8^{th} Workshop on Algebraic Singularity Theory

and

11^{th} Workshop on Singularity and Geometry

Posters

TUESDAY, 17th

Thaís Dalbelo UFSCar

In this work, we present a formula to compute the Euler obstruction of a function $f : (X, 0) \to (\mathbb{C}, 0)$ and its Brasselet number, where X is a multitoric surface. As an application of this formula, we compute the Euler obstruction of a function on some families of determinantal surfaces.

Joint work with Miriam S. Pereira

Nhan Nguyen ICMC - USP

Tangent cones, paratangent cones and C^1 regularity of definable sets

We characterize C^1 definable manifolds in terms of their tangent and paratangent cones. Namely, Let $X \subset \mathbb{R}^n$ be a connected locally closed definable set in an o-minimal structure. We prove that the following three statements are equivalent: (i) X is a C^1 manifold, (ii) the tangent cone and the paratangent cone of X coincide at every point in X, (iii) for every $x \in X$, the tangent cone of X at the point x is a k-dimensional linear subspace of $\mathbb{R}^n$ (k does not depend on x) varies continuously in x, and the density $\theta(X, x) < 3/2$. Characterizing C^1 definable manifolds with boundary is also included.

Joint work with O. Le Gal and K. Kurdyka

Juan Carlos Nuñez Maldonado ICMC - USP

Conectividade da Fibra de Milnor - real e complexa

John Milhor showed that given a germ of holomorphic function $f : (\mathbb{C}^{n+1}, 0) \to (\mathbb{C}, 0)$ exists a smooth fibration around the singularity for all spheres with sufficiently small radius (but on the complement of the set $f^{-1}(0)$) over the sphere S^1. Futhermore, when the origin is an isolated singular point, Milnor showed that the fiber has the homotopic type of a finite bouquet of spheres n-dimensional. Later, Kato and Matsumoto generalized the Milnor result showing that if the complex dimension of the singular set of f is s, then the fiber is $(n - 1 - s)$-connected. In the real case, not too much information is known about the connectivity of the fibers.

In this project we would like to collect the main results about the connectivity of the generic fiber, in the real and complex case, in the local and global settings.

WEDNESDAY, 18th

Marcelo J. Saia ICMC - USP

Minimal Whitney stratification and Euler obstruction of discriminants

In this work we describe the minimal Whitney stratification of the discriminant of finitely determined map germs from $(C^m, 0)$ to $(C^p, 0)$, of corank one if $n < p$, and only with A_k singularities, when $m = n + p$ with $n \geq 0$. We apply the theory developed by Gaffney which shows how to compute a Whitney stratification of discriminants of any finitely determined holomorphic map germ in the nice dimensions of Mather, or in its boundary. For the pairs cited above we show that both stratifications coincide. We also compute the local Euler obstruction at 0 in a class of discriminants of finitely determined map germs from C^{n+p} to C^p with $n \geq 0$ and only with A_k singularities.

Joint work with G. F. Barbosa and N. G. Grulha Jr.

Raimundo Araújo dos Santos ICMC - USP

In this talk we will show the equivalence of real Milnor's fibrations, whenever they exist. Moreover, some open questions will be stated concerning this research line.

THURSDAY, 19th

Alex Paulo Francisco ICMC - USP

Curves in the Minkowski plane and their geometry

The equivalence relation by the group $\mathcal{A}$ is very important when we classify function by diffeomorphism, in particular, when we study the deformations of plane curves. However, if we are interested in the geometry of curves, then this relation is not very appropriate, since diffeomorphisms do not preserve the geometry of the initial curve. Hence arose the need to define deformations which preserved the geometry of curves. In [2], such deformations were called FRS-deformations, from which it was possible to obtain a way to study the bifurcations of a curve in the Euclidian plane taking into account its geometry (inflections, vertices and singularities).

Our goal is to consider the above questions in the case of curves in the Minkowski plane. We note that the geometric consequences of the contact of a curve with pseudo-circles in the Minkowski plane are different of the contact of a curve with a circle in the Euclidian plane, as, for example, the behavior of the evolute.

In this work we analyzed the behavior of curves and its evolutes in the Minkowski plane around specific points, such as vertices, inflections and lightlike points. Furthermore, we define the FRLS-equivalence of curves in the Minkowski plane and we study the FRL-deformations of curves around determined points.

Key words: FRLS-Equivalence, Minkowski plane, inflections, vertices.

Referências

[1] OLIVEIRA, R.D.S.; TARI, F. On pairs of regular foliations in the plane. *Hokkaido Mathematical Journal*, v. 31, p. 523-537, 2002.

[2] SALARINOGHABI, M.; TARI, F. Flat and round singularity theory of plane curves. Preprint, 2015.

[3] SALOOM, A.; TARI, F. Curves in the Minkowski plane and their contact with pseudo-circles. *Geometria Dedicata*, v. 159, p. 109-124, 2012.

Thuy Nguyen Thi Bich IBILCE - UNESP

We associated to a nonvanishing jacobian polynomial mapping $F : \mathbb{C}^n \to \mathbb{C}^n$ a singular variety, the intersection homology of which describes the geometry of singularities at infinity of the mapping F.