12th SEMINAR ON OPTIMIZATION AND VARIATIONAL ANALYSIS

Elche, June 16, 2026, Seminar Room, Torretamarit Bldg.

Center of Operations Research, Miguel Hernández University of Elche

Organizers: Profs. María Josefa Cánovas and Juan Parra

PROGRAM

10:00-10:40 Stability and Stationary Points for Mathematical Problems with Complementarity Constraints
Jan-J. Rückmann, University of Bergen, Norway

Abstract: In this lecture we consider the class of mathematical problems with complementarity constraints (MPCC) with finite-dimensional variables. We focus on non-differentiability phenomena for this class which do not appear in standard optimization problems. In particular, several different stationarity concepts and corresponding stability properties are discussed for MPCC. For some of them we present algebraic and topological characterizations for strong stability of a stationary point. Strong stability refers to local existence, uniqueness and continuous dependence of a stationary point on any sufficiently small perturbation up to second order. These properties play an important role in sensitivity analysis and parametric optimization.
This lecture is based on joint works with Daniel Hernandez Escobar (University of Uppsala, Sweden) and Harald Günzel (RWTH Aachen University, Germany).

10:40-11:20 Invex Functions with Same η in Single and Multivalued Nonsmooth Optimization with Clarke's and Limiting Subdifferentials.
Yury Nikulin, University of Turku, Finland

Abstract: In this work a finite family of nonsmooth locally Lipschitz continuous functions that are invex with respect to the same function η are characterized in terms of their scalarized counterparts and various subdifferentials.

11:20-11:40 Coffee break

11:40-12:20 Solving mathematical programs with complementarity constraints by disjunctive regularizations
Vladimir Shikhman, Chemnitz University of Technology, Germany

Abstract: We propose a new disjunctive regularization for mathematical programs with complementarity constraints (MPCC). Its feasible set coincides with that of the Kanzow-Schwartz regularization. However, their functional descriptions differ considerably. For the disjunctive regularization, the logical operator OR and equivalent max-type constraints are used. Unlike the Kanzow-Schwartz, the disjunctive regularization satisfies the tailored linear independence constraint qualification if the original MPCC does. More than that, the favorable convergence properties -- known to hold for the Kanzow-Schwartz regularization -- remain valid for the disjunctive regularization as well. In particular, no second order necessary conditions are required to guarantee convergence towards S-stationary points of MPCC. Additionally, we keep track of the topological type of approximating and limiting nondegenerate C-stationary points in terms of their C-indices. Quadratic and biactive parts of the C-indices are shown to generically correspond to each other while regularizing. This is a new phenomenon as compared to the Scholtes or sign-type regularizations studied before. Numerical experiments illustrate that the

proposed disjunctive regularization clearly outperforms the Kanzow-Schwartz regularization. Its numerical performance is even better than that of the Scholtes regularization if solving MPCCs with high accuracy.
In collaboration with Sebastian Lämmel.

12:20-13:00 Minimization of Nonsmooth Functions under Equilibrium Constraints
Helmut Gfrerer, Johannes Kepler University Linz, Austria

Abstract: We consider the problem of minimizing a nonsmooth and nonconvex function subject to equilibrium constraints. Under the assumption that the objective is semismooth and the set-valued mapping describing the equilibrium constraint is semismooth*, we will demonstrate how this problem can be solved by means of a bundle algorithm. As an numerical example we consider a shape optimization problem stemming from a contact problem with Coulomb friction. This talk is based on Joint work with J.V. Outrata.