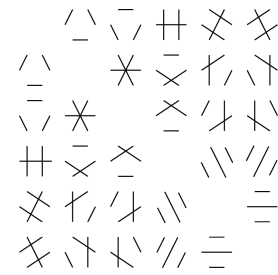


Mathematics Seminar



Rocky Mountain Algebraic Combinatorics Seminar

Algorithmic Group Theory, Computational Complexity, Application to Information Security

Delaram Kahrobaei
CUNY and NYU

I will give an overview of some algorithmic group theoretic problems with their computational complexity as well as how they have been proposed for applications in information security. The talk will discuss both theory and application behind these problems. The talk will be accessible to general audience mathematicians/computer scientists.

Semicontinuity of Persistence Diagrams

Amit Patel
Colorado State University

Let $f : M \rightarrow R$ be a Morse function. An r -sublevel set of f is the set of all points x in M such that $f(x)$ is at most r . The Morse function f therefore filters M by sublevel sets. The d -th persistence diagram of this filtration is a summary of how the d -th dimensional homology groups of the sublevel sets vary with increasing r . Very importantly, the persistence diagram is stable to continuous perturbations of the function f . This makes the persistence diagram an interesting tool to study the topology of data as data is inherently noisy.

Until very recently, the persistence diagram only made sense in the setting of vector spaces. That is, the homology groups must be computed using coefficients in a field. In this talk, I will present a vast generalization of the persistence diagram which implies a persistence diagram for homology groups computed over the integers. This opens the way to study persistent torsion in data.

Weber 223
4–6 pm
Friday, September 16, 2016
(Refreshments in Weber 117, 3:30–4 pm)
Colorado State University

This is a joint Denver U / UC Boulder / UC Denver / U of Wyoming / CSU seminar that meets biweekly.
Anyone interested is welcome to join us at a local restaurant for dinner after the talks.



Department of Mathematics
Fort Collins, Colorado 80523