

## Algebraic K-Theory Seminar

### *Infinite loop spaces in algebraic geometry*

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**Abstract:** A classical theorem in modern homotopy theory states that functors from finite pointed sets to spaces satisfying certain conditions model infinite loop spaces (Segal 1974). This theorem offers a recognition principle for infinite loop spaces. The analogous theorem for Morel-Voevodsky's motivic homotopy theory has been sought for since its inception. In joint work with Marc Hoyois, Adeel Khan, Vladimir Sosnalo and Maria Yakerson, we provide such a theorem. The category of finite pointed sets is replaced by a category where the objects are smooth schemes and the maps are spans whose "left legs" are finite syntomic maps equipped with a K-theoretic trivialization of its cotangent complex. I will explain what this means and how it is not so different from finite pointed sets. Time permitting, I will also provide an explicit model for the motivic sphere spectrum as a torsor over a Hilbert scheme.

Wednesday, September 20 at 10:30 AM in SEO 1227