

## **MODERN CHALLENGES IN LARGE-SCALE AND HIGH DIMENSIONAL DATA ANALYSIS**

MIRJETA PASHA

Rapidly-growing fields such as data science, uncertainty quantification, and machine learning rely on fast and accurate methods for inverse problems. Three emerging challenges on obtaining relevant solutions to large-scale and data-intensive inverse problems are ill-posedness of the problem, large dimensionality of the parameters, and the complexity of the model constraints. Tackling the immediate challenges that arise from growing model complexities (spatiotemporal measurements) and data-intensive studies (large-scale and high-dimensional measurements collected as time-series), state-of-the-art methods can easily exceed their limits of applicability. In this talk we discuss recent efficient methods for computing solutions to dynamic inverse problems, where both the quantities of interest and the forward operator may change at different time instances.