Séminaire d'algèbre, géométrie et topologie
Jeudi 19 novembre à 14h
Salle I

Immanuel Halupczok

Leeds

Poincaré series and singularities

Given a polynomial $f \in \mathbf{Z}[x]$, where x is an n-tuple of variables, one can ask two quite different questions :

1. Describe the singularities of the variety $X := \{x \in \mathbf{C}^n | f(x) = 0\}$.

2. Describe the number of solutions of the equation $f(x) = 0$ in the ring $\mathbf{Z}/p^r\mathbf{Z}$ as a function of r, when p is a fixed prime. This information is encoded in the "Poincaré series" associated to f.

In the talk, I will explain those two questions in more detail and I will present "t-stratifications", which form a link between these two questions : On the one hand, they yield a new kind of stratification of the set X from (1) ; on the other hand, they yield a geometric explanation for the rationality of the Poincaré series from (2).