## Title: Analytic Center Cutting Plane Methods for Solving Semi-Infinite Variational Inequality Problems

## Soon-Yi Wu

Abstract:

We study a variational inequality problem VI (X, F) whose domain X is defined by infinitely many inequality constraints and F is a pseudomonotone function. It is shown that the problem can be reduced to finding a feasible point in a convex set defined by an infinite number of constraints. An analytic center based cutting plane algorithm is proposed for the reduced problem, which can find an  $\varepsilon$ -optimal solution of the problem in O (n<sup>2</sup> /  $\rho^2$ ) iterations, where n is the dimension of X,  $\varepsilon$  is a user-specified tolerance, and  $\rho$  is the radius of a ball contained in the  $\varepsilon$ -optimal solution set. Besides, another inexact analytic center cutting plane algorithm is also proposed for the VI (X, F). Convergence results of these algorithms are provided.