AJMS
Asian Journal of Mathematical Sciences

RESEARCH ARTICLE

SUM OF PRIME NUMBERS

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Received: 05/01/2024 ; Revised: 16/02/2024 ; Accepted: 10/03/2024

INTRODUCTION

The author has been researching on the topic for many years, indicated in the title. He published the results of his research that shown at the end of the review under the "Resources" heading. Primary goal, which is a proof of the binary or strong Goldbach problem. From[1-10] in the resources the ternary Goldbach problem is taken as a basis, which was reportedly finally resolved in 2013, which is not is currently confirmed. At the same time, the author admits his incorrect solution to the proof of a binary problem in a number of publications[5],[6] and others, which are detailed in section 2.1.Recent publications [11, 12] in the opinion of the author are universal and not are not tied to Goldbach's ternary problem, but vice versa proves it. In section 2.3 the author will show two possible proofs. And in conclusion, a new formulation regarding the sum of n prime numbers.

CONTENTS

2.1 About the sum of n prime numbers.

n is the number of members.

For n=3 this is the ternary or weak Goldbach problem. In [1]-[10], considering it solved, the author moves on to the sum of four prime numbers. Then in the corollaries he states various properties of the corresponding sums and their use leads 4 proofs of the sum of two prime numbers and, as stated in the introduction, two of them not true. Let's repeat the correct ones.

$$p_1 + p_2 + p_3 + p_4 = 2N \qquad (01)$$

where N is any integer N>5.

And when $N = 2p_1 + 2p_2 + 2$ we have:

$$p_1 + p_2 + 2 = p_3 + p_4 \qquad (02)$$

which means the infinite sum of two primes following an even number in relation to the sum of two simple terms of the previous even numbers. The missing even number is 2+2=4.

Option2. By the opposite method

$$p_5 + p_6 \neq p_1 + p_2 + p_3 + p_4 = 2N \quad (03)$$

What follows:

$$p_5 + p_6 - p_4 \neq p_1 + p_2 + p_3 \quad (04)$$

However, inequality is impossible, as follows from additions to the ternary problem. Therefore it is inevitable:

$$p_1 + p_2 = 2N \quad (05)$$

We still show missing amounts up to 12 using arithmetic. The author's errors in the evidence, as stated in the introduction, are one of that the not equal sign is not analyzed in detail, namely with the greater-than sign and with the sign less separately, second in the sum of 4 prime numbers without proof of the sum two prime numbers, it is wrong to say that this can be done by equalizing the sums of six prime numbers and four.

2.2 Difference of any even, odd and prime odd number.

In [11], [12] a theorem was established that this difference is, respectively, any odd and even number. However, it is more correct to call the above axiom, as well as the difference between all possible even and odd numbers of variables with a fixed odd prime number, correspondingly there exists any odd or even number. This axiom allows us to proceed to the corollary [11], [12], which allows universal transition from even to odd numbers and back the minimum even is 2n and the minimum odd is 2n+1.

Thus it is enough that at least one identity has been proven for a certain n we claim that this applies to all n>1. And such an identity is the sum of six prime numbers. n this case, solutions for n = 2,3,4 regardless of whether the triple Goldbach problem is solved or not.

2.3 The sum of two primes and infinity of twin primes.

It was shown in [12] that, starting from 14, any even number is representable in at least two different versions, which in some way allows predict certain properties of prime numbers. I wonder what until 14 we don’t start from 10 since 12 is unique - one representation. So a special case of twin primes is that they are infinite. Solution of this problem the result is that the sum of prime numbers for n=2,3,4,5 any even and odd, respectively. The second solution is shown in papers before [12] as consequence of the sum of two and four prime numbers.

In [12] any prime number starting from 5 is shown, the arithmetic mean of two other prime numbers. Which in turn confirms infinity of prime numbers.

CONCLUSION

n conclusion, we note that it does not require proof, if in the sum of three prime numbers instead of one prime number you enter the prime number 2, then the sum of three prime numbers is also any even number from 6, and the sum four – any odd, etc. Which allows us to formulate the following:

The sum of n prime numbers, where n is at least 3, can be represented as any integer natural number at least 2n. What corresponds to:

$$p_1 + p_2 + ... + p_j + ... + p_{n-1} + p_n = N \quad (6)$$

Where,

N=2n, 2n+1,...,2n+j, ... ∞ (7)

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