

## Conjectures on L-functions for Varieties Over Function Fields and Their Relations

*jeudi 12 octobre 2023 11:15 (1 heure)*

(Joint work with T. Keller, Groningen, and Y. Qin, Berkeley)

We consider versions for smooth varieties  $X$  over finitely generated fields  $K$  in positive characteristic  $p$  of several conjectures that can be traced back to Tate, and study their interdependence. In particular, let  $A/K$  be an abelian variety. Assuming resolutions of singularities in positive characteristic, I will explain how to relate the BSD-rank conjecture for  $A$  to the finiteness of the  $p$ -primary part of the Tate-Shafarevich group of  $A$  using rigid cohomology. Furthermore, I will discuss what is needed for a generalisation.

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