Theorem on the distribution of prime pairs

$A_n = a_1 n + a_2$
$B_n = b_1 n + b_2$

(A_n,B_n are not obviously composite,

a_1, a_2, b_1, b_2 are integer, except like $A_n = n, B_n = n+1$ that one of it is even)

At most 2 $A_n B_n$ of 3 divided by 3.

for example
$A_n = n+2$
$B_n = n$

$A_1 B_1 = 3 \cdot 1 = 3(3o)$
$A_2 B_2 = 4 \cdot 2 = 8(3\times)$
$A_3 B_3 = 5 \cdot 3 = 15(3o)$
$A_4 B_4 = 6 \cdot 4 = 24(3o)$
$A_5 B_5 = 7 \cdot 5 = 35(3\times)$

$n = 3,4$, 2$A_n B_n$ divided by.

2 of $p - A_n B_n$ divided by p.

<Theorem1>

one of $3^4 Pln^4$P-$A_n B_n$ doesn't divided by P or less prime. and when every $A_nB_n < P^2$, they are prime at once.

<proof of Theorem1>
1 of 2-A_nB_n divided by 2.

2 of 3-A_nB_n divided by 3.

and let's see how long A_nB_n must contains doesn't divided by P or less prime.
in other word, when we overlap

$2 \triangle 2 \triangle 2 \triangle 2 \triangle 2 \triangle 2 \triangle 2 \triangle$

$3\,3 \triangle 3\,3 \triangle 3\,3 \triangle 3\,3 \triangle 3\,3 \triangle 3\,3 \triangle$

$5\,5 \triangle \triangle \triangle 5\,5 \triangle \triangle \triangle 5\,5 \triangle \triangle \triangle$

⋮

$P\,P \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle$

How long P or less primes are consecutive.
For example, overlap

$2 \triangle 2 \triangle 2 \triangle 2 \triangle 2 \triangle 2 \triangle 2 \triangle$

$3\,3 \triangle 3\,3 \triangle 3\,3 \triangle 3\,3 \triangle 3\,3 \triangle 3\,3 \triangle$ makes

$2\,3\,2\,3\,2 \triangle 2\,3\,2\,3\,2 \triangle 2\,3\,2\,3\,2 \triangle$
$3 \quad 3 \quad 3 \quad 3 \quad 3 \quad 3$

means 6-consecutive A_nB_n contains doesn't divided by 3 or less prime.

when overlap

$2 \triangle 2 \triangle 2 \triangle 2 \triangle 2 \triangle 2 \triangle 2 \triangle$

$3\,3 \triangle 3\,3 \triangle 3\,3 \triangle 3\,3 \triangle 3\,3 \triangle 3\,3 \triangle$

$5\,5 \triangle \triangle \triangle 5\,5 \triangle \triangle \triangle 5\,5 \triangle \triangle \triangle$

$\vdots$

$PP \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle \triangle$

if vacant

$\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

7 circles on

$\triangledown \triangledown \cdot \cdot \cdot \triangledown \triangledown \cdot \cdot \cdot \triangledown \triangledown \cdot \cdot \cdot \triangledown \triangledown \cdot \cdot \cdot \triangledown \triangledown \cdot \cdot$

makes

$\triangledown \triangledown \bigcirc \bigcirc \bigcirc \triangledown \triangledown \bigcirc \bigcirc \bigcirc \triangledown \triangledown \bigcirc \cdot \cdot \triangledown \triangledown \cdot \cdot \cdot \triangledown \triangledown \cdot \cdot$

not longer than $7 \cdot \dfrac{5+2}{5-2}$

it means consecutive $7 \cdot \dfrac{5+2}{5-2}$ contains 7vacant circle.

it means

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$\triangledown \triangledown \bigcirc \bigcirc \bigcirc \triangledown \triangledown$

$\triangledown \triangledown \bigcirc$

when

$\triangledown \triangledown \bigcirc \bigcirc \bigcirc \triangledown \triangledown$ overlap with

$\triangle \triangle \cdot \cdot \triangle \triangle \cdot \cdot \triangle \triangle \cdot \cdot \triangle \triangle \cdot \cdot \triangle \triangle \cdot \cdot \triangle \triangle \cdot \cdot$

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it's not longer than

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that makes $\frac{4+2}{4-2}$times - case of overlap △,▽.

$7 \cdot \frac{5+2}{5-2} \cdot \frac{4+2}{4-2}$-consecutine $A_n B_n$ contains 7-not divided by 4 or 5.

overlaping

○ ○ ○ ⋯ ○ ○ ○(P circles)

2 △ 2 △ 2 △ 2 △ 2 △ 2 △ 2 △

3 3 △ 3 3 △ 3 3 △ 3 3 △ 3 3 △ 3 3 △ 3 3 △

5 5 △ △ △ 5 5 △ △ △ 5 5 △ △ △

⋮

P P △ △ △ △ △ △ ⋯ △ △ △ P P

$P \cdot \left(\frac{2+1}{2-1}\right) \cdot \left(\frac{3+2}{3-2}\right) \cdot \left(\frac{5+2}{5-2}\right) \cdot \cdots \cdot \left(\frac{P+2}{P-2}\right)$-consecutive $A_n B_n$ contains P unit-not divided by P or less prime.

$$P\cdot\left(\frac{2+1}{2-1}\right)\cdot\left(\frac{3+2}{3-2}\right)\cdot\left(\frac{5+2}{5-2}\right)\cdot\ \cdots\ \cdot\left(\frac{P+2}{P-2}\right)$$
$$<P\cdot\left(\frac{2}{2-1}\right)^4\cdot\left(\frac{3}{3-1}\right)^4\cdot\left(\frac{5}{5-1}\right)^4\cdot\ \cdots\ \cdot\left(\frac{P}{P-1}\right)^4$$

from that

$$\left(\frac{2}{2-1}\right)\cdot\left(\frac{3}{3-1}\right)\cdot\left(\frac{5}{5-1}\right)\cdot\ \cdots\ \cdot\left(\frac{P}{P-1}\right)<3\ln P$$

$$P\cdot\left(\frac{2}{2-1}\right)^4\cdot\left(\frac{3}{3-1}\right)^4\cdot\left(\frac{5}{5-1}\right)^4\cdot\ \cdots\ \cdot\left(\frac{P}{P-1}\right)^4<3^4Pln^4P$$

Hence

3^4Pln^4P-consecutive A_n,B_n contains both are not divided by P or less prime, when $A_n,B_n<P^2$, both are prime.

<Theorem2>

$A_n=a_1n+a_2$
$B_n=b_1n+b_2$
$C_n=c_1n+c_2$
$\vdots\ (kth)$

for $A_nB_nC_n\cdots<P^2$

$3^{2k}Pln^{2k}P$-consecutive $A_nB_nC_n\cdots$contains every $A_n,B_n,C_n,\cdots$ are prime at once.

And we know

1.Goldbach's conjecture

$A_n = n$

$B_n = -n + 2N$

$3\sqrt[4]{2N} ln \sqrt[4]{2N}$-consecutive (A_n, B_n)contains A_n, B_n both are prime at once.

2.twin prime conjecture

$A_n = n$

$B_n = n - 2$

between Nth and $N - 3\sqrt[4]{N} ln \sqrt[4]{N}th(A_n, B_n)$ there is A_n, B_n both are prime at once.

3.$k = 1$

both N and $N + 3\sqrt[4]{N} ln \sqrt[4]{N}$ always exist prime.

4.and

Polignac's conjecture, green-tao theorem, so on.

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