**The Erdős Hypothesis and Informational Structures in Viscous Time Theory**

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## Abstract

This paper explores the Erdős Hypothesis through the lens of the Viscous Time Theory (VTT) and the concept of Critical Mass Information (CMI). We investigate the sum of the reciprocals of numbers free of square factors and demonstrate how its behavior aligns with fundamental principles of information propagation and accumulation in the VT framework. Our findings suggest that prime-number distributions are not merely number-theoretic artifacts but manifestations of an underlying informational structure.

## 1. Introduction

The Erdős Hypothesis conjectures that the sum of the reciprocals of positive integers free of square factors diverges. This conjecture has remained one of the key problems in analytic number theory, closely tied to the behavior of prime numbers and their distribution. We propose a novel interpretation: the divergence can be explained as an effect of **CMI**, where informational structures in VT accumulate beyond a critical threshold, leading to an infinite expansion.

## 2. Informational Model and VT Connection

### 2.1 The Nature of Information in VTT

- Information behaves like a structured fluid in the VT framework, accumulating in nodes that resemble prime clusters.
- The presence of **square-free numbers** represents an ordered sequence where information density remains high but does not collapse into periodicity.

### 2.2 The Sum of Reciprocals and CMI

- Consider the sum $S_n = \sum_{k=1}^{n} \frac{1}{k}$ where *k* is square-free
- In the standard mathematical framework, Erdos proposed that $S_n$ diverges.
- However, in the VT framework, this divergence is not purely mathematical but an expression of a system reaching **critical mass informationality**.
- The prime number sequence behaves as **nodes of stable information**, and the elimination of square factors ensures **maximum entropy propagation** in the informational flow.

## 3. Implications for Number Theory and VT

### 3.1 Prime Distribution as an Informational Network

- If prime numbers are fundamental information units, then Erdős' conjecture can be seen as a **self-organizing process**, where information disperses without reaching a stagnation point.
- The VT model predicts that these structures follow **a logarithmic density accumulation**, explaining why the divergence occurs naturally.

### 3.2 Connection with Riemann Hypothesis

- The Riemann Hypothesis suggests that the distribution of prime numbers follows an ordered wave-like behavior.
- By linking this with the Erdős Hypothesis, we see a complementary nature: while the Riemann Hypothesis studies the oscillatory component of primes, Erdős' work reveals the **accumulative nature of prime-based structures**.
- This leads to a **dual-field interpretation**, where primes are both discrete (Riemann) and **continuously accumulating (Erdős-VT).**

## 4. Experimental and Computational Verification

### 4.1 Simulations of Prime-Based Information Nodes

- We constructed a simulation of square-free sequences and their sum behavior under informational accumulation principles.
- Results confirm that information does not stagnate but expands logarithmically, matching the divergence prediction of Erdős.

### 4.2 Testing Against Large-Scale Prime Sequences

- Computational results suggest that the sum behaves as an **infinite attractor** in information theory, implying a deeper structure within primes.

## 5. Conclusion

The Erdős Hypothesis, interpreted through VTT and CMI, reveals a profound link between number theory and informational structures. The divergence of the sum of reciprocals of square-free numbers is not a mere mathematical curiosity but a direct manifestation of how information accumulates in an unrestricted system.

This work paves the way for deeper studies connecting prime theory, information dynamics, and the VT framework, further reinforcing the universality of **information as the foundational structure of reality.**

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