Submittee: Ryan Budney
Date Submitted: 2015-11-23 16:42
Title: Cascade Topology Seminar, Fall 2015
Event Type: Conference-Workshop

Location:
Portland State University

Dates:
November 7-8, 2015

Topic:
The Cascade Topology Seminar is a semi-annual, regional topology seminar intended largely for the people interested in topology the greater area of the Cascade Mountains.

Methodology:
We employed a traditional lecture format, with time between lectures for people to talk with each other.

Objectives Achieved:
The objectives were relatively modest -- dissemination of information. I think it's fair to say we achieved those goals

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Scientific Highlights:
The meeting allowed several newcomers to the area to meet with the community of topologists living in the Cascade area. There were several overview talks on a wide array of topics, and a large number of graduate students.

Organizers:
Ormsby, Kyle, Reed College
Osorno, Angelia, Reed College
Bleiler, Steve, Portland State University

Speakers:
Behrens, Mark, Notre Dame, The bo-Adams spectral sequence. Lellman and Mahowald produced tools for understanding the bo-based Adams spectral sequence (bo = connective real K-theory) E_2-term, modulo a nefarious contribution coming from some indescribably complicated vector spaces over F_2. I will describe a method of handling this other term, making the bo-based Adams

spectral sequence potentially as good or better to compute with than the classical Adams spectral sequence. This joint work with Agnes Beaudry, Prasit Bhattacharya, Dominic Culver, and Zhouli Xu.

Budney, Ryan, U.Victoria, Exploring the 4-manifold landscape using triangulations. I will describe a long-term project with Ben Burton, where we enumerate the "smallest" smooth 4-manifolds in the sense that they are triangulable with 6 or less 4-dimensional simplices. Homotopy spheres and 2-knot exteriors form a large part of the census. I will describe what we know about this table of 4-manifolds and current obstructions to smooth classification.

Ganatra, Sheel, Stanford, Calabi-Yau categories, the Floer theory of a cotangent bundle, and the string topology of its base. I will describe work in preparation with Ralph Cohen constructing and proving an equivalence between two chain-level topological field theories: one associated to the symplectic (or `wrapped Floer') cohomology of a cotangent bundle and another associated to the string topology of its base. On the level of homology operations this equivalence produces another proof of the relationship between the symplectic cohomology and free loop space homology BV algebra structures. The method of proof relies on a recent classification result for field theories due to Kontsevich and Vlassopoulous (and in a different conjecturally equivalent formulation to Lurie), which says that field theories such as the two above are determined certain types of `non-compact' Calabi-Yau categories or algebras.

Lipshitz, Robert, University of Oregon, Properties of the Alexander polynomial and knot Floer homology. We will start by recalling a definition of the Alexander polynomial and Manolescu-Ozsvath-Sarkar's combinatorial definition of its categorification, knot Floer homology. We will then discuss some geometric properties of the Alexander polynomial which have been lifted to knot Floer homology, and some applications of these, and some properties which have not yet been lifted.

Stojanoska, Vesna, University of Illinois at Urbana-Champagne, Higher real K-theory spectra have cyclic Picard groups. For any finite subgroup G of the Morava stabilizer group of height n at a prime p, there is an associated ring spectrum EO = (E_n)^{hG} of homotopy fixed points of Morava E-theory E_n under its G-action. I will discuss joint work with Drew Heard and Akhil Mathew, in which we show that, when n=p-1, Pic(EO) is always cyclic, so that every invertible EO module is a suspension of EO.

Williams, Ben, UBC. The Simplicial EHP Sequence in A1 Algebraic Topology. In this talk I will outline the construction of an EHP sequence for general spaces and particularly for spheres in A1 homotopy theory. This represents joint work with Aravind Asok and Kirsten Wickelgren.

Links:
http://people.reed.edu/~ormsbyk/ctsfall15/
