

UNIVERSIDADE FEDERAL DE SÃO CARLOS
DEPARTAMENTO DE MATEMÁTICA

PALESTRA - VERÃO 2023

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Falará sobre

On the problem of local uniformization in arbitrary
characteristic

The problem of resolution of singularities asks whether, given an algebraic variety X over a field, there exists a non-singular algebraic variety X' and a proper map $X' \rightarrow X$ which is one-to-one over the non-singular locus of X . If we cover X' by affine charts, the problem becomes one of *parametrizing* pieces of X by small pieces of the Euclidean space k^n . This local version of the problem, called Local Uniformization, is stated in terms of valuations, as follows. Let (R, M, k) be a local noetherian domain and R_ν a valuation ring containing R and having the same field of fractions as R . The **Local Uniformization Theorem** asserts the existence a *regular* finite type R -algebra R' such that $R' \subset R_\nu$; it was proved by O. Zariski in 1940 in the case when $\text{char } k = 0$ and is one of the central open problems in the field when $\text{char } k = p > 0$.

We will describe Zariski's valuative approach to the problem of resolution of singularities. Time permitting, we will try to explain the difficulties arising in characteristic $p > 0$ and the ideas for overcoming them using key polynomials.

Data: 16 de fevereiro de 2023

Horário: 10h30

Local: Auditório do DM