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VORTRAGSANKÜNDIGUNG

Im Rahmen unseres gemeinsamen Oberseminars

„Numerische Mathematik, Optimierung und Dynamische Systeme“

spricht

Herr **Doc. Ing. Jiří Outrata, Dr Sc.**
Institute of Information Theory and Automation (UTIA),
Academy of Sciences of the Czech Republic (ASCR), Prague, Czech Republic

am Montag, 2.12.2024 um 10:00 Uhr im Raum S 137, Gebäude NW III

über das Thema

“On the implicit programming approach in a class of mathematical programs with equilibrium constraints”

Abstract:
We consider a class of mathematical programs with equilibrium constraints (MPECs) *which can be converted to minimization of a Lipschitzian objective in the upper-level variable only. It is assumed that the equilibria are governed by* generalized equations (GEs)*, whose solution maps are single-valued and locally Lipschitz and the resulting nonsmooth programs are solved via a bundle method. Since the relevant rules of the generalized differential calculus hold merely as inclusions, we are generally not able to supply the used bundle method with correct subgradients, which makes the application of this, so-called* ImP approach*, questionable. It turns out, however, that on the basis of some generalizations of the classical semismoothness property one can:*

i. suggest a procedure in which the (Clarke) subdifferentials are replaced by some larger sets of the so-called pseudosubgradients*. The used bundle method converges then to points satisfying a slightly weaker stationarity condition.*
ii. interpret this condition in terms of the Clarke stationarity condition of an equivalent MPEC.
iii. *propose a numerically efficient way of computing the pseudosubgradients provided the multi-valued part of the considered GE possesses the so-called* SCD (subspace containing derivative) property*. The approach is tested via an economic MPEC modelling an oligopolistic market, where one player decides to replace the Cournot-Nash strategy by the Stackelberg one and possible strategy changes of some players are associated with certain costs of change.*

gez. Lars Grüne