



The University of Michigan Department of Biostatistics Presents

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Longitudinal Spacekime Analytics: Time Complexity & Inferential Uncertainty

As Big biomedical and health data becomes more ubiquitous, the corresponding analytical challenges require novel techniques for data management, aggregation, harmonization, processing, and analytics. This talk will present a new technique for modeling high-dimensional and time-varying data. The Longitudinal Spacekime Analytics approach relies on extending the notions of time and event to complex-time (kime) and complex-event (kevent). We will illustrate how the kime-order (time) and kime-direction (phase) affect the subsequent predictive analytics and the induced scientific inference. We will present some of the mathematical foundations and reveal various statistical implications including inferential uncertainty and Bayesian formulation of spacekime analytics. Simulated data, clinical observations (e.g., fMRI, UK Biobank), and air quality data will be used to demonstrate applications of spacekime analytics.

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