Low Lying Zeros of L-functions

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In number theory, an L-function $L(s, \chi)$ is a meromorphic function on the complex plane associated to some geometric or algebraic object χ. A significant portion of recent research in number theory has been concentrated on the values of L-functions in the so-called critical strip, where $0 < \mathrm{Re}(s) < 1$. The zeros of these functions are of particular interest, as these have been found to carry deep arithmetic implications.

In this talk, we will give an overview of the foundations of the theory of L-functions, including a review of the history of the subject and a survey of some critical results. We will also discuss a modern approach to the study of low lying zeros of L-functions and a new result we have obtained using this method.

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