

LOCAL UNIFORMIZATION OF CODIMENSION ONE FOLIATIONS

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We prove the local uniformization in the sense of Zariski for codimension one foliations in any ambient dimension. More precisely, in the algebraic context a codimension one foliation on a field K of algebraic functions with a base field k of zero characteristic is any integrable one dimensional K -vector subspace \mathcal{F} of the K -vector space of Kähler differentials $\Omega_{K/k}$. Given a k -valuation ring $k \subset R \subset K$, we show that there is a projective model M of K such that the center $Y \subset M$ of R in M is simple for \mathcal{F} . The definition of simple point coincides with the usual one for the complex analytic case for closed points. We proceed following the very classical main lines of Zariski's Local Uniformization, with an extensive use of the Newton-Puiseux's Polygon. The kind of transformations we do are grouped in Puiseux's packages, that generalize the idea of Puiseux's pairs for the case of curves. Moreover, our procedure is given in a truncated way. Finally, let us note that the integrability condition is important in order to assure the preparation steps in the proof.

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