The New Prime theorem（20）

Hardy-Littlewood prime K-tuple lonjecture

Chun-Xuan Jiang

jiangchunxuan@vip.sohu.com

Abstract

Using Jiang function we prove that Jiang prime k -tuple theorem is true[1-3] and Hardy-Littlewood prime k -tuple conjecture is false[4-8]. The tool of additive prime number theory is basically the Hardy-Littlewood prime tuple conjecutre, but can not prove and count any prime problems[6].

Jiang k -tuple theorem. We define prime equations

$$P, \quad P+b_i, \tag{1}$$

where $2 \mid b_i, i=1,\cdots,k-1$.

Proof. We have Jiang function [1,2]

$$J_2(\omega)=\prod_P [P-1-\chi(P)], \tag{2}$$

where $\omega=\prod_P P$, $\chi(P)$ is the number of solutions of congruence

$$\prod_{i=1}^{k-1}(q+b_i)\equiv 0 \pmod P, q=1,\cdots,P-1. \tag{3}$$

From (3) we have that if $\chi(P)\le P-2$ then $J_2(\omega)\ne 0$, there exist infinitely many primes P such that $P+b_i$, $i=1,\cdots,k-1$, are all prime; if $\chi(P)=P-1$ then $J_2(\omega)=0$, there exist finitely many primes P such that $P+b_i$ are all prime.

We have asymptotic formula [1,2]

$$\pi_k(N,2)=\left|\{P\le N: P+b_i=prime\}\right| \sim \sigma(J)\frac{N}{\log^k N}, \tag{4}$$

where Jiang prime k -tuple singular series

$$\sigma(J)=\frac{J_2(\omega)\omega^{k-1}}{\phi^k(\omega)}=\prod_P\left(1-\frac{1+\chi(P)}{P}\right)(1-\frac{1}{P})^{-k} \tag{5}$$

Prime 2-tuple theorem. Let $k=2$, $b_1=1$. From (1) we have

$$P, \quad P+1. \tag{6}$$

From (3) we have $\chi(2)=1$. From (2) we have $J_2(2)=0$.

Substituting it inot (5) we have Jiang singular series

$$\sigma(J)=0. \tag{7}$$

We prove that in (6) there is only a solution: $P=2$, $P+1=3$. One of $P, \quad P+1$ has to be divisible by 2. Additive prime number theory can not prime prime 2-tuple theorem [6].

Twin prime theorem. Let $k=2$, $b_1=2$. From (1) we have

$$P, \quad P+2 \tag{8}$$

From (3) we have

$$\chi(2)=0, \ \chi(P)=1 \ \text{ otherwise.} \tag{9}$$

Substituting (9) into (5) we have Jiang singular series

$$\sigma(J)=2\prod_{3\le P}\left(1-\frac{1}{(P-1)^2}\right)\neq 0 \tag{10}$$

We prove that there are infinitely many primes P such that $P+2$ is a prime. Additive prime number theory can not prove the twin prime theorem [6].

Prime 3-tuple theorem. Let $k=3$, $b_1=2$, $b_2=4$. From (1) we have

$$P, \ P+2, \ P+4. \tag{11}$$

From (2) and (3) we have

$$\chi(2)=0, \ \chi(3)=2, \ J_2(3)=0. \tag{12}$$

Substituting (12) into (5) we have Jiang singular series

$$\sigma(J)=0 \tag{13}$$

We prove that in (11) there is only a solution: $P=3$, $P+2=5$, $P+4=7$. One of $P, \ P+2, \ P+4$ has to be divisible by 3. Additive prime number theory can not prove prime 3-tuple theorem[6].

Remark. The prime number theory is basically to count the Jiang function $J_{n+1}(\omega)$ and Jiang prime k-tuple singular series $\sigma(J)=\frac{J_2(\omega)\omega^{k-1}}{\phi^k(\omega)}=\prod_P\left(1-\frac{1+\chi(P)}{P}\right)(1-\frac{1}{P})^{-k}$ [1,2], which can count the number of prime number. The prime distribution is not random. But Hardy prime k-tuple singular series $\sigma(H)=\prod_P\left(1-\frac{\nu(P)}{P}\right)(1-\frac{1}{P})^{-k}$ is false [3-8], which can not count the number of prime numbers.

References

[1] Chun-Xuan Jiang, Foundations of Santilli's isonumber theory with applications to new cryptograms, Fermat's theorem and Goldbach's conjecture. Inter. Acad. Press, 2002, MR2004c:11001, (http://www.i-b-r.org/docs/jiang.pdf) (http://www.wbabin.net/math/xuan13.pdf)(http//vixra.org/numth/).

[2] Chun-Xuan Jiang, Jiang's function $J_{n+1}(\omega)$ in prime distribution.(http://www. wbabin.net/math /xuan2. pdf.) (http://wbabin.net/xuan.htm#chun-xuan.)(http://vixra.org/numth/)

[3] Chun-Xuan Jiang, The Hardy-Littlewood prime k-tuple conjectnre is false. (http://wbabin.net/xuan.htm# chun-xuan)(http://vixra.org/numth/)

[4] G. H. Hardy and J. E. Littlewood, Some problems of "Partitio Numerorum", III: On the expression of a number as a sum of primes. Acta Math., 44(1923)1-70.

[5] W. Narkiewicz, The development of prime number theory. From Euclid to Hardy and Littlewood. Springer-Verlag, New York, NY. 2000, 333-353.这是当代素数理论水平.

[6] B. Green and T. Tao, Linear equations in primes. To appear, Ann. Math.

[7] D. Goldston, J. Pintz and C. Y. Yildirim, Primes in tuples I. Ann. Math., 170(2009) 819-862.

[8] T. Tao. Recent progress in additive prime number theory, preprint. 2009. http://terrytao.files.wordpress. com/2009/08/prime-number-theory 1.pdf

Szemerédi's theorem does not directly to the primes, because it can not count the number of primes. It is unusable. Cramér's random model can not prove prime problems. It is incorrect. The probability of $1/\log N$ of being prime is false. Assuming that the events "P is prime", "$P+2$ is prime" and "$P+4$ is prime" are independent, we conclude that P, $P+2$, $P+4$ are simultaneously prime with probability about $1/\log^3 N$. There are about $N/\log^3 N$ primes less than N. Letting $N\to\infty$ we obtain the prime conjecture, which is false. The tool of additive prime number theory is basically the Hardy-Littlewood prime tuple conjecture, but can not prove and count any prime problems[6].

本文开始对 1923 年 Hardy and Littlewood 开创素数理论新时代的猜想进行证明和否定。这是第一次, 所有数学家都认为他们的猜想都是对的但没有证明, 今天素数理论仍保持在 1923 水平.