

# WYKŁAD WYDZIAŁOWY

w ramach seminarium

## ARYTMETYCZNA GEOMETRIA ALGEBRAICZNA

(organizatorzy: Grzegorz Banaszak, Piotr Krasoń)

Piątek 8 listopada 2019, godz. 12:00, sala A1-33

Wydział Matematyki i Informatyki UAM w Poznaniu

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### *Homotopy Exact Sequence for the Pro-Étale Fundamental Group*

**Abstract:** Abstract: The pro-étale fundamental group of a scheme, introduced by Bhatt and Scholze, generalizes formerly known fundamental groups - the usual étale fundamental group defined in SGA1 and the more general group introduced in SGA3. It controls local systems in the pro-étale topology and leads to an interesting class of "geometric covers" of schemes, generalizing finite étale covers.

I will explain the generalization of some foundational results of Grothendieck from the étale to the pro-étale fundamental group. Most notably, the homotopy exact sequence over a field and over a general base scheme. To prove the first statement, we study Galois actions on free topological products of groups. To prove the second one, we construct an "infinite" (i.e. non-quasi-compact) analogue of Stein factorization.

On the way, we will mention a general van Kampen theorem and the Künneth formula for the pro-étale fundamental group.