The New Prime theorem（23）

Hardy-Littlewood conjecture F: $am^2 + bm + c$

Chun-Xuan Jiang

Institute for Basic Research, Palm Harbor, FL 34682, U.S.A.
jiangchunxuan@vip.sohu.com

Abstract: Using Jiang function we prove Hardy-Littlewood conjecture F: $am^2 + bm + c$ [4].

Keywords: prime; theorem; function; number; new

Theorem. We define prime equation

$$P_1 = aP^2 + bP + c$$ （1）

Let $a > 0$, $(a,b,c) = 1$. Assume that $a + b$ and c are not both even; and that $D = b^2 - 4ac$ is not a square. Then there are infinitely many primes P such that P_1 is a prime.

Proof. We have Jiang function [1,2]

$$J_2(\omega) = \prod_P [P - 1 - \chi(P)]$$ （2）

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

$$aq^2 + bq + c \equiv 0 \pmod{P}, q = 1, \cdots, P-1$$ （3）

From (3) we have that if $\left(\dfrac{D}{P}\right) = 1$ then $\chi(P) = 2$; if $\left(\dfrac{D}{P}\right) = -1$ then $\chi(P) = 0$. Substituting it into (2) we have

$$J_2(\omega) = \prod_{3 \le P}[P - 2 - (\frac{D}{P})] \ne 0$$ （4）

There are infinitely many primes P such that P_1 is a prime.
We have asymptotic formula [1,2]

$$\pi_2(N, 2) = \left|\{P \le N : P_1 = prime\}\right| \sim \frac{J_2(\omega)\omega}{2\phi^2(\omega)} \frac{N}{\log^2 N}$$ （5）

where $\phi(\omega) = \prod_P (P-1)$.

Example 1. Euler prime equation

$$P_1 = P^2 + P + 41$$ （6）

From (2) we have

$$J_2(\omega) = \prod_P (P - 1 - \chi(P))$$ （7）

where $\chi(41) = \chi(163) = 1$, if $\left(\dfrac{-163}{P}\right) = 1$ then $\chi(P) = 2$; if $\left(\dfrac{-163}{P}\right) = -1$ then $\chi(P) = 0$.
We have

$$J_2(\omega) \ne 0$$ （8）

We prove that there are infinitely many prime solutions in (6).

Remark. The prime number theory is basically to count the Jiang function $J_{n+1}(\omega)$ and Jiang prime k-tuple

singular series $\sigma(J) = \dfrac{J_2(\omega)\omega^{k-1}}{\phi^k(\omega)} = \Pi_P \left(1 - \dfrac{1+\chi(P)}{P}\right)(1-\dfrac{1}{P})^{-k}$ [1,2], which can count the number of prime

number. The prime distribution is not random. But Hardy prime k-tuple singular series

$\sigma(H) = \Pi_P \left(1 - \dfrac{\nu(P)}{P}\right)(1-\dfrac{1}{P})^{-k}$ is false [3-8], which can not count the number of prime numbers.

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].

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
9. Vinoo Cameron. Prime Number 19, The Vedic Zero And The Fall Of Western Mathematics By Theorem. *Nat Sci* 2013;11(2):51-52. (ISSN: 1545-0740). http://www.sciencepub.net/nature/ns1102/009_15631ns1102_51_52.pdf.
10. Vinoo Cameron, Theo Den otter. PRIME NUMBER COORDINATES AND CALCULUS. *Rep Opinion* 2012;4(10):16-17. (ISSN: 1553-9873). http://www.sciencepub.net/report/report0410/004_10859report0410_16_17.pdf.
11. Vinoo Cameron, Theo Den otter. PRIME NUMBER COORDINATES AND CALCULUS. *J Am Sci* 2012;8(10):9-10. (ISSN: 1545-1003). http://www.jofamericanscience.org/journals/am-sci/am0810/002_10859bam0810_9_10.pdf.
12. Chun-Xuan Jiang. Automorphic Functions And Fermat's Last Theorem (1). *Rep Opinion* 2012;4(8):1-6. (ISSN: 1553-9873). http://www.sciencepub.net/report/report0408/001_10009report0408_1_6.pdf.
13. Chun-Xuan Jiang. Jiang's function $J_{n+1}(\omega)$ in prime distribution. *Rep Opinion* 2012;4(8):28-34. (ISSN: 1553-9873). http://www.sciencepub.net/report/report0408/007_10015report0408_28_34.pdf.
14. Chun-Xuan Jiang. The Hardy-Littlewood prime k-tuple conjecture is false. *Rep Opinion* 2012;4(8):35-38. (ISSN: 1553-9873). http://www.sciencepub.net/report/report0408/008_10016report0408_35_38.pdf.
15. Chun-Xuan Jiang. A New Universe Model. *Academ Arena* 2012;4(7):12-13 (ISSN 1553-992X). http://sciencepub.net/academia/aa0407/003_10067aa0407_12_13.pdf.

5/1/2015