Fermat Last Theorem Controversy(2)

The Fermat last theorem controversy is an argument between 20th century mathematicians Jiang Chun-Xuan(1992) and Andrew Wiles(1995) over who has first proved Fermat last theorem.

Abstract

D.Zagier(1984) and K.Inkeri(1990) said[7] Jiang mathematics is true, but Jiang determinates the irrational numbers to be very difficult for prime exponent p>2.In 1991 Jiang studies the composite exponents n=15,21,33,…,3p and proves Fermat last theorem for prime exponent p>3[1].In 1986 Gerhard Frey places Fermat last theorem at elliptic curve ,now called a Frey curve.Andrew Wiles studies Frey curve.In 1994 Wiles proves Fermat last theorem[9,10].Conclusion:Jiang proof is direct and very simple,but Wiles proof is indirect and very complex. If China mathematicians and Academia Sinica had supported and recognized Jiang proof on Fermat last theorem,Wiles would not have proved Fermat last theorem,because in 1991 Jiang had proved Fermat last theorem[1].Wiles has received many prizes and awards, he should thank China mathematicians and Academia Sinica.To support and to publish Jiang Fermat last theorem paper is prohibited in Academia Sinica. Remark. Chun-Xuan Jiang,A general proof of Fermat last theorem(Chinese),Mimeograph papers,July 1978. In this paper using circulant matrix,circulant determinant and

permutation group theory Jiang had proved Fermat last theorem for odd prime exponent.

1978 年 7 月 19 日下午在中科院数学所由王元组织蒋春暄费马大定理讨论会, (这次讨论会是国家科委主任方毅指示下进行的) 蒋春暄首先报告, 接着数学所发言, 陈绪明(现在加拿大) 发言: 你没理解蒋春暄讲话内容. 最后宣布散会. 后来蒋春暄单位收到数学所来信, 领导对蒋春暄说, 内容大概如下: <你们单位好好教育蒋春暄, 为社会主义作些有益工作, 不要做些对社会主任无用的工作>。在这次讨论会上蒋春暄巳经证明了费马大定理。如果数学所所长华罗庚对这件事关心, 组织有关专家邦助并发表. 费马大定理在上世纪七十年代就解决了。不会出现怀尔斯事件。蒋春暄最后证明费马大定理是在这次报告基础进一步完成的, 基本思路没有变化。这是一种证明费马大定理新的数学方法。华罗庚数学学派他们不相信中国人能证明费马大定理, 华罗庚对中国证明费马大定理人有句名言: 骑自行登月是不可能的。所以蒋春暄是做骑自行登月的事. 所以到今天, 中国不承认不支持, 连蒋春暄母校北京航空航天大学也不支持。2009 年蒋春暄因首先证明费马大定理获国际金奖, 中国不承认这个金奖, 蒋春暄证明费大定理得到部分人支持,没有人否定蒋春暄证明。一句话中国只承认怀尔斯证明费马大定理, 不承认中国蒋春暄证明费马大定理。2010 年 8 月出版王元主编<数学大辞典> **, 王元宣布费马大定理是由怀尔斯 1994 年解决的, 这件事总会解决, 利用网络来宣传这件数学大事, 可能要下代, 怀尔斯学派力量太强大,** 它是日本德国美国法国英国顶尖数学家成果, 最后由怀尔斯完成。蒋春暄单枪匹马斗不过他们, 但科学真理力量是巨大, 最后胜利一定是

属于蒋春暄的。历史将会作出最后结论。蒋春暄证明费马大定理主要宣传他划时代 Automorphic function. **这和微分方程, 群论, 函数论, 代数,** 几何等学科都有联系, 三角函数非常有用, 它是三角函数推广。**用它可解决自然界最复杂问题。这个问题研究几百年, 最后由蒋春暄解决。蒋春暄用他发明新数学, 这种新数学就包括费马大定理, 不用任何数论知识, 直接证明了费马大定理,** 这种证明一般数学家都能理解。**说明这种数学非常有用。怀尔斯没有发明新数学, 利用与费马大定理没有直接关系数学, 硬把它和费马大定理联系在一起,间接证明费马大定理。**

Automorphic Functions And Fermat's Last Theorem（2）

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Abstract

In 1637 Fermat wrote: "*It is impossible to separate a cube into two cubes, or a biquadrate into two biquadrates, or in general any power higher than the second into powers of like degree: I have discovered a truly marvelous proof, which this margin is too small to contain.*"

This means: $x^n + y^n = z^n (n > 2)$ has no integer solutions, all different from 0(i.e., it has only the trivial solution, where one of the integers is equal to 0). It has been called Fermat's last theorem (FLT). It suffices to prove FLT for exponent 4. and every prime exponent P. Fermat proved FLT for exponent 4. Euler proved FLT for exponent 3.

In this paper using automorphic functions we prove FLT for exponents $6P$ and P, where P is an odd prime. The proof of FLT must be direct .But indirect proof of FLT is disbelieving.

In 1974 Jiang found out Euler formula of the cyclotomic real numbers in the cyclotomic fields

$$\exp\left(\sum_{i=1}^{2n-1} t_i J^i\right) = \sum_{i=1}^{2n} S_i J^{i-1} \quad (1)$$

where J denotes a $2n$ th root of unity, $J^{2n} = 1$, n is an odd number, t_i are the real numbers.

S_i is called the automorphic functions(complex hyperbolic functions) of order $2n$ with $2n-1$ variables [5,7].

$$S_i = \frac{1}{2n}\left[e^{A_1} + 2\sum_{j=1}^{\frac{n-1}{2}} (-1)^{(i-1)jB_j} \cos\left(\theta_j + (-1)^j \frac{(i-1)j\pi}{n} \right) \right]$$

$$+ \frac{(-1)^{(i-1)}}{2n}\left[e^{A_2} + 2\sum_{j=1}^{\frac{n-1}{2}} (-1)^{(i-1)j} e^{D_j} \cos\left(\phi_j + (-1)^{j+1} \frac{(i-1)j\pi}{n} \right) \right] , \qquad (2)$$

where $i = 1,\dots,2n$;

$$A_1 = \sum_{\alpha=1}^{2n-1} t_\alpha, \quad B_j = \sum_{\alpha=1}^{2n-1} t_\alpha (-1)^{\alpha j} \cos\frac{\alpha j\pi}{n}, \theta_j = (-1)^{(j+1)} \sum_{\alpha=1}^{2n-1} t_\alpha (-1)^{\alpha j} \sin\frac{\alpha j\pi}{n},$$

$$A_2 = \sum_{\alpha=1}^{2n-1} t_\alpha (-1)^{\alpha}, \quad D_j = \sum_{\alpha=1}^{2n-1} t_\alpha (-1)^{(j-1)\alpha} \cos\frac{\alpha j\pi}{n},$$

$$\phi_j = (-1)^j \sum_{\alpha=1}^{2n-1} t_\alpha (-1)^{(j-1)\alpha} \sin\frac{\alpha j\pi}{n}, A_1 + A_2 + 2\sum_{j=1}^{\frac{n-1}{2}} (B_j + D_j) = 0 \qquad (3)$$

From (2) we have its inverse transformation[5,7]

$$e^{A_1} = \sum_{i=1}^{2n} S_i, \quad e^{A_2} = \sum_{i=1}^{2n} S_i (-1)^{1+i}$$

$$e^{B_j} \cos\theta_j = S_1 + \sum_{i=1}^{2n-1} S_{1+i} (-1)^{ij} \cos\frac{ij\pi}{n},$$

$$e^{B_j} \sin\theta_j = (-1)^{(j+1)} \sum_{i=1}^{2n-1} S_{1+i} (-1)^{ij} \sin\frac{ij\pi}{n},$$

$$e^{D_j} \cos\phi_j = S_1 + \sum_{i=1}^{2n-1} S_{1+i} (-1)^{(j-1)i} \cos\frac{ij\pi}{n}$$

$$e^{D_j} \sin\phi_j = (-1)^j \sum_{i=1}^{2n-1} S_{1+i} (-1)^{(j-1)i} \sin\frac{ij\pi}{n} \qquad (4)$$

(3) and (4) have the same form.

From (3) we have

$$\exp\left[A_1 + A_2 + 2\sum_{j=1}^{\frac{n-1}{2}} (B_j + D_j) \right] = 1 \qquad (5)$$

From (4) we have

$$\exp\left[A_1 + A_2 + 2\sum_{j=1}^{\frac{n-1}{2}} (B_j + D_j)\right] = \begin{vmatrix} S_1 & S_{2n} & \cdots & S_2 \\ S_2 & S_1 & \cdots & S_3 \\ \cdots & \cdots & \cdots & \cdots \\ S_{2n} & S_{2n-1} & \cdots & S_1 \end{vmatrix}$$

$$= \begin{vmatrix} S_1 & (S_1)_1 & \cdots & (S_1)_{2n-1} \\ S_2 & (S_2)_1 & \cdots & (S_2)_{2n-1} \\ \cdots & \cdots & \cdots & \cdots \\ S_{2n} & (S_{2n})_1 & \cdots & (S_{2n})_{2n-1} \end{vmatrix} \quad (6)$$

where $(S_i)_j = \frac{\partial S_i}{\partial t_j}$ [7]..

From (5) and (6) we have circulant determinant

$$\exp\left[A_1 + A_2 + 2\sum_{j=1}^{\frac{n-1}{2}} (B_j + D_j)\right] = \begin{vmatrix} S_1 & S_{2n} & \cdots & S_2 \\ S_2 & S_1 & \cdots & S_3 \\ \cdots & \cdots & \cdots & \cdots \\ S_{2n} & S_{2n-1} & \cdots & S_1 \end{vmatrix} = 1 \quad (7)$$

If $S_i \neq 0$, where $i = 1,2,3,...,2n$, then (7) have infinitely many rational solutions.

Let $n = 1$. From (3) we have $A_1 = t_1$ and $A_2 = -t_1$. From (2) we have

$$S_1 = \operatorname{ch} t_1 \qquad S_2 = \operatorname{sh} t_1 \quad (8)$$

we have Pythagorean theorem

$$\operatorname{ch}^2 t_1 - \operatorname{sh}^2 t_1 = 1 \quad (9)$$

(9) has infinitely many rational solutions.

Assume $S_1 \neq 0, S_2 \neq 0, S_i \neq 0$, where $i = 3,...,2n$. $S_i = 0$ are $(2n-2)$ indeterminate equations with $(2n-1)$ variables. From (4) we have

$$e^{A_1} = S_1 + S_2, \quad e^{A_2} = S_1 - S_2, \, e^{2B_j} = S_1^2 + S_2^2 + 2S_1S_2(-1)^j \cos\frac{j\pi}{n},$$

$$e^{2D_j} = S_1^2 + S_2^2 + 2S_1S_2(-1)^{j+1} \cos\frac{j\pi}{n} \quad (10)$$

Example. Let $n = 15$. From (3) and (10) we have Fermat’s equation

$$\exp[A_1 + A_2 + 2\sum_{j=1}^{7} (B_j + D_j)] = S_1^{30} - S_2^{30} = (S_1^{10})^3 - (S_2^{10})^3 = 1 \quad (11)$$

From (3) we have

$$\exp(A_1 + 2B_3 + 2B_6) = [\exp(\sum_{j=1}^{5} t_{5j})]^5 \qquad (12)$$

From (10) we have

$$\exp(A_1 + 2B_3 + 2B_6) = S_1^5 + S_2^5 \qquad (13)$$

From (12) and (13) we have Fermat's equation

$$\exp(A_1 + 2B_3 + 2B_6) = S_1^5 + S_2^5 = [\exp(\sum_{j=1}^{5} t_{5j})]^5 \qquad (14)$$

Euler prove that (19) has no rational solutions for exponent 3 [8]. Therefore we prove that (14) has no rational solutions for exponent 5.

Theorem. Let $n = 3P$ where P is an odd prime. From (7) and (8) we have Fermat's equation

$$\exp(A_1 + A_2 + 2\sum_{j=1}^{\frac{3P-1}{2}} (B_j + D_j)] = S_1^{6P} - S_2^{6P} = (S_1^{2P})^3 - (S_2^{2P})^3 = 1 \qquad (15)$$

From (3) we have

$$\exp\left(A_1 + 2\sum_{j=1}^{\frac{P-1}{2}} B_{3j}\right) = \left[\exp\left(\sum_{j=1}^{5} t_{jP}\right)\right]^P \qquad (16)$$

From (10) we have

$$\exp\left(A_1 + 2\sum_{j=1}^{\frac{P-1}{2}} B_{3j}\right) = S_1^P + S_2^P \qquad (17)$$

From (16) and (17) we have Fermat's equation

$$\exp\left(A_1 + 2\sum_{j=1}^{\frac{P-1}{2}} B_{3j}\right) = S_1^P + S_2^P = \left[\exp\left(\sum_{j=1}^{5} t_{jP}\right)\right]^P \qquad (18)$$

Euler prove that (15) has no rational solutions for exponent 3[8]. Therefore we prove that (18) has no rational solutions for prime exponent P [5,7].

Remark. It suffices to prove FLT for exponent 4. Let $n = 4P$, where P is an odd prime. We have the Fermat's equation for exponent $4P$ and the Fermat's equation for exponent P [2,5,7]. This is the proof that Fermat thought to have had. In complex hyperbolic functions let exponent n be $n = \Pi P$, $n = 2\Pi P$ and $n = 4\Pi P$. Every factor of exponent n has the Fermat's equation [1-7]. In complex trigonometric functions let exponent n be $n = \Pi P$, $n = 2\Pi P$ and $n = 4\Pi P$. Every factor of exponent n has Fermat's equation [1-7]. Using modular elliptic curves Wiles and Taylor prove FLT [9, 10]. This is not the proof that Fermat thought to have had. The classical theory of automorphic functions, created by Klein and Poincare, was concerned with the study of analytic functions in the unit circle that are invariant under a discrete group of transformation. Automorphic functions are the generalization of trigonometric, hyperbolic, elliptic, and certain other functions of elementary analysis. The complex trigonometric functions and complex hyperbolic functions have a wide application in mathematics and physics.

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