

## Motivic Stable Homotopy Theory (1/3)

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In joint work with Toni Annala and Marc Hoyois, we have developed motivic stable homotopy in broader generality than the theory initiated by Voevodsky, so that non- $A^1$ -invariant theories can also be captured. I'll describe this, bearing in mind its connection to algebraic K-theory and p-adic cohomology such as syntomic cohomology. The course is divided roughly into three parts.

**Foundations:** The goal of this part is to grasp the notion of  $P^1$ -spectrum, which forms the basic framework of motivic stable homotopy theory.

**Techniques:** The goal of this part is to understand our main technique, P-homotopy invariance, which allows us to do a homotopy theory in algebraic geometry while keeping the affine line  $A^1$  non-contractible.

**Applications:** In this part, we apply our motivic homotopy theory to algebraic K-theory of arbitrary qcqs schemes, and prove an algebraic analogue of Snaith theorem, which says that K-theory is obtained from the Picard stack by inverting the Bott element.

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