

ACMS Applied Math Seminar



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Thursday, November 29, 2018
154 Hurley Hall
3:30 – 4:40 PM

Data-enabled Computational Modeling

The increasing availability of data accumulated from high-fidelity simulations and laboratory/field observations, and recent advances in machine learning and data assimilation techniques open up new possibilities to develop data-enabled computational models of various physical systems. Due to unique challenges in developing data-driven modeling for physical applications (e.g., “small” data in parameter space, rigorousness requirement), it is very important to efficiently leverage both data and known physical knowledge/constraints. In this talk, several applications of data-enabled computational physics are introduced, with special focus on the problems, where only “small data” are available. Specifically, derivative-free inversion techniques will be discussed in detail and improvements of convergence of Kalman inversion techniques will be presented. Moreover, how to add soft constraints into Bayesian inversion will be discussed.

The Department of Applied and Computational
Mathematics and Statistics

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