Algebra Seminar

A new approach to bounding L-functions

Jesse Thorner
Stanford

Abstract: An L-function is a type of generating function with multiplicative structure which arises from either an arithmetic-geometric object (like a number field, elliptic curve, abelian variety) or an automorphic form. The Riemann zeta function $\zeta(s) = \sum_{n=1}^{\infty} n^{-s}$ is the prototypical example of an L-function. While L-functions might appear to be an esoteric and special topic in number theory, time and again it has turned out that the crux of a problem lies in the theory of these functions. Many equidistribution problems in number theory rely on one's ability to accurately bound the size of L-functions; optimal bounds arise from the (unproven!) Riemann Hypothesis for $\zeta(s)$ and its extensions to other L-functions. I will discuss some motivating equidistribution problems along with recent work (joint with K. Soundararajan) which produces new bounds for L-functions by proving a suitable "statistical approximation" to the (extended) Riemann Hypothesis.

Tuesday, February 26, 2019, 4:00 pm
Mathematics and Science Center: W201

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