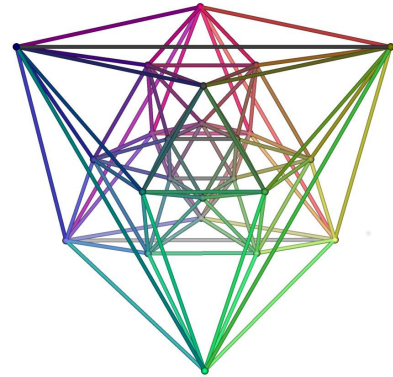


Oberseminar Geometrie
Department of Mathematics
University of Fribourg
Seminar room, Math II (Lonza)
Wednesday March 15, 2017, 10:20-12:00



PIERRE-MARIE POLONI (Bern)

Around the cancellation problem

The cancellation problem asks the following question. Suppose that the product of an affine algebraic variety X with the affine line is isomorphic to an affine space. Does it imply that the variety X is an affine space itself? This is true in dimension 1 and 2, but turns out to be false in higher dimension when the ground field is of positive characteristic. All other cases remain wide open.

More generally, one can ask whether two affine algebraic varieties whose products with the affine line are isomorphic are isomorphic themselves. In algebraic terms, this is the question of the "uniqueness of the coefficient ring in a polynomial ring".

In this talk, we will describe some known explicit counterexamples, notably the famous surfaces of Danielewski, and consider the analogous problem where the affine line is replaced by the punctured affine line ("uniqueness of the coefficient ring in a Laurent polynomial ring").

If times permits, we will also show how to use Danielewski surfaces to construct irreducible hypersurfaces in the complex affine n -space which are not isomorphic, although they have isomorphic complements. This last result answers in the negative one of the "challenging problems on the affine space" posed by Hanspeter Kraft.