

SUMMARY OF PHD DISSERTATION

Dissertation Title: Stability of Some Constraint Systems and Optimization Problems

Speciality: Applied Mathematics

Speciality code: 9 46 01 12

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Supervisor: Prof. Dr.Sc. Nguyen Dong Yen

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

This dissertation studies implicit multifunctions which are solution maps of parametric constraint systems or variational systems. Two main properties which have been studied here are the Lipschitz-like property (also called the Aubin property) and the Robinson stability. The main tools are coderivatives. Part 1 of the dissertation investigates the solution stability of a parametric generalized linear constraint system under total and linear perturbations and applies the obtained results to linear complementarity problems and affine variational inequalities. Part 2 of the dissertation studies the sensitivity of the stationary point set of a parametric smooth optimization problem with one smooth functional constraint under total perturbations.

The main results of the dissertation include:

1. Criterion for the Lipschitz-like property and the Robinson stability of the solution map of a parametric generalized linear constraint system under total perturbations and applications to the linear complementarity problems and affine variational inequality problems;
2. Analogues of the above results for the case when the generalized linear constraint system undergoes linear perturbations;
3. The Lipschitz-like property of the stationary point set map of a smooth parametric optimization problem with one smooth functional constraint under total perturbations;
4. The Robinson stability of the above stationary point set map and applications to quadratic programming.

Supervisor

Hanoi, December 27, 2019

PhD Student

Prof. Dr.Sc. Nguyen Dong Yen

Duong Thi Kim Huyen