

Talk announcement

Michael Mandlmayr
(RICAM)

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Semismooth* Newton Methods for Quasi-Variational inequalities and Contact Problems with friction

Motivated by many applications with real world Background, we consider semismooth* Newton methods for generalized equations. A generalized equations is typically described via a multifunction F , and we are interested in finding a point x where $0 \in F(x)$. We present the theoretical and algorithmic framework for semismooth* Newton methods, which enable us to solve many challenging generalized equations efficiently. We introduce the new concept of semismoothness* of a certain order, which yields more precise convergence results. Moreover we present an inexact version of the semismooth* Newton method with results on convergence (speed). Moreover we present the application of the semismooth* Newton method to Quasi Variational Inequalities in two different formulations (where one also covers generalized nonlinear programming), Contact problems with Tresca friction and Contact problems with Coulomb friction. For each of these interesting problems we construct a specified version of the semismooth* Newton method which converges locally (quadratic) superlinear. Lastly Show numerical results that support the claims from the theory.