

## Solution to Riemann Hypothesis Critical Strip Zone Using Non-Linear Complex Variable Functions

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**Abstract :** The Riemann hypothesis is an unsolved millennium problem and the search for a solution to the Riemann hypothesis is to study the pattern of prime number distribution. The scope of this paper is to identify the solution for the critical strip and the critical line axis, which has the non-trivial zero solutions using complex plane functions. The Riemann graphical plot is constructed using a linear complex variable function  $(X+iY)$  and is applicable only when  $X>1$ . But the investigation shows that complex variable behavior has two zones. The first zone is the transformation zone, where the definition of the complex plane should be a non-linear variable which is the critical strip zone in the graph  $(X=0$  to  $1)$ . The second zone is the transformed zone  $(X>1)$  defined using linear variables conventionally. This paper deals with the Non-linear function in the transformation zone derived using cosine and sinusoidal time lag w.r.t imaginary number 'i'. The alternate complex variable  $(\cos\theta+i \sin\theta)$  is used to understand the variables in the critical strip zone. It is concluded that the non-trivial zeros present in the Real part 0.5 are because the linear function is not the correct approach in the critical strip. This paper provides the solution to Reimann's hypothesis.

**Keywords :** Reimann hypothesis, critical strip, complex plane, transformation zone

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