



The rising STAR of Texas

Discrete Mathematics Seminar

Time: Friday, September 8, 2017, 2:15-3:15 PM
Room: 237 Derrick Hall
Title: The Tutte polynomial via lattice point enumeration
Speaker: Dr. Alex Fink, School of Mathematical Sciences, Queen Mary University of London

Abstract:

Tamás Kálmán discovered a pair of univariate polynomials associated to a hypergraph which enumerate its spanning trees by internal and external activity. In joint work with Amanda Cameron, we have extended this to a bivariate polynomial of polymatroids enumerating both activity statistics at once, using lattice point enumeration. On matroids we find that our invariant agrees with the Tutte polynomial, though not in its most obvious basis, and that its coefficients have combinatorial meaning closely tied to a Dawson partition.

Bio:

Alex Fink's research interests lie in the intersection of combinatorics, commutative algebra, and algebraic geometry, especially matroid theory and tropical geometry. He earned his PHD from UC Berkeley in 2010 under the joint supervision of Bernd Sturmfels and Federico Ardila, for a thesis on matroid polytope subdivisions. After a postdoctoral position at North Carolina State University he joined Queen Mary University of London as permanent staff in 2013, where he is now a Senior Lecturer.