JOHANNES KEPLER UNIVERSITY LINZ

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Talk announcement (ZOOM)

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On the SCD semismooth* Newton method

In the recently developed semismooth* Newton method one approximates multifunctions via elements from the graph of their limiting coderivatives. A deeper analysis of this procedure has lead to the notion of a new derivative for set-valued mappings whose elements are subspaces. There is some analogy to the classical concept of differentiability where the derivative is a linear mapping and consequently its graph is a subspace. Based on this notion we introduce the class of the so-called SCD (Subspace Containing Derivative) mappings and consider a new variant of the method which we call SCD semismooth* Newton method.

The class of SCD mappings is rather broad and seems to cover most of the mappings appearing in applications. A major advantage of the new derivative is that it has a much simpler structure than the limiting coderivative and is therefore easier to compute. Further, convergence can be shown under weaker assumptions.

In this talk we want to focus on the key ideas behind the (SCD) semismooth* Newton method. The theoretical results are illustrated by a nonsmooth optimization problem arising from a discretized contact problem with given (Tresca) friction.