

Motivic realizations via 2-categories

Ko Aoki
(MPI Bonn)

My thesis shows that the stable presentably symmetric monoidal $(\infty, 2)$ -category freely generated by a smooth sutured ring (1-affine) stack with trivial homology coincides with the presentable $(\infty, 2)$ -category of kernels associated with Morel–Voevodsky’s motivic homotopy theory. This confirms an expectation of Scholze. I begin by explaining the mathematical content of this statement, starting from necessary higher category theory. I then explain its usefulness even when one is only interested in $(\infty, 1)$ -categories.

My thesis also proves an analogous result for Scholze’s Berkovich motives. If time permits, I explain why this analytic version of the $(\infty, 2)$ -category of 2-motives is strictly better than its algebraic counterpart, in particular through my higher rigidity theorem.