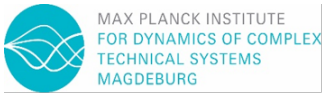


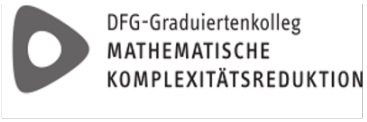


Contribution ID: **10** Type: **Talk**

# End-to-end reconstruction meets data-driven regularization for inverse problems

*Thursday, 3 November 2022 16:15 (30 minutes)*

In this presentation we discuss new machine learning techniques suitable to solve ill-posed inverse problems. In particular, we deal with the task of reconstructing data from a collection of noisy measurements that are typically not enough to recover the ground-truth univocally. In this context, we propose a machine learning approach based on adversarial training based on optimal transport methods that, using an unpaired set of data and measurements, is able to learn an end-to-end reconstruction of the data given the measurements. Additionally, we show how to leverage the adversarial formulation of the approach to learn, as a byproduct, a regularizer for the inverse problem that encodes prior knowledge of the data. Such regularizer is used to refine the end-to-end reconstruction by solving a variational problem that jointly penalizes the regularizer and the reconstruction error for a given observation. We showcase the potential of our approach by applying it to image reconstruction tasks in computed tomography.

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