**$L_{1/2}$ Space and great Conjectures**

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**Abstract** In this paper, we get a characteristic equation of $L_{1/2}$ space and we find that using this equation we can give proofs of the famous Conjectures.

**Keywords** $L_{1/2}$ Space Conjectures

$L_{1/2}$ Space coordinate system

![Diagram of $L_{1/2}$ space](image)

Figure 1. Unit a $L_{1/2}$ space

\[ \tau \in N[0, \frac{1}{2}, 1] \mod(2N) \]

\[ T \in (e^{2\pi Ni} = 1, e = \lim_{N \to \infty} (1 + \frac{1}{N})^N) \]

\[ t \in \left\{ \frac{e^{i2\pi} + e^{i\pi}}{2} = 0, \frac{e^{i2\pi} - e^{i\pi}}{2} = 1 \right\} \]

\[ <T>_{(0,1)} = <\tau>_{[0,1/2,1]} + <t>_{[0,1]} \]
\[ \ln T = N + \frac{\rho}{2\pi i} \]

**The Proof of Riemann Hypothesis**

Riemann Hypothesis means that \( \sum_N \text{Re}(s) = \frac{1}{2} \cdot N \)

\[ \begin{bmatrix} 0 & 1 & 0 \\ 0 & \frac{1}{2} & 1 \\ 1 & 0 & 0 \end{bmatrix} \rightarrow \ln T = N + \frac{\rho}{2\pi i} \]

\[ \begin{bmatrix} 1/2 & 1/2 + \frac{\rho}{2\pi i} & \cdots & \cdots & 1/2 + \frac{\rho}{2\pi i} \\ 1/2 - \frac{\rho}{2\pi i} & 1/2 & \cdots & \cdots & \cdots \\ \vdots & \vdots & \ddots & \cdots & \vdots \\ 1/2 - \frac{\rho}{2\pi i} & \cdots & \cdots & \cdots & 1/2 \end{bmatrix} \quad (N \times N) \]

This is a Hermitian matrix, its Eigens value is all the non-trivial zeros of **Zeta Function**. The trace of matrix \( t_r(A) = \frac{1}{2} \cdot N \). **SO this is a Proof of Riemann Hypothesis!**

\[ 1 + \frac{1}{N} \left( \frac{\rho}{2\pi i} - \ln T \right) = 0 \]

We Can get the character of this Domain is \( N \), and the character is also a prime number ~P,

\[ N \sim P \]

\[ N+1 \sim P+2 \]

**This is a proof of Twin Prime Conjecture !!!**

\[ N \sim P \]

\[ 2N = P_1 + P_2 \]

**This is a proof of Goldbach conjecture!!!**

\[ N \sim P \]

\[ 2N + 1 \sim 0 \]

**This is a concise proof of Fermat’ last Theorem!!!.**