Erik Holmes (University of Calgary)

Title: Archimedean invariants of number fields and applications

Abstract: I will discuss ongoing work regarding the shapes of number fields and unit lattices in non-generic families. I will also discuss a connection between these shape studies and number field asymptotics.

Aaron Landesman (MIT)

Title: Low degree Hurwitz stacks in the Grothendieck ring

Abstract: How many degree d number fields or function fields are there of bounded discriminant? For $2 \leq d \leq 5$, we answer the analog of this question in the Grothendieck ring of stacks. We will survey the connections between this result and related stabilizations occuring in number theory, algebraic geometry, and topology.

This is based on joint work with Ravi Vakil and Melanie Matchett Wood.

Sebastian Monnet (London School of Geometry and Number Theory)

Title: Counting wildly ramified quartic extensions with fixed automorphism group

Abstract: In the statistics of number fields, many problems require us to compute the "masses" of certain sets of étale algebras, in the sense of Serre's and Bhargava's mass formulae. In the tamely ramified case, we can easily classify all possible étale algebras to obtain the mass. In the wildly ramified case, the situation is harder.

In our recent work, we consider the case of totally ramified quartic field extensions of a 2-adic field. We count such extensions with given discriminant exponent and automorphism group, and hence obtain refinements of Serre's mass formulae. These refinements will allow us to improve the results in our preprint "S4-quartics with prescribed norms", and they will also be used in upcoming work of Newton and Varma.

We hope that, more generally, our formulae will be used to extend results from S4-quartic number fields over Q to S4-quartic extensions of any number field.

Sameera Vemulapalli (Princeton University)

Title: Counting low degree number fields with almost prescribed successive minima

Abstract: The successive minima of an order in a degree n number field are n real numbers encoding information about the Euclidean structure of the order. How many orders in degree n number fields are there with almost prescribed successive minima, fixed Galois group, and bounded discriminant? In this talk, I will address this question for n = 3,4,5. The answers, appropriately interpreted, turn out to be piecewise linear functions on certain convex bodies.