

Characterization of Degenerate Centers by Its Complex Separatrices

Jaume Giné

Universitat de Lleida, Spain

In this talk we deal with analytic families of real planar vector fields \mathcal{X}_λ having a monodromic singularity at the origin for any $\lambda \in \Lambda \subset \mathbb{R}^p$ and depending analytically on the parameters λ . There naturally appears the so-called center-focus problem which consists in describing the partition of Λ induced by the centers and the foci at the origin. We give a characterization of the centers (degenerated or not) in terms of a specific integral of the cofactor associated to a real invariant analytic curve passing through the singularity, which always exists. Several consequences and applications are also stated.

The work is in collaboration with Prof. Isaac A. García