

Factorization Homology Reading Seminar

University of Western Ontario

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About the topic

Introduced around 2012, *factorization homology* is a variant of the topological chiral homology, which has found several applications, including in Topological Quantum Field Theories, the Cobordism Hypothesis, and the Weil Conjecture on Tamagawa Numbers. The foundational paper of the field is

- D. Ayala, J. Francis, *Factorization Homology of Topological Manifolds*, J. Topol. 8 (2015), no. 4, 1045–1084. [arXiv:1206.5522](#)

The goal of the seminar is to read and understand §1–4 (and possibly §5) of this paper.

Time+place and format

The seminar will meet on Thursdays at 1:30 PM in MC 107, starting on January 24. Talks are supposed to last one hour, but we will have the room for additional 30 minutes if necessary.

We will go through the paper roughly one subsection per talk. The speakers are expected to present all the details of each proof, including those omitted in the paper. Out of necessity, we will need to black-box certain bits of manifold topology and higher algebra.

Outline of talks

§1 Introduction. — by Chris Kapulkin.

§1 Implementation of ∞ -categories. — check with the organizers.

§2.1 B -framings.

§2.2 Disks and §2.3 Manifolds with boundary.

§2.4 Localizing with respect to isotopy equivalences.

§3.1 Disk algebras.

§3.2 Factorization homology over oriented 1-manifolds with boundary and §3.3 Homology theories.

§3.4 Pushforward.

§3.5 Homology theories.

§4 Nonabelian Poincaré Duality.

§5 maybe...