

Title:

The Rudra Equation

Author:

Tanmay Bilodi

Independent Student, India

Abstract:

We propose The Rudra equation :The sum of the squares of three distinct prime numbers is never equal to the square of fourth distinct prime number .The conjecture has been tested computationally on all combinations of prime numbers up to 10,000 and no counterexamples were found.A formal proof is not given the results suggest that the equation is consistent and may hold true.The problem remains an open problem

1.Introduction

Prime numbers inspired many mathematicians throughout history due to their deep role in number theory.Today we are proposing a conjecture involving squares of distinct prime numbers.This equation has been tested computationally but remains unproven.

2.Statement of Equation

Let a, b, c, d be four distinct prime numbers. Then:

$$a^2 + b^2 + c^2 \neq d^2$$

3.Computational Evidence:

A Python program was used to test all combinations of three distinct prime numbers where $a, b, c < 10,000$ for each triplet ,the sum of $a^2+b^2+c^2$ was computed and checked whether it equals the square of fourth distinct prime number d^2 .Despite checking it to millions of combinations no counterexamples were found.

Appendix :The python code used to test this equation is available at :

[https://colab.research.google.com/drive/1Rq-fdHMBAX4NITDsL3OdhZ_Is8CB1Ev5?usp=sharing]

4.Conclusion:

Although the equation appears simple it remains unproven it's consistency across a large number of tests suggest that it may hold in general

Inspired by mathematical elegance admired by Ramanujan the author offers this equation an open problem inviting further attempts at proofs or counterexample from math community

The author respectfully dedicates this equation to Lord Shiva