

Title: The typical algebraic shifting of a surface

Abstract:

Algebraic shifting, introduced by Kalai in 1984, is an operator that canonically associates a shifted complex to a given simplicial complex. This construction uses the Stanley-Reisner ring of the complex, or its exterior algebra analogue, and is useful especially in f-vector theory.

We initiate a statistical study of exterior algebraic shifting, focusing on concentration phenomena for random triangulations of a fixed topological space. In particular, we prove concentration for (i) a uniform n -vertex refinement of any given graph, and for (ii) a random Delauney triangulation of any given Riemannian surface (compact, connected, without boundary), where the n vertices are sampled independently at random according to the volume measure.

As a tool to prove concentration for surfaces, we prove a universality result on edge contractions: for every fixed surface triangulation K , every dense enough point set in the surface yields a Delaunay triangulation that edge contracts to K .

Joint work with Denys Bulavka and Yuval Peled.

All the relevant background will be reviewed in the talk.
