Abstract

In this paper, a rigorous proof of the strong Goldbach Conjecture is provided. This proof is mainly based on a very special expression of even numbers we propose and which takes the form of \((2n + 6)\). Even numbers expressed in this form can be expressed as sums of two primes of the form of \((3 + 2i)\) and \((2n + 3 - 2i)\), where \(i\) and \(n\) are positive integers. We show that it is always possible to find at least one pair of prime numbers according to the former two expressions for any given even number greater or equal to 6. Moreover, the prime numbers theorem is used to investigate the number of primes’ pairs corresponding to even numbers. The obtained results showed that all even numbers have at least one pair of primes verifying this conjecture. Thus, this result provides a rigorous proof for Goldbach conjecture which is still considered, to our best knowledge, among the open problems of mathematics.

Index Terms

Computer Science

Control Systems

Keywords

Goldbach conjecture, Numbers theory, prime numbers, even numbers, proof.