## Lossy Compression of State Trajectories

## S. Götschel<sup>1</sup> and <u>M. Weiser<sup>1</sup></u>

**Abstract:** In large-scale, time-dependent optimal control problems, adjoint methods for gradient computations are often employed. As the state enters into the adjoint equation, the state trajectory has to be stored, which can result in high demand of storage capacity and bandwidth. In this talk we address lossy compression of state trajectories as a means to reduce these demands, without a significant loss of accuracy or increase of computational complexity.

We present a-priori error estimates as well as heuristic schemes for adaptively selecting the quantization level. The different tradeoffs compared to checkpointing or model reduction are discussed. Quantitative aspects are illustrated on numerical examples.

Department of Numerical Analysis and Modelling Zuse Institute Berlin Takustr. 7, 14195 Berlin, Germany weiser@zib.de, goetschel@zib.de