



DEPARTMENT OF MATHEMATICS

Fall 2023 Colloquium Series

Online Trend Estimation and Detection of Trend Deviations in Sub-sewershed Time Series of SARS-CoV-2 RNA Measured in Wastewater

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Wastewater surveillance has proven a key public health tool to understand a wide range of community health diseases and has been especially critical to health departments throughout the SARS CoV-2 pandemic. Regular sampling of wastewater at routinely monitored locations is cost effective and gives a time series of viral concentration of SARS-CoV-2. When time series data are collected, the goal is often to estimate a trend, that is, whether the “typical values” are changing in time. When visualized, it is clear that wastewater viral concentrations are changing in time and can be modeled using time series tools. Such a model should be able to separate out the “noise”, or observation/measurement error, in these observations from the “signal”, or trend. An additional constraint when modeling time series data is the presence of temporal correlation structure, i.e. the values are not independent. The state space modeling framework is quite flexible and can separate out sources of variation while also accounting for temporal dependence structures. This talk will detail the application of a state space model and Exponentially Weighted Moving Average control charts to several wastewater time series with the goal of determining when the upstream sub-sewersheds are deviating from the routinely monitored, centralized WWTP. The results of these analyses can be used to inform public health resource allocation decisions in times of increasing concern.

October 16, 2023
Monday

4:00 PM
BSS 166

FOR MORE INFO GO TO [HTTPS://MATH.HUMBOLDT.EDU/GET-INVOLVED/MATHEMATICS-COLLOQUIUM](https://math.humboldt.edu/get-involved/mathematics-colloquium)

WE CORDIALLY INVITE YOU TO THE PRE-COLLOQUIUM TEA IN BSS 312
AT 3:30 PM