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**Igor Zelenko\*** ([zelenko@math.tamu.edu](mailto:zelenko@math.tamu.edu)), Department of Mathematics, Texas A&M University, College Station, TX 77843-3368. *Symplectification, Generalized Tanaka Prolongations, and Geometry of Distributions*. Preliminary report.

The talk is devoted to local geometry of distributions (subbundles of tangent bundles) on manifolds. We will present quite general results on the finiteness of dimension of symmetry group and on the construction of the canonical frames for distributions of any rank. One of the corollaries is that a rank 2 nonholonomic distribution is either the Goursat distribution (i.e. a distribution locally isomorphic at generic point to the natural distribution on jet spaces of scalar functions of one variable) or has finite dimensional algebra of infinitesimal symmetries. Our method is a combination of ideas from Optimal Control Theory (a symplectification procedure) and the generalized Tanaka prolongation procedure for filtered structures on manifolds. The talk is based on the joint work with Boris Doubrov. (Received September 17, 2009)