
The Hyperbolic Monge-Ampere Equation: Classical Solutions on the Whole Plane

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On the plane (x, y) the Cauchy problem for the hyperbolic Monge-Ampere equation

$$\begin{cases} A + Bz_{xx} + Cz_{xy} + Dz_{yy} + \text{hess } z = 0, \\ z(0, y) = z^o(y), \quad z_x(0, y) = p^o(y), \quad y \in \mathcal{R} \end{cases}$$

is considered. Here $\text{hess } z = z_{xx}z_{yy} - z_{xy}^2$, A, B, C, D depend on x, y, z, z_x, z_y . The equation is hyperbolic when $C^2 - 4BD + 4A > 0$.

The existence of the C^3 -solution on the whole plane is proved. The sufficient conditions are formulated.

Reference

- [1]. Yu. N. Bratkov, On the existence of the classical solution of the hyperbolic Monge-Ampere equation on the whole. *Fundamental and Applied Mathematics*, **2** (2000) 379–390. (Russian)