Einladung zu einem Vortrag in der

AG STOCHASTIK

am Dienstag, 20.06.2023, um 15.45 Uhr.

Prof. em. Dr. Hans R. Künsch

ETH Zürich

spricht über das Thema

Particle Filters: A general Introduction and 2 Examples

A state-space model consists of a latent state process (X_t) with Markovian dynamics and a sequence of conditionally independent partial and noisy observations Y_t of X_t. Such models are used in many applications, e.g. biology, ecology, finance or engineering. I will discuss two examples: Estimation of the effective reproduction number of Covid-19 from data on the daily numbers of positive test and estimation of glacier mass balance from stake readings.

The task of the statistician is to provide estimates of the state process and of fixed parameters in the transition and/or the observation density. In nonlinear and non-Gaussian settings this is not straightforward. Typically, Bayesian methods with sampling from the posterior are used. If observations become available sequentially, the posterior evolves sequentially and one would like to be able to update the generated sample rather than start again from scratch. Particle filter methods, aka sequential Monte Carlo have been developed for this purpose during the past 30 years, but there are still many examples where these methods break down. I will present a few recent ideas to overcome these problems and discuss the adaptations necessary in the two examples.

Ort: SR -1.025 (Geb. 20.30)

Die Dozentinnen und Dozenten der Stochastik