On the Scissors-Congruence K-Theory Spectrum of Derived Schemes

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Abstract. The "Grothendieck ring of S-varieties" $K_0(\mathrm{Var}_S)$ classifies the so-called "motivic measures", aka ring-valued representations of isomorphism classes of Svarieties (e.g. cohomologies with support). These are very rich geometric invariants, as they allow to "integrate motivically" in the sense of Kontsevich. Given that, $K_0(\mathrm{Var}_S)$ is (still) a very mysterious object and constructing interesting motivic measures is notoriously a hard problem.

To better understand $K_0(\mathrm{Var}_S)$, Zakharevich and Campbell have recently introduced the corresponding higher K-groups as homotopy groups of a "Scissors-Congruence K-theory spectrum" of S-varieties. This is heavily inspired by the classical approach to algebraic K-theory pursued by Segal and Waldhausen.

In this talk, we enhance their work to the ∞-world and define Scissors-Congruence K-theory of derived S-schemes or S-Artin stacks. In particular, we improve some results by Campbell, Kuijiper, Merling, and Zakharevich [2310.02852] and adapt them to the world of derived algebraic geometry.