

ALGEBRA
SEMINAR

Athens-Atlanta joint Number Theory Seminar

Alina Bucur and Samit Dasgupta
Duke and University of California, San Diego

Abstract: Samit Dasgupta (Duke University), 4:00
Stark's Conjectures and Hilbert's 12th Problem

In this talk we will discuss two central problems in algebraic number theory and their interconnections: explicit class field theory (also known as Hilbert's 12th Problem), and the special values of L-functions. The goal of explicit class field theory is to describe the abelian extensions of a ground number field via analytic means intrinsic to the ground field. Meanwhile, there is an abundance of conjectures on the special values of L-functions at certain integer points. Of these, Stark's Conjecture has special relevance toward explicit class field theory. This conjecture states the existence of certain canonical elements in CM abelian extensions of totally real fields. I will state a conjectural exact formula for Brumer-Stark units that has been developed over the last 15 years. I will conclude with a description of my work with Mahesh Kakde that proves these conjectures away from $p = 2$, thereby giving an explicit class field theory for totally real fields.

Alina Bucur, USCD (University of California, San Diego), 5:15
Counting D_4 fields

A guiding question in number theory, specifically in arithmetic statistics, is that of counting number fields of fixed degree whose normal closure has a given Galois group G as we let their discriminants grow to infinity. In this talk, we will discuss the history of this question and take a closer look at the story in the case that $n = 4$, i.e. the counts of quartic fields.

Monday, November 7, 2022, 4:00 pm
Mathematics and Science Center: MSC W301

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