Goldbach's conjecture

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Abstract

In this article I try to make my modest contribution to the proof of Goldbach's conjecture and I propose to simply go through its negation.

Let E be the prime numbers set.

The Goldbach conjecture states that :

$\forall k \in \mathbb{N}^*/\{1\} \quad \exists (p,p') \in E^2 \ / \qquad 2k = p + p'$

Suppose this statement is false, then :

$\exists k \in \mathbb{N}^*/\{1\} \quad \forall (p,p') \in E^2 \ / \quad 2k \neq p + p'$

$2k \neq p + p'$ is equivalent to either 2k $<$ p+p' or 2k $>$ p+p'

in the case 2k $<$ p+p'
as p and p' are arbitrary we can set the value of p' to 2 for example then,
2k-2 $<$ p.
but $k \geq 2 \ \ then \ \ 2 \leq 2k - 2$ so $\quad \forall p \in E \quad 2$ $<$ p, it does mean that 2 is not prime! which is absurd

in the case 2k $>$ p+p' then for $p' = 2$, p $<$ 2k-2, so E is bounded and this is absurd too.

So, the negation of Goldbach statement is false.

Conclusion : The Goldbach's conjecture is true.

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