CODY HYNDMAN, Concordia University

A geometric approach to arbitrage-free modelling, estimation, and prediction

We develop a new approach to stochastic modelling, estimation, and prediction in mathematical and computational finance. In the modelling step, we show how to obtain an optimal model by exploiting the implicit geometry characterizing the class of arbitrage-free models. Since the resulting optimal model is non-Euclidean, estimation and implementation is performed using new manifold learning algorithms. We conclude by showing these models best balance the nonlinearities and financial information present in the data. Moreover, the manifold learning algorithms have greater predictive power than their classical Euclidean counterparts. This talk is based on joint work with **Anastasis Kratsios.**