Bernoullis Tafelrunde

Math Students and PhDs Seminar

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Counting lines on surfaces, how to make the base field not matter anymore?

Abstract

In algebraic geometry, counting lines contained in surfaces is an old habit. However, in some cases doing so for a variety defined over a non-algebraically closed field (say $\mathbb{R}$ instead of $\mathbb{C}$) brakes a wonderful invariant result to one depending on the surface! There are some "by hand" ways to go around this problem using geometric properties of the surface (apart from counting a line whenever found). We'll see how people translated these counting techniques to a more global setup (motivic homotopy and Grothendieck-Witt groups) to recover an invariant result of surfaces and (almost) fields.