**AFTERNOON WORKSHOP IN OPTIMIZATION**

**26 febbraio 2019**

**ABSTRACT**

**R. CAMBINI**

**A partitioning method for a class of Rank2 problems**

Rank2 problems are nothing but nonlinear minimization problems over polyhedrons where a linear transformation of the variables provides an objective function which actually depends on just 2 variables. These problems appear quite easily in applications, for example in location-allocation models, Data Envelopment Analysis, multiobjective/bicriteria programs. The particular structure of the problem allows to determine a partitioning solution method based on very tight underestimation functions and hence having very good algorithmic performances.

**M. GIULI**

**An existence result for quasiequilibrium problems in normed spaces**

A quasiequilibrium problem is an equilibrium problem in which the constraint set is subject to modifications depending on the considered point. This model encompasses many relevant problems as special cases, among which variational and quasivariational inequalities, social (or generalized) Nash equilibrium problems, mixed quasivariational-like inequalities and so on. Aim of this lecture is to establish an existence result for problems defined in a normed space X which improves a recent one in [J. Math. Anal. Appl. 425 (2015) 85-95] where X was a separable Banach space. The proof of this result relies on a new selection theorem for lower semicontinuous set-valued maps whose values are convex but not necessarily closed sets.

**I. KONNOV**

**Simple adaptive step-size for optimization methods**

We suggest a simple adaptive step-size procedure for a general class of iterative optimization methods. This procedure takes into account behavior of the iteration sequence and reduces the
implementation cost of each iteration essentially since does not require any line-search. We prove convergence of a general method for non-convex optimization problems. We describe its applications to smooth optimization problems and variational inequalities.

**M. PASSACANTANDO**

**Nonlinear programming techniques for quasi-equilibria**

The quasi-equilibrium problem (QEP) is an abstract setting for quasi-variational inequalities (QVIs) and generalized Nash equilibrium problems (GNEPs) and possibly other problems where the feasible region changes together with the considered point. Unlikely QVI and GNEP, algorithms for the QEP format did not receive much attention up to now. The goal of the talk is to discuss possible extensions of three classical algorithmic approaches for optimization and VIs to QEPs, namely fixed point, extragradient and descent methods. The main difficulties arise from a feasible region that changes: the iterates belong to different sets and any solution of QEP has to be a fixed point of the constraining set-valued map. Therefore, a range of convexity, monotonicity and Lipschitz assumptions both on the equilibrium bifunction and the constraining set-valued map must be met in suitable combinations to achieve convergence.