Blind deconvolution with randomness - convex geometry and algorithmic approaches

Blind deconvolution problems are ubiquitous in many areas of imaging and technology and have been the object of study for several decades. Recently, motivated by the theory of compressed sensing, a new viewpoint has been introduced, motivated by applications in wireless application, where a signal is transmitted through an unknown channel. Namely, the idea is to randomly embed the signal into a higher dimensional space before transmission. Due to the resulting redundancy, one can hope to recover both the signal and the channel parameters. In this talk we will discuss recovery guarantees for this problem. In this talk, we will focus on convex approaches based on lifting as they have first been studied by Ahmed et al. (2014). We show that one encounters a fundamentally different geometric behavior as compared to generic bilinear measurements. In addition, we will review recent progress on the study of efficient nonconvex recovery methods.
This talk is based on joint work with Dominik Stöger (TUM).