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Alexei G. Kushner

*Invariants of Monge–Ampere equations and
solution of the filtration equations*

The class of Monge–Ampere equations is invariant under contact transformations. This result was already known to Sophus Lee. In 1978 V.V. Lychagin showed that the classical Monge–Ampere equations and their generalizations to the case of n independent variables from a geometric point of view can be considered as differential n -forms on the space of 1-jets. This allowed one to consider 1-jet spaces instead of 2-jet spaces.

The report will present the results on the problem of linearization of non-degenerate Monge–Ampere equations and equations of variable type. For non-degenerate equations, differential 2-forms are constructed that are invariantly related to the Monge–Ampere equations, in terms of which the problem of contact linearization of equations is solved. The results are applied to the construction of an exact general solution to nonlinear equations of deep filtration of a suspension in a porous medium, taking into account the clogging of pores by precipitates, as well as to the construction of solutions to the equations of two-phase filtration.

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