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Igor Zelenko* (zelenko@math.tamu.edu), Department of Mathematics, Mailstop 3368, College Station, TX 77843. *Symplectically flat vector distributions and their symmetries.*

Vector distributions constitute a very natural and wide class of geometries that can be defined by differential forms. They appear naturally in control theory and geometric theory of differential equations. Apart of several cases of small rank or corank, local differential geometry of vector distribution is not trivial. In the last decade we developed the novel variational or symplectic approach for the construction of canonical frames and differential invariants for a very wide class of distributions. The main new point of this approach is that the study of geometry of distributions can be reduced to a simpler (extrinsic) geometry of curves of symplectic flags. In terms of these curves we obtain a new discrete basic invariant of the original distribution, called the flag symbol and we have an explicit algorithm for construction of the canonical frame for our original structure that depends only on first fixing this discrete information. In this talk I would like to focus on the following two questions: what are the most simple distributions with given flag symbol and what is their group of symmetries. (Received September 16, 2014)