A note of Goldbach's Conjucture

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Abstract. In this paper i have presented a partial solution of open problem so called Goldbach's conjecture in number theory, which consists in the fact that: "Every even number can be expressed as a sum of two prime numbers". In this paper I have set up a hypothesis, which helps in my line of proof of Goldbach hypothesis. I very much hope that this hypothesis be easier to prove.

Key words. simple number, generation of natural numbers, Goldbach problem.

1. PRELIMINARY STATEMENTS

Definition 1. Prime numbers we called every natural numbers that doesn't have divisors than 1 and itself. (one doesn't unify to this set.). (see[1],[2]).
Theorem 2. Every prime numbers greater than 3 can be expressed in the form $6k + 1$ *or* $6k - 1$, where k-is a natural number. (see[2],[3], [4], [5]).

2. MY HYPOTHESIS

Let separate now the set of natural numbers $\mathbb{N}$ into three subsets.

$$\mathbb{N}_1 = \{3\alpha - 1 \ / \ \forall\alpha \in \mathbb{N}\},$$
$$\mathbb{N}_2 = \{3\alpha \ / \ \forall\alpha \in \mathbb{N}\},$$
$$\mathbb{N}_3 = \{3\alpha + 1 \ / \ \forall\alpha \in \mathbb{N}\}$$

We have the following propositions.

Proposition.3: The set's $\mathbb{N}_1, \mathbb{N}_2, \mathbb{N}_3$, are mutually disjoints (so the split is correct) and their union gives us the set of natural numbers.

$$\mathbb{N}_1 \cap \mathbb{N}_2 = \phi, \mathbb{N}_1 \cap \mathbb{N}_3 = \phi, \mathbb{N}_2 \cap \mathbb{N}_3 = \phi \quad \text{and} \quad \mathbb{N}_1 \cup \mathbb{N}_2 \cup \mathbb{N}_3 = \mathbb{N}$$

Spliting the set of natural numbers in three types we see that we have a full generation of this set, so we generate all natural numbers greater than 4. Below we give an illustration on the table:.

Table 1	$\mathbb{N}_1$**--Type I**	$\mathbb{N}_2$**--Type II**	$\mathbb{N}_3$**—Type III**
α	$[3(k_1 + k_2) - 1]$	$[3(k_1 + k_2)]$	$[3(k_1 + k_2) + 1]$
$k_1 + k_2 = 2$	5	6	7
$k_1 + k_2 = 3$	8	9	10
$k_1 + k_2 = 4$	11	12	13
$k_1 + k_2 = 5$	14	15	16
$k_1 + k_2 = 6$	17	18	19
$k_1 + k_2 = 7$	20	21	22
$\vdots$	$\vdots$	$\vdots$	$\vdots$

My Algorithm. 5: I give a servo algorithm. (Emphasize that the goal is a proof of Goldbach hypothesis)

Step.1. For every even number given to us, first of divide by 2 this number by obtaining a natural number and shonim which of the above three types of the this number.

Step.2. To obtain a natural number found α- relevant.

Step. 3. Find suitable couple $(k_1, k_2) \in \mathbb{N} \times \mathbb{N}$, such that $k_1 + k_2 = \alpha$, for which we have according to the number of proper derive simple numbers.

MY HYPOTHESIS. 6: For all $n_i \in \mathbb{N}_i$ ($i = 1,2,3.$ so for all $n \in \mathbb{N}$) place one of the three following cases: (In each of the three following cases α is, α of find through Algorimit 5)

Case.1. For all $n_1 \in \mathbb{N}_1 = \{3\alpha - 1/ \text{ where } \alpha \in \mathbb{N}\},\ n_1 = 3\alpha - 1$,
$\exists k_1, k_2 \in \mathbb{N}$ where $k_1 + k_2 = \alpha$, such that the numbers:
$\boldsymbol{p_1 = 6k_1 - 1},\ \boldsymbol{p_2 = 6k_2 - 1}$ are prim numbers.

Case.2. For all $n_2 \in \mathbb{N}_2 = \{3\alpha/ \text{ where } \alpha \in \mathbb{N}\},\ n_2 = 3\alpha$,
$\exists k_1, k_2 \in \mathbb{N}$ where $k_1 + k_2 = \alpha$, such that the numbers:
$\boldsymbol{p_1 = 6k_1 - 1},\ \boldsymbol{p_2 = 6k_2 + 1},$ are prim numbers.

Case.3. Për cdo $n_3 \in \mathbb{N}_3 = \{3\alpha + 1/\text{where } \alpha \in \mathbb{N}\},\ n_3 = 3\alpha + 1$,
$\exists k_1, k_2 \in \mathbb{N}$ where $k_1 + k_2 = \alpha$, such that the numbers:
$\boldsymbol{p_1 = 6k_1 + 1},\ \boldsymbol{p_2 = 6k_2 + 1}$ are prim numbers.
in the following tables in accordance with an illustrative case is to do the first few numbers.

Table 1.1

$\mathbb{N}_1$**--Type I**			
$[3(k_1 + k_2) - 1]$	$k_1 + k_2 = \alpha$	$\boldsymbol{p_1 = 6k_1 - 1}$	$\boldsymbol{p_2 = 6k_2 - 1}$
5	$1 + 1 = \mathbf{2}$	5	5
8	$2 + 1 = 3$	11	5
11	$3 + 1 = 4$	17	5
14	$4 + 1 = 5$	23	5
17	$5 + 1 = 6$	29	5
20	$4 + 3 = 7$	23	17
⋮	⋮	⋮	⋮

Table 1.2

$\mathbb{N}_2$**--Type II**			
$[3(k_1 + k_2)]$	$k_1 + k_2 = \alpha$	$\boldsymbol{p_1 = 6k_1 - 1}$	$\boldsymbol{p_2 = 6k_2 + 1}$
6	$1 + 1 = \mathbf{2}$	5	7
9	$2 + 1 = 3$	11	7
12	$3 + 1 = 4$	17	7
15	$4 + 1 = 5$	23	7
18	$5 + 1 = 6$	29	7
21	$4 + 3 = 7$	23	19
⋮	⋮	⋮	⋮

Table 1.3

$\mathbb{N}_3$**—Type III**			
$[3(k_1 + k_2) + 1]$	$k_1 + k_2 = \alpha$	$\boldsymbol{p_1 = 6k_1 + 1}$	$\boldsymbol{p_2 = 6k_2 + 1}$
7	$1 + 1 = \mathbf{2}$	7	7
10	$2 + 1 = 3$	13	7
13	$3 + 1 = 4$	19	7
16	$3 + 2 = 5$	19	13
19	$5 + 1 = 6$	31	7
22	$5 + 2 = 7$	31	13
⋮	⋮	⋮	⋮

3. SOLUTION OF GOLDBACH'S CONJECTURE

GOLDBACH'S CONJECTURE 7: Show that every even number greater than 4 can be expressed as a sum of two prime numbers.

Remark. Certainly that difficulty remains in finding $\boldsymbol{k_1}$ and $\boldsymbol{k_2}$.

Proff. Relying on the Theorem 2, we present some cases how can be appear the pairs of prime numbers.

Case.1. Suppose that a prime numbers p_1 and p_2 have the form:

$$p_1 = 6k_1 - 1 \text{ and } p_2 = 6k_2 - 1, \text{ where } k_1, k_2 \in \mathbb{N}.$$

$$p_1 + p_2 = \mathbf{2}\,[3(k_1 + k_2) - 1] \Longrightarrow [3(k_1 + k_2) - 1] \in \mathbb{N}\ (*)$$

Case.2. Suppose that a prime numbers p_1 and p_2 have the form::

$$p_1 = 6k_1 - 1 \text{ and } p_2 = 6k_2 + 1, \text{ where } k_1, k_2 \in \mathbb{N}$$

$$p_1 + p_2 = \mathbf{2}\,[3(k_1 + k_2)] \Longrightarrow [3(k_1 + k_2)] \in \mathbb{N} \qquad (**)$$

Case.3. Suppose that a prime numbers p_1 and p_2 have the form:

$$p_1 = 6k_1 + 1 \text{ and } p_2 = 6k_2 + 1, \text{ where } k_1, k_2 \in \mathbb{N}$$

$$p_1 + p_2 = \mathbf{2}\,[3(k_1 + k_2) + 1] \Longrightarrow [3(k_1 + k_2) + 1] \in \mathbb{N}\ \ (***)$$

Now we can say that every doubly natural number traits above, can be expressed as the sum of two prime numbers

Remark 8. Out of our proof remain the even numbers: 4, 6 and 8, which can easily anyone present who knows a definition of prime number as a sum of both them.

4=2+2**,** where 2 is a prime number.
6=3+3, where a number 3 is prime.
8=5+3, where a numbers 3 and 5 are prime numbers.

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