Workshop on "Geometry of vector distributions, differential equations, and variational problems"

Abstracts of the posters

Determinacy of affine distributions by their singular curves

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We consider control-affine systems of corank grater or equal 2 defined on a smooth manifold of dimension n, i.e., systems of the form:

$$\dot{q} = f_0 + u_1 f_1 + ... + u_k f_k, \quad k < n - 1.$$

We prove that if k is even then a generic system of this type is determined by its singular curves at every points belonging to some open and dense set. For odd k it may happen that there are no singular curves passing through an open set. Still, the above kind of determinacy holds for an open and dense subset of points through which at least one singular curve passes. In terms of distributions we prove that every generic germ of an affine distribution is determined by its singular curves. This is an analogue of the results obtained for linear distributions by Montgomery, Krynski, Jakubczyk-Krynski-Pelletier. Our results reduce some problems of classification of affine distributions, e.g. classification of rank 4 affine distributions on 6-dimensional manifold is reduced to classification of rank 2 affine distributions of special type.