3:00 PM Tuesday, July 22 in Flagler

Generalization of the Kraft-Russell Generic Equivalence Theorem

Daniel Daigle

University of Ottawa

The Kraft-Russell Generic Equivalence Theorem states that two affine morphisms of varieties X −> S and Y −> S with isomorphic closed fibers become isomorphic after a dominant étale base change S' −> S. Kaliman (2020) generalized this result by weakening some of the hypotheses. We further extend the result in several ways: Instead of considering the existence of isomorphisms (between closed fibers or globally), we consider the existence of morphisms of schemes having a given property P. Here, P is a property of morphisms of schemes that satisfies certain stability conditions. We show that there is a large set of properties P for which the theorem is valid (the property of being an isomorphism is an example). Instead of considering two schemes over S (such as X —> S and Y —> S in the above statement), we establish the result for arbitrary commutative diagrams of schemes over S. We offer an equivariant version of the result, where schemes are equipped with actions by an algebraic structure A and morphisms are required to be A-equivariant. The structure A can be any algebraic object defined by finitely many commutative diagrams. (For instance, A may be a group scheme or an algebraic group.)

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