words: the prime number in the prime number sequence discussed in this paper is adjacent and continuous, and the first number is **3**.
An even number in an even number sequence is contiguous and the first number is **6**.

2.7 ϕ_7: Remember: all the primes I'll talk about below refer to odd primes (excluding **2**).

Prime symbol **P**, different primes use $\mathbf{P_1, P_2, P_3, ...,}$ $\mathbf{p_x}$

3 Logical argument

3.1 Θ_1: **Goldbach conjecture** :$3\leqslant \forall n\in N$，$2n=p_x+p_y$ **. set up** Δ_1: $p_x \geqslant p_y$

3.2 Θ_2: Theorem: the continuity of prime numbers leads to the continuity of even numbers

In mathematical language ：
Known: {**3，5，7，11，13，…，p_2，p_1，p_0**}$\in$(prime)，The next neighbor of $\mathbf{p_1}$ is $\mathbf{p_0}$，
3<5<7<11<13<… p_2<p_1<p_0，
{ **6，8，10，12，14，16，…..，2n**}$\in$(continuous even number).
If : **{3，5，7，11，13，… ，p_2，p_1}$\Rightarrow${ 6，8，10，12，14，16，…，2n}**.
inevitable: **{3，5，7，11，13，… ，p_2，p_1，p_0}$\Rightarrow${ 6，8，10，12，14，16，…，2n，2(n+1)}.**

3.2.1 **prove:**
Humans use computers to calculate a finite number of even numbers: **{6, 8, 10, 12, 14,..., 2n}** every even number satisfies Θ_1.

The computer process is finite **{6, 8, 10, 12, 14,..., 2n}**

It is not logically proved that any even number greater than **4** satisfies Θ_1.

(ϕ_5 + ϕ_6)Take odd prime sequence: **3, 5, 7, 11, 13, 17, 19, 23,...**

Take the minimum prime number 3 from the front of the prime sequence,

A_1: $\{\phi_1+\phi_4+\{3\}\}\Rightarrow$:

{3+3=6} It is recorded as **A_1**

→**6**

According to the rule, **3** can only get {**3+3=6**}

Nonexistence: **5+p=6**

【Because **1** in **5+1=6** is not defined as a prime number. If **1** is defined as a prime number, this paper will come to the same conclusion】

Note: **$5\notin\{3\}$**.

Prime number 3, limit is used according to ϕ_4, cannot be: **6→8**.

$\{\phi_1+\phi_4+\{3\}\}\Rightarrow$: Quoting prime number **3** can only get even number **6.**

If you want to: **6→8**, you must add an adjacent prime number **5**.

A_2 : $\{\phi_1+\phi_4+\{3,5\}\}\Rightarrow$

3+3=6

3+5=8

5+5=3+7=10 .∵ ϕ_4 **{(5,5),(3,7)}** ∈ **10**.∴ $\{\phi_1+\phi_4+\{3,5,7\}\}\Rightarrow$

7+5=12

7+7=11+3=14. ∵ ϕ_4 **{(7,7),(3,11)}** ∈ **14**.∴ $\{\phi_1+\phi_4+\{3,5,7,11\}\}\Rightarrow$

11+5=13+3=16.∵ ϕ_4 **{(11,5),(13,3)}** ∈ **16**.∴ $\{\phi_1+\phi_4+\{3,5,7,11,13\}\}\Rightarrow$

11+7=13+5=18.

13+7=17+3=20. There is a new prime number 17 in continuity.

Note: **{(13,7),(17,3)}** ∈ **20**. even numbers ⇒ **:6,8,10,12,14,16,18,20.**

Prime numbers are continuous, and there is a new prime number **17**.

even numbers ⇒ **:6,8,10,12,14,16,18,20**.

Note the key point: **A_1** broken, increase the adjacent prime number **5** to have **A_2**

From **A_1** → **A_2** → is it always infinite? Or will it stop?

Here's the wonderful thing:

(analysis Ⅰ) :

Always Unlimited: $\mathbf{A_1 \rightarrow A_2 \rightarrow \ldots}$

There are:$(\phi_5 + \phi_6) \Rightarrow \{$ **3, 5, 7, 11, 13, 17, 19, 23, …**

Get: **6, 8, 10, 12, 14, 16, 20, 22, …**

Conclusion : Θ_2 (QED).

$(\phi_2) \Rightarrow$ Stop at $\mathbf{A_n}$, cannot continue.

(analysis Ⅱ): Stop at $\mathbf{A_n}$, not to be continued.

Stop at $\mathbf{A_n}$: $\mathbf{A_1 \rightarrow A_2 \rightarrow \ldots \rightarrow A_n}$

κ-line with continuous Prime: **3, 5, 7, 11, 13, 17, 19, 23, … , p_2, p_1**
Get : **6, 8, 10, 12, 14, 16, 20, 22, ….., 2(n-1), 2n**

$$\Theta_3 : \{ \{ \phi_1 + \phi_4 + \{3,5,7,11, \ldots, p_2, p_1\} \Rightarrow \{6, 8, 10, 12, \ldots, 2(n-1), 2n\}$$

$$\Rightarrow \{6, 8, 10, 12, \ldots, 2(n-1), 2n\} \in A_n \}$$

$$\Theta_4 : \{ \{ \phi_1 + \phi_4 + \{3,5,7,11, \ldots, p_2, p_1\} \not\Rightarrow 2(n+1)$$

$$\Rightarrow \{2(n+1)\} \notin A_n \}$$

$\{$ Let: prime $\mathbf{p}$ satisfy: $\mathbf{p} \notin \{3,5,7,11, \ldots, p_2, p_1\}$, Θ_3, Θ_4.

$$\therefore \{ \; p_1 < p, (p + \forall p) \notin \{6, 8, 10, 12, \ldots, 2(n-1), 2n\}, (p + \forall p) \notin A_n, \} \qquad (1)$$

Take the prime number that is greater than p_1 and adjacent to p_1 as p_0,
$\because$ **(1)** $\Rightarrow \{ \mathbf{p_0 + 3 \neq 2n}$, $\mathbf{p_0 + 3 \nless 2n} \}$

$\therefore$ $p_0+3>2n$

$\therefore$ $p_0+2\geqslant 2n$ $\because$ (odd) $\neq$ (even)

$\therefore$ $p_0+2>2n$ $\Rightarrow$ $p_0+1\geqslant 2n$ Record as **(W)**

Starting from (Analysis Ⅱ)

The principle of mathematical complete induction:

it is correct in the front, until $\mathbf{A_n}$.

Take the continuous prime number $(3,5,7,11,\dots,p_2,p_1)$ from small to large.

$\mathbf{A_n}$: $\{\phi_1+\phi_4 + \{3,5,7,11,\dots,p_2,p_1\}\}\Rightarrow$:

{3+3=6

5+3=8

7+3=5+5=10. set up: (7+3=5+5) sequence: 7>5

7+5=12

11+3=7+7=14. set up Δ_2: (11+3=7+7) sequence: 11>7

13+3=11+5=16. set up Δ_2: (13+3=11+5) sequence: 13>11

13+5=11+7=18. set up Δ_2: (13+5=11+7) sequence: 13>11

17+3=13+7=20. set up Δ_2:(17+3=13+7) sequence: 17>13

19+3=17+5=11+11=22. set up Δ_2: (19+3=17+5=11+11) sequence: 19>17>11

19+5=17+7=13+11=24. set up Δ_2:(19+5=17+7=13+11) sequence: 19>17>13

....

$p_{c1}+p_{c2}=p_{c3}+p_{c4}=\dots=2(n-2)$

$p_{b1}+p_{b2}=p_{b3}+p_{b4}=\dots=2(n-1)$

$p_{a1}+p_{a2}=p_{a3}+p_{a4}=\dots=2n\}$ It is recorded as $\mathbf{A_n}$

$\Rightarrow$ **:6,8,10,12,14,16,18, ... , 2(n-1),2n.**

In $\mathbf{A_n}$, it is specified that : $p_{a1}\geq p_{a2}$

In A_n it is specified that : $p_{a1} > p_{a3}$ 【Reason: $p_{a1} + p_{a2} = 2n$ must exist.

$p_{a3} + p_{a4} = 2n$, not necessarily. If $p_{a3} + p_{a4} = 2n$, exists p_{a1} and p_{a3} if one of them is big, put the big one in the first place according to the regulations.

If: $p_{a1} = p_{a3} \Rightarrow \{p_{a1} + p_{a2} = 2n\}$ □ $\{p_{a3} + p_{a4} = 2n\}$

$\phi_4 \Rightarrow \{p_{a3} + p_{a4} = 2n\}$ is deleted】 $\therefore p_{a1} > p_{a3}$

A_n is simplified as B_n.

{3+3=6
5+3=8
7+3=5+5=10.
7+5=12
11+3=7+7=14.
13+3=11+5=16.
13+5=11+7=18.
17+3=13+7=20.
19+3=17+5=11+11=22.
19+5=17+7=13+11=24.
....

$p_{c1} + p_{c2} = p_{c3} + p_{c4} = ... = 2(n-2)$

$p_{b1} + p_{b2} = p_{b3} + p_{b4} = ... = 2(n-1)$

$p_{a1} + p_{a2} = p_{a3} + p_{a4} = ... = 2n\}$ It is recorded as B_n

Change B_n to C_n.

{ Level 2(n-2):3+2(n-2)+3=2(n+1)
Level 2(n-3): 5+2(n-3)+3=2(n+1)
Level 2(n-4): 7+2(n-4)+3=5+2(n-4)+5=2(n+1)
Level 2(n-5): 7+2(n-5)+5=2(n+1)
Level 2(n-6): 11+2(n-6)+3=7+2(n-6)+7=2(n+1)
Level 2(n-7): 13+2(n-7)+3=11+2(n-7)+5=2(n+1)
Level 2(n-8): 13+2(n-8)+5=11+2(n-8)+7=2(n+1)
Level 2(n-9): 17+2(n-9)+3=13+2(n-9)+7=2(n+1)
Level 2(n-10):19+2(n-10)+3=17+2(n-10)+5=11+2(n-10)+11=2(n+1)
Level 2(n-11):19+2(n-11)+5=17+2(n-11)+7=13+2(n-11)+11=2(n+1)

....

Level 6: $p_{c1}+6+p_{c2}=p_{c3}+6+p_{c4}=\ldots=2(n+1)$

Level 4: $p_{b1}+4+p_{b2}=p_{b3}+4+p_{b4}=\ldots=2(n+1)$

Level 2: $p_{a1}+2+p_{a2}=p_{a3}+2+p_{a4}=\ldots=2(n+1)\}$ It is recorded as : C_n

"Line β" in C_n : $2\to4\to6\to8\to\ldots\to2(n-5)\to2(n-4)\to2(n-3)\to2(n-2)$

In C_n (Level 2): $\{p_{a1},p_{a2},p_{a3},p_{a4},\ldots,p_{an}\}$, any element is modeled as p_a, and each prime is abbreviated as p_a.

In C_n (Level 4): $\{p_{b1},p_{b2},p_{b3},p_{b4},\ldots,p_{bn}\}$, any element is modeled as p_b, and each prime is abbreviated as p_b.

The same analogy follows (at each level).

Important note: in C_n, I didn't specify $p_{a1}>p_{b1}$, I didn't specify their size relationship.

Theorem (ω_1) : $\{p_1$ and p_0 are adjacent prime numbers. $p_0>p_1\}$ $\Rightarrow$ $p_0 \ngtr 2p_1$.

Proof:

Assumptions: $p_0>2p_1$.

$\Rightarrow$: $p_0>2p_1>p_1$.

$\phi_3+\{p_0>2p_1>p_1\}\Rightarrow$ $p_0>2p_1>p_g>p_1$.

$\Rightarrow$ $\{p_0>p_g>p_1\}$ contradiction. $\because$ (p_1 and p_0 are adjacent prime numbers.)

$\therefore p_0 \ngtr 2p_1$.

(QED).

Theorem (ω_2) : A_n, B_n, C_n, If : $\{2n+2=p_x+p_y$ .set up Δ_1 : $p_x \geqslant p_y\}$

There must be: $p_x=p_0$

Proof:

If: $p_x + p_y = 2(n+1)$ (2)

(w)+(2) : $p_0 + 3 \geqslant p_x + p_y$ (3)

【(w):$p_0+1 \geqslant 2n \Rightarrow p_0+1+2 \geqslant 2n+2 = p_x+p_y \Rightarrow p_0+3 \geqslant p_x+p_y$ 】

∵ (the smallest prime in κ is 3)

∴ $p_y \geqslant 3$

∴ (3)⇒ $p_0 \geqslant p_x$

(4)

∵ { Θ_4 : $\{\phi_4 + \{3,5,7,11, \ldots, p_2, p_1\} \not\Rightarrow 2(n+1) = p_i + p_{ii}$ } (5)

∴ { (1) + (5) ⇒ $p_x \notin \{3,5,7,11, \ldots, p_2, p_1\} \Rightarrow p_x > p_1$ } (6)

【**reason**: Hypothesis: $p_x \in \{3,5,7,11, \ldots, p_2, p_1\}$

∵ $p_x \geqslant p_y \Rightarrow \{p_x, p_y\} \in \{3,5,7,11, \ldots, p_2, p_1\}$

$\{3,5,7,11, \ldots, p_2, p_1\} \Rightarrow p_x + p_y = 2(n+1)$ Contradiction with **(5)**

∴ $p_x \notin \{3,5,7,11, \ldots, p_2, p_1\} \Rightarrow p_x > p_1$】

{ (4) + (6) } ⇒ $p_0 \geqslant p_x > p_1$ **(7)**

Because $p_0 > p_1$, and the prime number: p_0 and p_1 adjacent.

{ p_0 and p_1 adjacent. + (7) } ⇒ ∴ $p_x = p_0$

(ω_2) (QED).

Theorem (ω_3) :

Known: { A_n, B_n, C_n, ϕ_2, ϕ_4, p_1 and p_0 are adjacent prime numbers , $p_0 > p_1$,

β line: $2 \to 4 \to 6 \to 8 \to \ldots \to 2(n-6) \to 2(n-5) \to 2(n-4) \to 2(n-3) \to 2(n-2)$

κ line: $3 \to 5 \to 7 \to 11 \to 13 \to 17 \to 19 \to \ldots \to p_2 \to p_1$

ϕ_2 Extreme law : Not allowed: $2n+2 = p_x + p_y$.} There must be: $p_0 - p_1 > 2(n-2)$

Proof:

p_1 and p_0 are adjacent prime numbers , $p_0 > p_1$,

{∵ there is no prime number between p_1 and p_0 ∴ p_1 takes precedence over other prime numbers and approaches p_0 .} Record as **(x)**

Level 2: $p_{a1}+2+p_{a2}=p_{a3}+2+p_{a4}=\ldots=2(n+1)$

Must have: $p_{a1}+2+p_{a2}=2(n+1)$

If: $\{p_{a1}+2+p_{a2}=2(n+1)\}\Rightarrow 2n+2=p_x+p_y$ Record as **(i)**

(ω_2) +(i)$\Rightarrow$ $p_x=p_0 \Rightarrow 2n+2=p_0+p_y$

(i)+(ϕ_4)+($p_{a1}+2$)$\Rightarrow$ $p_{a1}+2=p_0$

【explanation: according to Φ_4. According to the combination rule, if you can get **(i)** at **level 2**, it must be $p_{a1}+2=p_0$, because C_n contains all (prime + prime) combinations. According to the classification model, you can get $p+2=p_0$, which must be the model at **level 2**: $p_{a1}+2=p_0$】

(x)+($p_{a1}+2=p_0$)$\Rightarrow$ $p_1+2=p_0 \Rightarrow p_0-p_1=2$ Record as **(ii)**

{(i),(ii)} **Get:** { ($p_x+p_y=2n+2$)$\Rightarrow$ $p_0-p_1=2$ } Record as **(iii)**

ϕ_2 Extreme laws do not allow: $2n+2=p_x+p_y \Rightarrow 2n+2\neq p_x+p_y$

$\therefore$ { (iii)+($2n+2\neq p_x+p_y$)} $\Rightarrow p_0-p_1\neq 2$ **(8)**

Level 4: $p_{b1}+4+p_{b2}=p_{b3}+4+p_{b4}=\ldots=2(n+1)$

Must have: $p_{b1}+4+p_{b2}=2(n+1)$

If: $\{p_{b1}+4+p_{b2}=2(n+1)\}\Rightarrow 2n+2=p_x+p_y$

$(\omega_2)\Rightarrow p_x=p_0 \Rightarrow 2n+2=p_0+p_y$

The same logic: (ϕ_4)+($p_{b1}+4$)$\Rightarrow$ $p_{b1}+4=p_0$

(x)+(8)+($p_{b1}+4=p_0$)$\Rightarrow$ $p_1+4=p_0 \Rightarrow p_0-p_1=4$

The same logic leads to: { ($p_x+p_y=2n+2$)$\Rightarrow$ $p_0-p_1=4$ } Record as **(iiii)**

ϕ_2 Extreme laws do not allow: $2n+2=p_x+p_y \Rightarrow 2n+2\neq p_x+p_y$

$\therefore$ { (iiii)+($2n+2\neq p_x+p_y$)} $\Rightarrow p_0-p_1\neq 4$ **(9)**

Level 6: $p_{c1}+6+p_{c2}=p_{c3}+6+p_{c4}=\ldots=2(n+1)$

Must have: $p_{c1}+6+p_{c2}=2(n+1)$

If: $\{p_{c1}+6+p_{c2}=2(n+1)\}\Rightarrow 2n+2=p_x+p_y$

$(\omega_2)\Rightarrow p_x=p_0 \Rightarrow 2n+2=p_0+p_y$

The same logic: $(\phi_4)+(p_{c1}+6)\Rightarrow p_{c1}+6=p_0$

$(x)+(8)+(9)+(p_{c1}+6=p_0)\Rightarrow p_1+6=p_0 \Rightarrow p_0-p_1=6$

The same logic leads to: $\{(p_x+p_y=2n+2)\Rightarrow p_0-p_1=6\}$ Record as **(iiiii)**

ϕ_2 Extreme laws do not allow: $2n+2=p_x+p_y \Rightarrow 2n+2\neq p_x+p_y$

$\therefore\{(\text{iiiii})+(2n+2\neq p_x+p_y)\}\Rightarrow p_0-p_1\neq 6$ **(10)**

......

β line: $2\to4\to6\to8\to \ldots \to2(n-6)\to2(n-5)\to2(n-4)\to2(n-3)\to2(n-2)$

C_n : (Level 2 (n-2)) also follows the same principle: $p_0-p_1\neq 2(n-2)$

$\{p_0>p_1$

$p_0-p_1\neq 2$

$p_0-p_1\neq 4$

$p_0-p_1\neq 6$

$p_0-p_1\neq 8$

...

$p_0-p_1\neq 2(n-3)$

$p_0-p_1\neq 2(n-2)\}\Rightarrow p_0-p_1>2(n-2)$

(ω_3) (QED).

$(\omega_3)\Rightarrow p_0-p_1>2(n-2)\Rightarrow p_0-p_1>2n-4\geqslant p_1+p_i-4$ 【$\because 2n\geqslant p_1+p_i$】

$\therefore p_0>(2p_1+p_i-4)$

$\therefore p_0\geqslant(2p_1+p_i-3)$

∵ (the smallest prime in κ is 3) ⇒ $p_i \geqslant 3$ ∴ ($p_0 \geqslant 2p_1 + p_i - 3$) ⇒ $p_0 \geqslant 2p_1$

∵ (odd) ≠ (even). ∴ $p_0 > 2p_1$

$p_0 > 2p_1$ contradicts (ω_1)

It is proved that it is wrong to quote "extreme law ϕ_2" in this process.

As long as one of them does not quote the "extreme law ϕ_2"

Must get: $p_x + p_y = 2(n+1)$ ⇒ $p_0 + p_y = 2(n+1)$ 【Theorem (ω_2): $P_0 = P_x$ 】

(ω_2) ⇒ New (κ line): 3→5→7→11→13→17→19→....→p_1→p_0

At this time, the complete proof A_n is followed by $p_0 + p_y = 2(n+1)$

Θ_2 (QED).

Θ_1 and Θ_2 are equivalent: Θ_2 (QED) ⇒ Θ_1 (QED).

4 Conclusion

Θ_1 and Θ_2 are equivalent: Θ_2 (QED) ⇒ Θ_1 (QED).

Complete the mathematical complete induction:

{A_1 (κ line:3) Θ_1 (QED) ,

A_n (κ line:3,5,7,...p_1) Θ_1 (QED),

A_{n+1} (κ line:3,5,7,...p_1,p_0) Θ_1 (QED)}.

There is another situation: it is impossible to stop, it is impossible to stop at A_n, and it is always infinite. ⇒ Θ_1 (QED).

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6 References cited:

[1] Bertrand Chebyshev theorem: if the integer **n > 3**, then there is at least one prime **P**, which conforms to **n < p < 2n−2**. Another slightly weaker argument is: for all integers n greater than **1**, there is at least one prime P, which conforms to **n < p < 2n**.
https://www.researchgate.net/publication/228592091_A_Generalization_of_Erdos's_Proof_of_Bertrand-Chebyshev_Theorem

[2] The theorem of infinite number of primes: the n bit after each prime can always find another prime.
https://www.researchgate.net/publication/266044680_THE_NUMBER_OF_PRIMES_IS_INFINITE