

## **SUMMARY OF PH.D. THESIS**

Title: Coderivatives of Normal Cone Mappings and Applications

Speciality: Applied Mathematics

Speciality code: 62 46 01 12

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Supervisors: Prof. Dr. Sc. Nguyen Dong Yen  
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Training institute: Institute of Mathematics, Vietnam Academy of Science and Technology

The thesis investigates generalized second-order subdifferentials of the indicator function of parametric convex sets and their applications to the solution stability of parametric variational inequalities and parametric linear generalized equations.

### **The main results of the thesis include:**

1. An exact formula for the Fréchet coderivative and some upper and lower estimates for the Mordukhovich coderivative of the normal cone mappings to linearly perturbed polyhedral convex sets in reflexive Banach spaces.
2. Necessary conditions and sufficient conditions for the local Lipschitz-like property and the local metric regularity of the solution maps of affine variational inequalities under linear perturbations.
3. Upper estimates for the Fréchet and the limiting normal cone to the graphs of the normal cone mappings to nonlinearly perturbed polyhedral convex sets in finite dimensional spaces.
4. Sufficient conditions for the local Lipschitz-like property of the solution maps of affine variational inequalities under nonlinear perturbations.
5. Exact formulas for the Fréchet and the Mordukhovich coderivatives of the normal cone mappings to perturbed Euclidean balls.
6. Necessary and sufficient conditions for the local Lipschitz-like property of the solution maps of linear generalized equations as well as of parametric trust-region subproblems.

**Supervisors**

*Hanoi, February 10, 2014*

**Ph.D student**

**Prof. Dr. Sc. Nguyen Dong Yen**

**Nguyen Thanh Qui**