Coderivative Characterizations of Quasiconvexity and Pseudoconvexity

Vo Thanh Phat*

Abstract

For a $\mathcal{C}^2$-smooth function on a finite-dimensional space, a necessary condition for its quasiconvexity is the positive semidefiniteness of its Hessian matrix on the subspace orthogonal to its gradient, whereas a sufficient condition for its strict pseudoconvexity is the positive definiteness of its Hessian matrix on the subspace orthogonal to its gradient. Our aim in this talk is to extend those conditions for $\mathcal{C}^{1,1}$-smooth functions via Mordukhovich coderivatives. (This talk is based on the joint work with **Pham Duy Khanh**[1])

*Department of Mathematics, HCMC University of Education, Ho Chi Minh City, Vietnam and Department of Mathematics, Wayne State University, Detroit, Michigan, USA. E-mails: phatvt@hcmue.edu.vn; phatvt@wayne.edu,

[1]Department of Mathematics, HCMC University of Education, Ho Chi Minh City. E-mail: pdkhanh182@gmail.com