Media SRM

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Abstract:

The article studies the zeros of the Koecher-Maass series associated to a Siegel cusp forms of degree 2. It is proved that Koecher-Maass series associate to a Siegel cusp form has infinitely many zeros on the critical line.

Explanation

One of the most celeberated conjecture in number theory is Riemann hypothesis. It says that all the non-trivial zeros of Riemann zeta function $\zeta(s) = \sum\limits_{n=1}^{\infty} \frac{1}{n^s}$ lie on the line $\Re(s) = \frac{1}{2}$. The reason of this conjecture being so important is its connection with the prime numbers. It is a common belief that all the natural L-functions should satisfy the Riemann hypothesis. Our result is a progress in that direction.

Title:

Koecher-Maass series have infinitely many critical zeros.

Practical implementation

As it is well known that zeros of Riemann zeta function have connections with prime numbers. In a similar fashion one can state the behaviour of the coefficients of such series at primes. These are results of pure mathematical flavour and their immediate application will take time.

Collaborations

This result is a joint work with Dr. Jaban Meher of Niser Bhubaneshwar and Dr. Karamdeo Shankhadhar of IISER Bhopal.

Future Plan

Currently, I am working on a problem of automorphic differential equation. The problem studies when a Maass form f will be the solution of the equation $\nabla f = E_{2,1}(z,\alpha)E_{2,1}(z,\beta)$, here $E_{2,1}(z,\alpha)$ is the maximal parabolic Eisenstein series. Such differential equations have connection with problem in string theory. This work is going on in collaboration with KIm Klinger-Logan, Holley Friedlander and Maryam.