abstract

JOINT IAS/PU NUMBER THEORY SEMINAR
Topic:

Speaker:

Affiliation:

Date:

Time/Room:

We will discuss some arithmetic counting problems, ranging from the antique (how many squarefree integers are there in [0 . . N]?) to the au courant (conjectures of Bhargava and Cohen-Lenstra about the distributions of discriminants and of class groups.) When considered over function fields, these conjectures reveal themselves as having to do with stabilization of cohomology of moduli spaces of covers of curves, or Hurwitz spaces. We will report on progress on the topological study of Hurwitz spaces, which leads to information about arithmetic counting problems over function fields over finite fields; for instance, a version of Cohen-Lenstra "correct up to the constant" for F_q(t) . If time permits I will try to give a picture of the rather general ensemble of arithmetic counting conjectures suggested by the method (e.g. -- for how many squarefree integers in
[0 . . N] is there a totally real quintic extension of Q with discriminant N ?) and explain how to prove versions of these conjectures in the much easier regime where "q goes to infinity first." (This is joint work with Akshay Venkatesh and Craig Westerland.)