

SUMMARY OF PHD THESIS

Thesis Title: The Dirichlet problem for nonsymmetric Monge-Ampère equations of elliptic type

Speciality: Differential and Integral Equations

Speciality code: 9 46 01 03

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Supervisor: Assoc.Prof. Dr. Ha Tien Ngoan

Training Institute: Institute of Mathematics, Vietnam Academy of Science and Technology

The new results of the thesis include:

The thesis studies the solvability in the space $C^{2,\alpha}(\bar{\Omega})$ of the Dirichlet problem for nonsymmetric Monge-Ampère type equations in a bounded domain $\Omega \subset \mathbb{R}^n$ and get the following new results:

1. Introduced the notion of d -concavity for $d \geq 0$ and established the d -concavity for the nonsymmetric Monge-Ampère type function in a convex unbounded set of the set of nonsymmetric positive definite matrices.
2. Introduced the notion of δ -elliptic for $0 \leq \delta < 1$ and proved the comparison principle for δ -elliptic solutions to nonsymmetric Monge-Ampère type equations and get a necessary condition for the existence of that solution.
3. Established a priori estimates in $C^{2,\alpha}(\bar{\Omega})$ for δ -elliptic solutions to the Dirichlet problem for nonsymmetric Monge-Ampère type equations, that are uniform with respect to a class of skew-symmetric matrices.
4. Established sufficient conditions on the symmetric matrix and the right hand side of nonsymmetric Monge-Ampère type equation for unique existence of δ -elliptic solution for the Dirichlet problem in $C^{2,\alpha}(\bar{\Omega})$ when the skew-symmetric matrix in the equation is sufficiently small in some sense.

Hanoi, May, 14, 2019

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