CONSTRUCTING NON-RATIONAL HYPERSURFACES OF LOW DEGREE USING UNRAMIFIED COHOMOLOGY

Jan Hennig (Master thesis)

A smooth hypersurface $X \subseteq \mathbb{P}_k^{N+1}$ of degree $d \geq N+2$ is not rational because the canonical bundle has sections. In this talk we will construct a large class of interesting non-rational hypersurfaces of degree roughly $d = \log_2(N) + m$ for a fixed positive integer m. This is done by constructing varieties with a specific non-trivial unramified class in Milnor K-theory and étale cohomology with $\mathbb{Z}/m\mathbb{Z}$-coefficients. This technique works for algebraically closed fields in arbitrary characteristic (m is coprime to the characteristic) and is due to Stefan Schreieder.

In the case where m is a power of the characteristic we will briefly see which results still work and which cause problems.

Thursday, 24.09.2020
11:00 - 12:00
A310 (Leibniz Universität Hannover)
All who are interested are cordially invited.