GradSWANTAG XII

Zoom Room: Contact Tom or Sam

June 7th, 2020

- 1:00 - 2:00: **The Hilbert Scheme of Points**
  Speaker: Patrick Girardet
  Abstract: The Hilbert scheme of points of a projective scheme is one of the most well-known classes of examples of moduli spaces. For a general projective scheme these objects can exhibit very pathological behavior. However, restricting to the case of a complex projective surface is often a "sweet spot" where problems are both rich enough to exhibit interesting behavior while tame enough that definitive answers can be given. In this talk, I will survey some topological and enumerative questions about Hilbert schemes of points on surfaces and discuss some connections between these objects and other areas of mathematics.

- 2:00 - 3:00: **Computations with Hypergeometric Motives**
  Speaker: Tom Grubb
  Abstract: Building upon on work of Dwork and of Katz, recent work has made explicit connections between differential equations and arithmetic data by developing suitable p-adic Weil cohomologies. Miraculously, the p-adic cohomology can be made explicit enough to program into a computer (at least in certain scenarios). In this talk we discuss this connection in the setting of hypergeometric differential equations and hypergeometric motives. In particular, we discuss recent ideas of Kedlaya on how one might make efficient, yet provably correct, computations with such objects, such as computing Euler factors of L-functions at nice primes.

- 3:00 - 3:30: **Virtual Tea/Coffee Break!**

- 3:30 - 4:30: **An Introduction to Equivariant Intersection Theory**
  Speaker: Sam Canning
  Abstract: Equivariant intersection theory is a tool that has come up frequently in my recent work. I will explain the basics and the history of the ideas that led to Edidin and Graham's equivariant intersection theory by giving a litany of examples from algebraic topology and algebraic geometry.