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Title: The arc-Floer conjecture for plane curve singularities

Abstract: The old-standing monodromy conjecture aims to relate two invariants of different nature of a given hypersurface singularity. On one hand, we have the contact loci (algebraic nature), which are subsets of arcs of fixed intersection multiplicity with the hypersurface. On the other hand, we have the Milnor fibration (topological nature), which is the most important topological invariant of the singularity. Although the monodromy conjecture has been verified in several cases, it is still widely open, and the attempts to solve it have motivated new developments in different directions: motivic, nonarchimedean, model-theoretic, etc. In 2022, Budur, F. de Bobadilla, Lê and Nguyen suggested a new approach by exploding the symplectic properties of the Milnor fibration.

More precisely, they suggested the so-called arc-Floer conjecture, which states that the cohomology of contact loci coincides (up to a shift) with the Floer homology of the iterates of a symplectic monodromy. However, the conjecture was formulated based on analogies but not on actual evidence. In 2023, de la Bodega and de Lorenzo Poza verified it for plane curve singularities, providing the first piece of evidence supporting the arc-Floer conjecture. In this talk, we will give an overview of the problem and explain the proof for plane curves.