Improving EKI Performance by Adaptively Controlling the Ensemble

Ruben Harris
Freie Universität Berlin
r.harris@fu-berlin.de

Coauthor(s): Claudia Schillings

Special session: Continuous time dynamics in Monte Carlo and beyond

Due to their low computational costs and straightforward implementation, filtering methods such as the Ensemble Kalman Filter have become very popular for inverse problems over the last few years. They have been shown to work well even for highly nonlinear, complex models. We discuss variants of the Ensemble Kalman Inversion (EKI) aiming to improve the accuracy of the estimate by adaptively choosing the particles in the ensemble. In particular, we propose a method of ensemble selection that is - for linear forward operators - optimal among a family of potential initial ensembles, and we suggest how to adapt this method to nonlinear forward operators.