

Math PATCH Seminar

Friday October 1, 2021

Bryn Mawr College, Park Science Complex 159

The PATCH Seminar is a monthly gathering of faculty and students in the Philadelphia Area interested in Topology, Contact/Symplectic Topology, and Hyperbolic Geometry. This is an all-day event featuring two guest speakers.



Emmy Murphy
(Princeton & IAS)



Emily Stark
(Wesleyan)

Morning Background/Introductory Talks:

- **10-11, Stark** “Geometry of finitely generated groups”

Abstract: In the 1980s Gromov proposed studying finitely generated groups as metric spaces. This perspective is powerful as groups that have similar large-scale geometry often share common algebraic features. In this introductory talk, we will present examples of this phenomena as well as tools to study the geometry of a finitely generated group.

- **11:30 – 12:30, Murphy** “Weinstein handles and flexibility”

Abstract: We'll discuss the basics of Liouville manifolds and Weinstein handles. This is a method by which new symplectic manifolds can be constructed from old, using isotropic/Legendrian submanifolds of contact manifolds. We'll also discuss some of the ways this interacts with contact flexibility, namely loose Legendrians and overtwisted contact structures. These are tools by which, using some semi-local hypotheses, the geometric structures in question can be completely understood in terms of smooth topology.

Afternoon Research Talks:

- **3-4, Stark** “Graphically discrete groups and rigidity”

Abstract: Rigidity theorems prove that a group's geometry determines its algebra, typically up to virtual isomorphism. Motivated by interest in rigidity, we study the family of graphically discrete groups. In this talk, we will present rigidity consequences for groups in this family. We will present classic examples as well as new results that imply this property is not a quasi-isometry invariant. This is joint work with Alex Margolis, Sam Shepherd, and Daniel Woodhouse.

- **4:30 – 5:30, Murphy** “Liouville cobordisms”

Abstract: In this talk we'll discuss some interesting Liouville cobordisms arising in the particular case when the negative boundary is an overtwisted contact manifold. This will center on two independent constructions: concordances in the high-dimensional setting, and cobordisms with high-index (and therefore non-Weinstein) topological type.

Questions? ltraynor@brynmawr.edu