Algebra
Seminar

Athens-Atlanta Joint Number Theory Seminar

Gopal Prasad and Rachel Pries
University of Michigan and Colorado State University

Abstract: Rachel Pries (4pm)
Title: Galois action on homology of Fermat curves

Abstract: We prove a result about the Galois module structure of the Fermat curve using commutative algebra, number theory, and algebraic topology. Specifically, we extend work of Anderson about the action of the absolute Galois group of a cyclotomic field on a relative homology group of the Fermat curve. By finding explicit formulae for this action, we determine the maps between several Galois cohomology groups which arise in connection with obstructions for rational points on the generalized Jacobian. Heisenberg extensions play a key role in the result. This is joint work with R. Davis, V. Stojanoska, and K. Wickelgren.

Gopal Prasad (5:15pm)
Title: Weakly commensurable Zariski-dense subgroups of semi-simple groups and isospectral locally symmetric spaces

Abstract. I will discuss the notion of weak commensurability of Zariski-dense subgroups of semi-simple groups. This notion was introduced in my joint work with Andrei Rapinchuk (Publ. Math. IHES 109(2009), 113-184), where we determined when two Zariski-dense S-arithmetic subgroups of absolutely almost simple algebraic groups over a field of characteristic zero can be weakly commensurable. These results enabled us to prove that in many situations isospectral locally symmetric spaces of simple real algebraic groups are necessarily commensurable. This settled the famous question "Can one hear the shape of a drum?" of Mark Kac for these spaces. The arguments use algebraic and transcendental number theory.

Tuesday, April 18, 2017, 4:00 pm
Room 208

Mathematics and Computer Science
Emory University