Abstract

This note is about the geometry of holomorphic foliations. Let $X$ be a polynomial vectorfield with isolated singularities on $\mathbb{C}^2$. We announce some results regarding two problems: 1. Given a finitely curved orbit $L$ of $X$, under which conditions is $L$ algebraic? 2. If $X$ has some non-algebraic finitely curved orbit $L$ what is the classification of $X$? Problem 1 is related to the following question: Let $C \subset \mathbb{C}^2$ be a holomorphic curve which has finite total Gaussian curvature. Is $C$ contained in an algebraic curve?

Keywords

Holomorphic foliations, polynomial vector fields, algebraic curves, finite total curvature.