SARD CONJECTURE IN SUB-RIEMANNIAN GEOMETRY

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We will present an overview of our results concerning the Sard Conjecture in sub-Riemannian manifolds (M, D), where M is a Riemannian manifold and D is a non- holonomic distribution. More precisely, we will explain how the Conjecture can be interpreted as a geometrical problem concerning the behavior of a characteristic singular foliation in the cotangent bundle. Under the hypothesis of analyticity of M and D, we can study this singular foliation via methods of singularity theory, subanalytic geometry and control measure theory. This approach was used in our proof of the (strong) Sard Conjecture when M is of dimension 3 (in collaboration with Figalli, Parusinski and Rifford) and has recently been used to provide a proof of the minimal rank Sard conjecture in arbitrary dimensions, under an additional qualitative property of the foliation which we call "splittable" (in collaboration with Parusinki and Rifford).

Joint work with: A. Parusinki and L. Rifford.