

## Extreme Values of Artin L-functions

The Riemann zeta function is an example of an L-function, which is connected to numerous famous conjectures on the distribution of primes. Artin L-functions are additional examples defined via number fields and Galois theory. They are connected to deep questions about primes in algebraic & analytic number theory. In particular, they have a special value at  $s=1$  which is of exceptional interest with its connection to class groups, regulators, and many other interesting number theoretic invariants. Recently, unconditional and conditional bounds were obtained for the extreme values of Artin L-functions at  $s=1$ . This project aims to determine whether these extremal bounds are optimal for generic Galois extensions.

We will collaboratively decide on your research problem, which will be rooted in theoretical techniques from analytic and algebraic number theory. The program will have several stages of hands-on research experience. First, we will establish foundational knowledge for algebraic & analytic number theory for Artin L-functions and a brief introduction to some arithmetic statistics. Second, we will study recent techniques for your proposed investigations and apply them to our research problem. Third, we will summarize the outcomes of your research in an appropriate academic forum, so the community can use this work to guide future research.

If you are interested in exploring fundamental objects in number theory and using a mix of algebra, analysis, probability, and geometry, then please consider applying. A solid background in elementary number theory and Galois theory is necessary, but an introduction to algebraic & analytic number theory is strongly recommended.

If you have any further questions, please feel free to contact me.

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