Research Statement

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April 24, 2025

The following text is a brief summary of my past research experience and research interests.

Higher Category, Higher Algebra, and Their Equivariant Variants

These topics were central to my master's thesis¹. I am interested in the applications of higher category theory and higher algebra, particularly the ∞ -categorical reformulation and generalisation of classical theories. I also focus on their further development.

Algebraic *K*-theory

My interest in algebraic K-theory arose from its connection with THH and THR, two other essential topics of my master's thesis, largely inspired by Horev's work [Hor19]. Subsequently, I familiarised myself with these notions and other "trace approximations" to algebraic K-theory through the lecture series on TC by Prof. Thomas Nikolaus and Prof. Achim Krause, as well as the seminal paper [NS18]. Moreover, inspired by talks by Yonatan Harpaz, Markus Land, and Emanuele Dotto, I have begun working on quadratic forms in the setting of Hermitian/Poincaré ∞ -categories and exploring Hermitian K-theory. These subjects are closely related to real algebraic K-theory and THR, as I learned from Yonatan Harpaz.

Stable Homotopy Theory

I have long been interested in stable homotopy theory and subsequently developed an interest in its equivariant counterpart, sparked by my work on THR during my master's thesis. I later pursued a more systematic study through various resources, including the EHTW workshop series organised by the INI, notes and online lectures by Stefan Schwede, Andrew Blumberg, and Denis Nardin, as well as a concise introduction by Michael Hill and the renowned Kervaire invariant paper. Additionally, observations made while exploring the Adams spectral sequence have recently motivated me to begin studying chromatic homotopy theory.

¹Available upon request. The thesis was conducted under the supervision of Gabriel Angelini-Knoll and Geoffroy Horel; it essentially records my attempt to apply equivariant higher algebra to generalise existing non-equivariant results formulated in the language of ∞ -categories.

References

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