

International Workshop on Algebraic Topology 2023

Winter School on Motivic Stable Homotopy Theory and Synthetic Spectra

Southern University of Science and Technology

Shenzhen, China - December 19-23, 2023

Organizers

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Shangjie Zhang, UCSD

Shuhan Zheng, Fudan



IWoAT 2023 Winter School Syllabus

1 DAY 1

(Fudan University) We set up preliminaries in infinity category and motivic homotopy theory for the following talks.

Gheorghe, Wang, Xu, *The special fiber of the motivic deformation of the stable homotopy category is algebraic*, Section 2;

Lurie, *Higher Algebra*;

Morel, Voevodsky, *A¹-homotopy theory of schemes*.

2 DAY 2

(SUSTech) We go through the theoretical results of Gheorghe-Wang-Xu, and introduce the Chow *t*-structure as a generalization.

Gheorghe, Wang, Xu, *The special fiber of the motivic deformation of the stable homotopy category is algebraic*, Section 4-7;

Bachmann, Kong, Wang, Xu, *The Chow t-structure on the infinite category of motivic spectra*.

3 DAY 3

(Shangjie Zhang) We give the computational results of Gheorghe-Wang-Xu and applications to deduce some differentials in the classical Adams spectral sequence.

Gheorghe, Wang, Xu, *The special fiber of the motivic deformation of the stable homotopy category is algebraic*, Section 8-10.

4 DAY 4

(Yueshi Hou, Cheng Li) We give other models for motivic stable homotopy category. Topics include synthetic spectra, comparison with the cellular motivic category, motivic modular forms via filtered spectra.

Pstrągowski, *Synthetic spectra and the cellular motivic category*;

Gheorghe, Isaksen, Krause, Ricka, *C-motivic modular forms*.

5 DAY 5

(Yucheng Wu, Tongtong Liang) We introduce applications of synthetic spectra.

Burklund, *Multiplicative structures on Moore spectra*;

Burklund, *An extension in the Adams spectral sequence in dimension 54*;

Burklund, Xu, *The Adams differentials on the classes h_j^3* ;

Pstrągowski, *Chromatic homotopy theory is algebraic when $p > n^2 + n + 1$* .