

Stark's conjectures

Explicit description of algebraic extensions of rational numbers is important for arithmetic applications.

Kronecker–Weber theorem says that all abelian extensions of rational numbers are given by roots of 1, or values of $\exp(2/\pi ix)$ at rational values of x . In the 1970s Stark made a series of conjectures relating leading terms of Artin L-functions to logarithms of certain algebraic numbers. It turns out that these algebraic numbers generate abelian extensions of “number fields”. I will introduce these conjectures and talk about recent progress in certain cases. This is all joint work with Samit Dasgupta.



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Professor Mahesh Kakde is a mathematician working at the Indian Institute of Science, Bengaluru. His research interests lie in the area of number theory. Professor Kakde's research is motivated by conjectures on special values of L-functions, more precisely, by the Bloch-Kato conjectures. Prof. Kakde's deep work on the noncommutative Iwasawa main conjecture, his

work on the Gross-Stark conjecture (with Samit Dasgupta and Kevin Ventullo), and his work on the Brumer-Stark conjecture (with Samit Dasgupta), resolves outstanding conjectures at the heart of modern number theory. Professor Kakde received his PhD from the University of Cambridge under the supervision of Professor John Coates in 2008. Subsequently, he worked at Princeton University, University College London, and King's College London. He is a recipient of the Swarnajayanti Fellowship (2019) and Infosys Prize (2022). Details of his publications and research experience can be accessed at: <https://math.iisc.ac.in/~maheshkakde/>

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