Kolloquium

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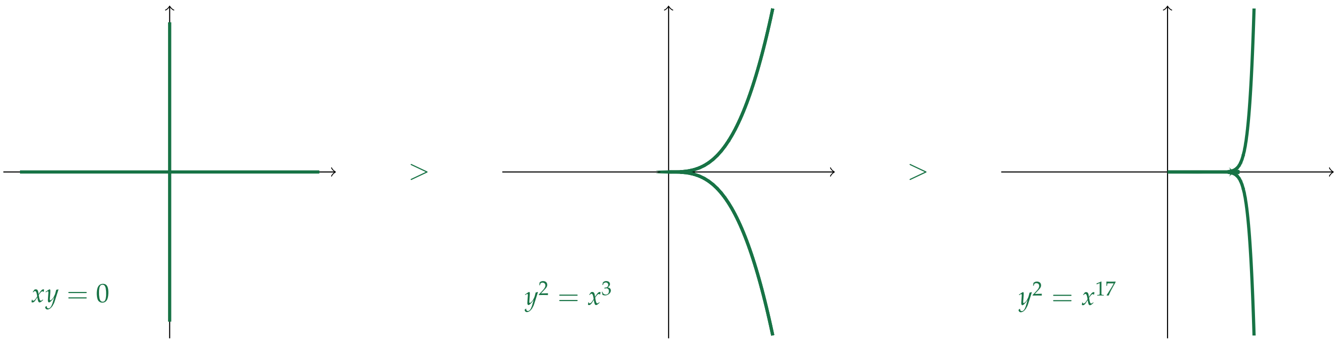
Test and multiplier ideals

A way to measure the singularities of a scheme X is via the log-canonical threshold, defined over the complex numbers in terms of integrability, or over any field of characteristic 0 in terms of resolution of singularities. In positive characteristic, one can define the F-pure threshold in terms of the Frobenius. Quite surprisingly, these two different ways of quantifying singularities are intimately related: *If the equations defining X have integral coefficients, then the F-pure threshold of the reduction of X modulo a prime number p approaches the log-canonical threshold of X as p goes to infinity.*



In the talk, I will give the precise definitions, discuss basic properties and give examples. Encoding log-canonical (resp. F-pure) thresholds are the multiplier (resp. test) ideals. Recently, in a joint work with Ines Henriques, we computed the multiplier ideals of any G-stable projective subscheme of $\mathbb{P}(V \otimes W)$, where V and W are finite vector spaces over a field of characteristic 0, and $G = GL(V) \times GL(W)$. The proof, that will not be presented, quite surprisingly relies on a reduction to positive characteristic, where G-stable subschemes are not well-understood.

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