1126-53-248   **Ekaterina Shemyakova*** (`shemyake@newpaltz.edu`), 1 Hawk dr., New Paltz, NY 12561.
Differential Operators on the algebras of densities. Factorization and Darboux transformations. Preliminary report.

In this talk we report a preliminary result on some differential-geometric aspects of Darboux transformations.

We consider differential operators acting on the algebra of densities on a manifold M. It is an $\mathbb{R}$-graded commutative algebra which naturally arises from tensor multiplication of densities of various weights. Differential operators on it are understood in algebraic sense but can be interpreted in a simpler way as particular differential operators on an auxiliary graded manifold $\hat{M}$. They are effectively described as particular polynomial operators' pencils.

There is a non-trivial factorization problem for such operators or pencils, and we explore possibilities arising here. (Received January 15, 2017)