IWR Colloquium Summer Semester 2019

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Mathematikon, Conference Room / 5th Floor
Im Neuenheimer Feld 205, 69120 Heidelberg

Speaker:
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Title:
“Bayes-Optimal Filtering in the Tensor Train Format"

Abstract:
Optimal sequential Bayesian inference, or filtering, for the state of a dynamical system requires solving a partial differential equation. For low-dimensional, smooth systems the finite-volume method is an effective solver that gives estimates that converge to the optimal continuous-time values. We develop this finite-volume filter, and give numerical examples that show that the filter we develop is able to handle multi-modal filtering distributions. For higher-dimensional systems the curse or dimensionality may be overcome by representing density functions by an interpolated tensor train decomposition. We give examples of filtering for continuous-time and discrete-time systems.

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www.iwr.uni-heidelberg.de/iwr-colloquium