

THH Talks

All subtopics are suggested topics. The speaker should feel free to include only those they think important or add things that they like to talk about.

References:

[Morrow's Notes in 2019 AWS](#)

[Krause-Nikolaus Lecture notes \(No.29\)](#)

[Weibel \(Mainly just for talk 1\)](#)

[Nikolaus-Scholze](#)

Talk 1(Introduction) Hana

Definitions of HH, THH, S^1 action on THH, HKR theorem, HKR filtration, Connes operator

Talk 2 (Computation of THH) Weinan

Direct computation, Thom spectra method to compute THH

Some computational examples: $HH(\mathbb{F}_p)$, $THH(\mathbb{F}_p)$

Talk 3 (Tate construction) Yutao

Tate construction, Tate diagram (+Adams isomorphism), Tate SS, homotopy fixed pt SS, TC-, TP

Some computational examples: homotopy fixed point of $H\mathbb{Z}/H\mathbb{F}_p$, $TC-(\mathbb{F}_p)/TP(\mathbb{F}_p)$

Talk 4 (Cyclotomic structure) Chase

Cyclotomic structure, definition of TC, adjunction between Sp and $CycSp$, comparison of the Nikolaus-Scholze TC to the Bokstedt-Hsiang-Madsen TC

Some computational examples: $TC(\mathbb{F}_p)$

Talk 5 (Computation of $\pi_0(THH(\mathbb{R})^{\wedge\{C_n\}})$) Foling

Witt vector, Computation of $\pi_0(THH(\mathbb{R})^{\wedge\{C_n\}})$

Motivic Talks

Talk 1: (Introduction) Marie

The goal of this talk is to define the stable and unstable infinity-categories underlying the motivic world. We don't necessarily need all the details, but the main ideas of [these two](#) talks should come across. (I have more sources I can send whoever gives this talk, but they're pdfs and idk how to connect them to a google doc) (Maybe we can black-box symmetric monoidal infinity categories, I'd like to discuss them in the other proseminar at some point.) In particular, this talk should cover:

- A review of sites/sheaves in infinity-categories
- A brief introduction to localization of infinity-categories -- just the idea and universal property, we don't need the technical details.
- The Nisnevich site, and why we're using it over e.g. the étale site.
- The definition of the stable and unstable motivic infinity categories over a field k .
- Why suspensions/etc are *bigraded* in the motivic category

Talk 2: (Comparison between R-motivic and C_2 -equivariant homotopy groups of spheres) Danny

Based on [this](#) paper. The goal of this talk is to introduce the functor taking a real scheme X to the points of $X(C)$ w/ complex conjugation, which we view as a C_2 -equivariant space. This induces a map from (completions of) the real motivic homotopy groups of spheres to the C_2 equivariant ones, which is sometimes an isomorphism. Tell us what interesting properties this map has!

Talk 3: (Representability of Algebraic K-Theory) Oliver

Based on [these](#) and other notes I can send you. The goal of this talk is to explain why algebraic k-theory (of sufficiently nice schemes) is actually a representable functor in the motivic stable homotopy category, the same way cohomology is in ordinary homotopy theory!

Talk 4: (Motivic Steenrod? Cobordism in the Motivic world, I) Nick

Piece something together out of Adeel's and the Thursday talks [here](#). For the next talk, it's important that you cover what the "formal group law \leftrightarrow cohomology theory" correspondence looks like in the motivic case. Beyond this, you can decide how much detail you want to go into in what essentially amounts to "what do the prerequisites for chromatic theory look like in the motivic case?" Brian's "geometric aspects of algebraic cobordism" notes (same link) are also nice.

Talk 5: (Cobordism in the Motivic world, II) Colin

The first three Friday talks in [these](#) notes. The goal is to establish the motivic version of Quillen's theorem that MU carries a universal formal group law. Obviously you won't have enough time to give three talks worth of content, but I think the main idea of the theorem should come across and maybe a couple interesting aspects of the proof, with everything else black-boxed.