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ONE WORLD OPTIMIZATION SEMINAR

October 4th 2021 @ 15:30 CEST (Central European Summer Time)

WALAA MOURSI

(University of Waterloo)

The Douglas-Rachford Algorithm for Solving Possibly Inconsistent Optimization Problems

Abstract. More than 40 years ago, Lions and Mercier introduced in a seminal paper the Douglas–Rachford algorithm. Today, this method is well recognized as a classical and highly successful splitting method to find minimizers of the sum of two (not necessarily smooth) convex functions. While the underlying theory has matured, one case remains a mystery: the behaviour of the shadow sequence when the given functions have disjoint domains. Building on previous work, we establish for the first time weak and value convergence of the shadow sequence generated by the Douglas–Rachford algorithm in a setting of unprecedented generality. The weak limit point is shown to solve the associated normal problem which is a minimal perturbation of the original optimization problem. We also present new results on the geometry of the minimal displacement vector.

The link of the zoom-room of the meeting and the corresponding password will be announced the day before the talk on the mailing list of the seminar, to which one can subscribe on <https://owos.univie.ac.at>.