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- Geometry and topology of differentiable manifolds
- General and algebraic topology
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# On partial preliminary group classification of some class of $(1 + 3)$ -dimensional Monge-Ampere equations. One-dimensional Galilean Lie algebras.

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A solution of many problems of the geometry, theoretical physics, astrophysics, differential equations, nonlinear elasticity, fluid dynamics, optimal mass transportation, one-dimensional gas dynamics and etc. has reduced to investigation of classes of Monge-Ampère equations in the spaces of different dimensions and different types. At the present time, there are a lot of papers and books in which those classes have been studied by different methods.

Let us consider the following class of  $(1 + 3)$ -dimensional Monge-Ampère equations:

$$\det(u_{\mu\nu}) = F(x_0, x_1, x_2, x_3, u, u_0, u_1, u_2, u_3),$$

where  $u = u(x)$ ,  $x = (x_0, x_1, x_2, x_3) \in M(1, 3)$ ,  $u_{\mu\nu} \equiv \frac{\partial^2 u}{\partial x_\mu \partial x_\nu}$ ,  $u_\alpha \equiv \frac{\partial u}{\partial x_\alpha}$ ,  $\mu, \nu, \alpha = 0, 1, 2, 3$ .

Here,  $M(1, 3)$  is a four-dimensional Minkowski space,  $F$  is an arbitrary real smooth function.

For the group classification of this class we have used the classical Lie-Ovsianikov approach. At the present time, we have performed partial preliminary group classification of the class under consideration, using one-dimensional nonconjugate Galilean subalgebras of the Lie algebra of the Poincaré group  $P(1, 4)$ .

In my report, I plan to present some of the results obtained concerning with partial preliminary group classification of the class under consideration.

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