

Departmental Colloquium

Perfectoid signature and an application to étale fundamental groups

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Abstract: A common way to picture a singular point of an algebraic variety is by analyzing its link, the intersection of a small embedded sphere with the variety. Heuristically, more complex links correspond to worse singularities. Over the past few years, certain numerical invariants have been used to (roughly) give an upper bound on the size of the fundamental groups of such links for some important classes of singularities in a number of different settings. In positive characteristic, one can use the F-signature – an invariant giving a quantitative measure of F-regularity and closely related to Kawamata Log Terminal (KLT) singularities in characteristic zero. In this talk, I aim to motivate and discuss a new mixed characteristic analogue of the F-signature defined using the perfectoidization functor of Bhatt-Scholze. As an application, we are able to bound the size of the étale fundamental group of the regular locus of BCM-regular singularities. This is joint work with Hanlin Cai, Seungsu Lee, Linquan Ma and Karl Schwede.

Friday, March 31 at 3:00 PM in 636 SEO