

Algebra/Topology Seminar

FLORIAN FRICK

Carnegie Mellon University

CANONICAL METRIC THICKENINGS AND APPLICATIONS

Thursday, April 25, 2019

1:15 p.m. in ES-143

ABSTRACT. Any metric space can be thickened in a canonical way using the theory of optimal transport. This yields a family of thickenings that capture local connectivity properties of the space. For a sufficiently dense point sample in a Riemannian manifold with certain curvature bounds this thickening recovers the homotopy type of the manifold. I will introduce this theory and explain some of its applications. In particular, this can be used to prove Borsuk–Ulam type results, study the structure of zeros of trigonometric polynomials, or illuminate convexity properties of circle actions on Euclidean space. This is joint work with Michal Adamaszek, Henry Adams, and Johnathan Bush.