

**SUMMARY INFORMATION OF NEW RESULTS
OF THE PH. D. THESIS**

Title: *Smoothness, analyticity, Gevrey regularity of solutions of semilinear elliptic degenerate equations.*

In: Differential equations and Integral equations.

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Some new results in my Ph. D. thesis

1. We have found a fundamental solution of the degenerate elliptic operator

$$G_{k,c}^{a,b} = \left(\frac{\partial}{\partial x} - iax^k \frac{\partial}{\partial y} \right) \left(\frac{\partial}{\partial x} - ibx^k \frac{\partial}{\partial y} \right) + icx^{k-1} \frac{\partial}{\partial y},$$

where a, b, c are complex number, k being a positive integer.

2. We have proved smoothness of solutions of the equation

$$\Psi_{k,c}^{a,b} f = G_{k,c}^{a,b} f + \psi \left(x, y, f, \frac{\partial f}{\partial x}, x^k \frac{\partial f}{\partial y} \right) = 0. \quad (1)$$

3. We have proved analyticity, Gevrey regularity of solutions of equation (1).

4. We have proved hypoellipticity, analytic hypoellipticity, s-hypoellipticity of nonlinear operator $\Psi_{k,c}^{a,b}$.

Hà Nội, ngày 08 tháng 08 năm 2011

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