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A PROOF TO GOLDBACH CONJECTURES

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Abstract : A proof to strong and weak goldbach conjectures – Using prime numbers list analytical prepared – Totally avoided guess work – To write down conjectures – Proof explained

IndexTerms - **Strong and Weak Goldbach conjecture – Proof – Submission**

INTRODUCTION:

Proof to goldbach conjectures is a vital problem in number theory Goldbach wrote a letter to Euler – A great mathematician – That he have noticed a set o conjectures which mean any even number can be expressed as some of two primes but he never claimed that he had proved a statement. This conjectures are denoted as strong goldbach conjecture (Year 1742).

Goldbach was following ,Number 1as a Prime. Later on this practice was discontinued. Number 1 is considered neither as a prime nor as composite. It is unique. It is not my intension to write down full story about the attempts made to prove the above said conjecture.

In modern time Goldbach conjecture is meant as any even number can be expressed as some of two primes barring Number one. This conjectures are known as Goldbach strong conjectures. So far no mathematicians has neither proved nor disproved – These conjectures as true or false.

It is needless to say that Faber and Faber publishers announced one million dollar cash award to the mathematician. This situation clearly explained as the important of the problem detailed information in this regard is explained in Number 1 reference.

PROOF:

Let us group the number sequence – numbers into 5 groups. All are integers

[1] **α Numbers:** The first number is 5, the interval between 2 consecutive numbers are 2 and 4 alternatively considered. The sequence is

5, 7, 11, 13, 17, 19, 23, 25…

Further the sequence is segregated into two groups namely α_1 and α_2
α_1 : 5, 11, 17, 23, 29, 35…
α_2: 7, 13, 19, 25, 31, 37…

The first number being 5 and 7 respectively and the common difference is being 6.

[2] **β Numbers:** First number :6 common number 6
6, 12, 18, 24, 30, 36…
All are even

[3] **γ Numbers:** First number:8 common difference 6
8, 14, 20, 26, 32, 38…

[4] **δ Numbers:** First number: 9 common difference 6
9, 15, 21, 27, 33, 39…

η Numbers

F.N: 10, C.D: 6
10, 16, 22, 28, 34, 40…

1. It should be noted that α numbers alone consist of prime and multiples of prime
2. β numbers are all even
3. γ numbers are also even
4. δ numbers are odd and divisible by 3
5. η numbers are all even

This 5 group of numbers consists all numbers known in the number sequence that is infinite

Now
Let us all even number in the following way:

	1 2 3	**4 5 6**
1	[6,8,10]	[12,14,16]
2	[18,20,22]	[24.26,28]
3	[30,32,34]	[36,38,40]
4	[42,44,46]	[48,50,52]
5	[54,56,58]	[60,62,64]
6	[66,68,70]	[72,74,76]
7	[78,80,82]	[84,86,88]

8	[90,92,94]	[96,98,100]
9	[102,104,106]	[108,110,112]
10	[114,116,118]	[120,122,124]
11	[126,128,130]	[132,134,136]
12	[138,140,142]	[144,146,148]
13	[150,152,154]	[156,158,160]
14	[162,164,166]	[168,170,172]
15	[174,176,178]	[180,182,184]
16	[186,188,190]	[192,194,196]
17	[198,200,202]	[204,206,208]
18	[210,212,214]	[216,218,220]
19	[222,224,226]	[228,230,232]
20	[234,236,238]	[240,242,244]

… and so on

Note:

1) There are 6 column when we considered the numbers vertically. The difference between 2 consecutive term is 12 when we considered vertically.
2) There are infinite number of lines when we considered horizontally and the difference between two consecutive number is 2 is irrespective of the column.
3) This even numbers triplets do not consists α numbers because they are all odd numbers.
4) The another set of odd numbers are δ numbers which are all divisible by 3 and they are not prime

α_1 Numbers

5, 11, 17, 23, 29, 35, 41, 47, 53, 59, 65, 71, 77, 83, 89, 95, 101….. and so on

α_2 Numbers

7, 13, 19, 25, 31, 37, 43, 49, 55, 61, 67, 73, 79, 85, 91, 97, 103…. And so on

Discussion:

Step 1:

1) Firstly let us considered δ numbers. All numbers are divisible by 3 and hence not prime the definition or condition of Goldbach conjecture is any even number be expressed as some of two prime, now the sum of two δ number are also even example 63+69 =132 . This statement do not satisfy the condition of Goldbach conjectures though 132 is an even number, numbers 63and 69 are not prime.

   On first view without deep imagination or concentration one may say that because of this state Goldbach conjecture are disproved. But in fact thus type of conclusion is false. Because 59+73=132. In this case 59 and 73 are prime. So The 132 is also can be expressed as the sum of 2 primes.
2) what is relevant here we need not considered the δ set numbers as the sum of two of them is disproving Goldbach conjecture, but let us look into the conjecture once again they say that any even number can be expressed as the sum of 2 prime. Its never says that the sum of 2 composite number are not even it specifies the prime and its sum and demand a proof now we will move to next step

Step 2:

In the above said pairs of even number triplets number 2 and number 2 do not take place, 2 is the only prime. It is the sum of 1+1. 4 is a composite but smaller than 5. That is first α prime. It may be expressed in two ways that is 2+2=4 or 3+1=4.

We are considering that numbers which are greater than 5 and so the pairs of even number triplets we begin with number 6. Again number 6 can be expressed in only way as a sum of two primers that is 3+3=6. Hence we create an order of even numbers from the 6 table column which has been already exhibited. The order that we drive is also 6.
Table 1 Shows numbers of column 1 of the first triplets in the vertical order that is

6
18
30

Table 2 Similarly the vertical order is
8
20
32

Table 3 Similarly the vertical order is
10
22
34

Table 4 Similarly the vertical order is
12
24
36

Table 5 Similarly the vertical order is
14
26
38

Table 6 Similarly the vertical order is
16
28
40
Number 18 goes to column 1and etc.

<u>Step 3:</u>
The even triplets form them selves 6 kind of orders

<u>Order 1:</u>
1) 11+7=18 – α_1 Second number plus α_2 first number
2) 17+13=30 – α_1 Third number plus α_2 second number
3) 23+19=42 – α_1 Fourth number and α_2 Third number …. and so on

<u>More Examples:</u>
1) 11+7=18
2) 17+13=30
3) 23+19=42
4) 29+25=54
5) 35+31=66
6) 41+37=78
7) 47+43=90
8) 53+49=102
9) 59+55=114
10) 65+61=126

<u>Note:</u>
In the above set serial number 4, 5, 8, 9, 10 there exists composites number 25, 35, 49, 55, 65 respectively.

In such cases the left hand side number should be subtracted by number 6 and right hand side number should be added with number 6
Thus that total is get balanced. This process should be continued until we get both left hand side number and right hand side number are primes.

Illustration

4) 29 + 25 = 54
-6 +6
23 + 31 = 54

As per the same principle all other sets may be so arranged that both the left hand side and right hand side number are prime.

The other 5 orders

Second order

α_1 and α_2

1 st number in α_1 and 3 (exceptional)

2nd number in α_2 and 3rd number in α_2 and so on

Examples:

1) 5+3=8
2) 7+13=20
3) 13+19=32
4)19+25=44
5) 25+31=56

In this case serial number 4 and 5 consists a composite number they may be rearranged as per the rules already stated.

3rd Order

$\alpha_1 + \alpha_1$

In this said the same number of α_1 repeats twice as the sum of 2 primes

Examples:

1) 5+5=10
2) 11+11=22
3) 17+17=34
4)23+23=46
5) 29+29=58

4th Order

α_1 1st number + α_2 1st number

α_1 2nd number + α_2 2nd number

… and so on

Examples:

1) 5+7=12
2) 11+13=24
3) 17+19=36
4)23+25=48
5) 29+31=60

In this said set serial number 4 there is complex number 25 occurs. This may be modified as per the rule already stated.

5th Order

$\alpha_2 + \alpha_2$ the same number of α_2 repeats.

Examples:
1) 7+7=14
2) 13+13=26
3) 19+19=38
4)25+25=50
5) 31+31=62

In this case also number 25 occurs this may be modified as per the rule already stated.

6th Order

α_1 1st number+ α_1 2nd number
α_1 2nd number+ α_1 3rd number

Examples:
1) 5+11=16
2) 11+17=28
3) 17+23=40
4)23+29=52
5) 29+35=64

In this case number 35 is composite it may be modified as per the rule already stated.

Discussion 2:

1) All the $\alpha,\beta,\gamma,\delta, \eta$ numbers have been used to form conjectures in a systematic order so there is no guess work. The prime number also arranged in a systematic way.

2) Thus the conjectures of Goldbach is proved logically. Any even number may be expressed as the sum of 2 primes are the same time any odd numbers sum gives a even number as a result the odd numbers need not be primes the may be odd numbers divisible by 3,5,7,9 etc

3) So the converse is not true

Weak conjectures

The sets of even numbers which are the sum of 2 primes will yield an odd number if we add another odd number with it. That may be a guess work

Examples:
83+85=168. 168+19=187
19 is selected by guess.

Let us look the following conjuctures
1) 5+7=12. 12+5=17
2) 11+13=24. 24+7=31
3) 17+19=36. 36+11=47
4) 29+31=60. 60+13=73
5) 41+43=84. 84+17=101

The above examples clearly shows that we can select the 3rd prime also in a orderly manner and the triplet of numbers may be express in a systematic way also.

As per Arpita Bhattacha's statement (http://www.link.2.com/in/arpitabhattachira state that in 2013 Hevgott proved that every odd integer grater than or equal to 5 is sum of 3 primes. It is clear that the weak conjecture is already proved as per bhattachira statement. But the strong conjectures are still remain as unproved for very very long years. In this paper we had proved The weak conjectures also as true.

CONCLUSION:

Thus in this paper we proved the Goldbach conjectures both Strong and Weak are true.

REFERENCES

[1] Arpita Bhattacha's websites state that the proof of Goldbach conjectures attracts 1 Million Dollar cash prize. It was state that the award will go to a mathematician who proofs the conjectures in the period 2000 March and 2002 March. Whether the time limit is extended or not is not known to us.

[2] Elementry number theory A book by David M Burton

[3] This problem is a very famous problem there are so many references. We just limit with two references for want of space.