

# Philadelphia Area Number Theory Seminar

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## Counting cusp forms

Abstract: Central to the modern analytic theory of automorphic forms (an example of which are the classical holomorphic modular forms) is the notion of a family. Several definitions of a family have been proposed, all of which involve a finite set of cusp forms on a reductive linear group (such as  $GL(2)$ ), described by a natural condition and expanding in size. The cardinality of the expanding set acts as an essential characteristic of a family; for example, in the case of the "universal family", it is related to the number of requisite twists in the Converse Theorem as well as to the Sobolev norms studied by Michel and Venkatesh.

In this talk, I will present new asymptotic results on counting automorphic forms in the universal families and Hecke characters as well as the associated results on explicit uniform Weyl laws and limit multiplicity theorems. This will be a survey talk, with emphasis on the underlying geometric and analytic intuition.

This work is joint with Farrell Brumley.

Part I: Wednesday, November 19, 2014  
2:40-4:00 PM

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Tea and refreshments at 2:20 PM in Park 355