universität wien

FAKULTÄT FÜR MATHEMATIK
Dekan Univ.-Prof. Dr. Christian Krattenthaler

Einladung zur öffentlichen Defensio von

Dipl.-Math. Sebastian Banert

Thema der Dissertation:

Splitting algorithms in Hilbert spaces and beyond

Abstract: In this talk, we will first introduce the proximal splitting principle for solving monotone inclusions, motivated by the minimisation of convex functions. In the first part, we will give a short overview over the contributions of the author to the theory of proximal splitting:

- a variable-metric version of the alternating direction method of multipliers for monotone operators (ADMM),
- a penalty scheme for solving a variational inequality whose feasible set is the set of zeros of another maximally monotone operator,
- a continuous-time dynamical system in the spirit of the forward-backward-forward splitting algorithm,
- a backward-backward splitting scheme in Hadamard spaces, a type of complete metric spaces,
- a splitting scheme for nonconvex d.c. programming, i.e., minimising the difference of convex functions.

The second part is dedicated to a detailed look at the last point. We will talk about Toland duality and first-order optimality conditions for d.c. programmes and the asymptotic properties of a double-proximal splitting scheme, which separately evaluates the convex and concave parts by means of their proximal points and the differentiable part by its gradient. The concave part might be the composition of a convex function with a linear operator.
In the general setting we show how to prove a descent property for the objective function values of a primal-dual formulation of the problem. Convergence of the iterates can be shown if this objective function additionally satiesfies the Kurdyka–Łojasiewicz property. We conclude the talk by two numerical examples.

Prüfungssenat:

Univ.-Prof. Dr. Josef Hofbauer (Vorsitz)
(Universität Wien)

Assoz. Prof. Dr. Radu Ioan Bot, Privatdoz.
(Universität Wien)

ao. Univ.-Prof. Dipl.-Ing. Dr. Hermann Schichl
(Universität Wien)

Prof. Dr. Jean-Christophe Pesquet
(University Paris-Saclay)

Zeit: Dienstag, 11. Juli 2017, 10:00 Uhr

Ort: Fakultät für Mathematik,Hörsaal 10 , Oskar-Morgenstern-Platz 1