THE REFUTATION OF THE ABC CONJECTURE

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Abstract

The refutation of The Oesterlé–Masser Conjecture (The ABC Conjecture).

MSC: Primary - 11D41; Secondary - 11D45; 11D75.

Keywords

ABC Conjecture, Beal Conjecture, Diophantine Equations, Diophantine Inequalities, Fermat-Beal Theorem.

I. INTRODUCTION

The famous Fermat's Last Theorem (FLT) assertion that for all $x \in \{3,4,5,\dots\}$ and for all $X, Y, Z \in \{1,2,3,\dots\}$: $X^x + Y^x \neq Z^x \in 1.$ [2], [3] and [4]

II. THE REFUTATION OF THE ABC CONJECTURE

Conjecture ABC (Oesterlé– Masser Conjecture). For all $\epsilon > 0$ there exist only finitiely many triples (a, b, c) of positive coprime integers, with $a + b = c > d^{1+\epsilon}$, where d denotes the product of the distinct prime factors of the product abc. [1]

Refutation of ABC Conjecture.

Without loss of the disproof we can assume that the number g is the odd prime number.

For all $x \in \{1,3,5,\dots\}$ and for all $0 < \epsilon \leq \frac{1}{3^x+125^x}$ and for some g:

$$3^x + 125^x = 2^7 g > (2 \cdot 3 \cdot 5g)^{1+\epsilon} = d^{1+\epsilon} \implies 2^6 > (2g)^\epsilon (3 \cdot 5)^{1+\epsilon}.$$

For all $x \in \{1,3,5,\dots\}$ and for all $0 < \epsilon \leq \frac{1}{169^x+343^x}$ and for some g:

$$169^x + 343^x = 2^9 g > (2 \cdot 7 \cdot 13g)^{1+\epsilon} = d^{1+\epsilon} \implies 2^8 > (2g)^\epsilon (7 \cdot 13)^{1+\epsilon}.$$

For all $x \in \{1,3,5,\dots\}$ and for all $0 < \epsilon \leq \frac{1}{4^x+121^x}$ and for some g:

$$4^x + 121^x = 5^3 g > (2 \cdot 5 \cdot 11g)^{1+\epsilon} = d^{1+\epsilon} \implies 5^2 > (5g)^\epsilon (2 \cdot 11)^{1+\epsilon}.$$

Theorem. For all $0 < \epsilon \leq \frac{1}{c}$ there exist infinite many triples (a, b, c) of positive coprime integers with $a + b = c > d^{1+\epsilon}$, where d denotes the product of the distinct prime factors of abc. ♠

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