

Contact structures with singularities

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The study of singular symplectic manifolds was initiated by the work of Radko, who classified stable Poisson structures on surfaces. It was observed by Guillemin–Miranda–Pires that stable Poisson structures can be treated as a generalization of symplectic geometry by extending the de Rham complex. Since then, a lot has been done to understand the geometry, dynamics and topology of those manifolds.

We will explore the odd-dimensional case of those manifolds in this talk by extending the notion of contact manifolds to the singular setting. We plan to give local normal forms and the relation to singular symplectic geometry. We will prove the existence of singular contact structures in dimension 3. We prove the equivalent of Weinstein conjecture in contact geometry in the singular setting, i.e. existence of periodic orbits on compact 3-dimensional b -contact manifolds.

This is a joint work with Eva Miranda.