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Perverse homotopy heart of stable motivic homotopy and Milnor-Witt-modules

Friday, October 28, 2022 9:00 AM (1 hour)

One of Voevodsky's pillar for motivic complexes is the Gersten resolution of homotopy invariant sheaves with transfers over a perfect field k. In my Ph. D., prepared in the Algebraic Geometry team that Bruno was leading in Chevaleret, I extended this result in an equivalence of categories between the homotopy heart of (stable) Voevodsky's motivic complexes and Rost's cycle modules, over k.
After the fundammental work of Morel on stable homotopy over the field k, Niels Feld has been able to extend this result for motivic spectra over k, after introducing a suitable variant of Rost's theory, based on the Milnor-Witt variant of Milnor K-theory. In this new theory, invariants of quadratic nature such as Witt and Chow-Witt groups are captured.
Shortly after his Ph. D., Joseph Ayoub proposed a way to extend the first motivic equivalence to bases over a field. This was based on his perverse version of the homotopy t-structure, a theory that was continued by Bondarko and myself a few years ago using the notion of dimension functions.
In this talk, I will present a work in collaboration with Niels Feld and Fangzhou Jin where we realize Ayoub's conjectural program showing that the heart of stable homotopy category over appropriate base schemes can be related to a suitable version of relative Milnor-Witt modules. We will also show the link between objects of the perverse homotopy heart and both Cousin and Cohen-Macaulay complexes of Grothendieck-Hartshorne.

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