RUTGERS–NEW BRUNSWICK
School of Arts and Sciences

Department of Statistics

# Department of Statistics Seminar Series

**Chris Geoga**
**Department of Statistics**
**University of Wisconsin**

***Fast and Accurate Spectral Methods for Irregularly Sampled Gaussian Processes***

**Thursday, October 22nd, 2026**
**1:30-2:30 PM**
**Hill Center - 552**
**Light refreshments will be served in Hill Center 452 at 1:00 PM**

## Abstract:

A common problem in the exploratory analysis of temporal/spatial/spatio-temporal data is wanting to use Fourier analysis and the FFT, but being unable to due to gaps or irregularities in sampling. Unfortunately, many intuitive options—like smoothing to a grid and transforming or simple window-based weighted Fourier sums—can have poor properties. In this work, I will introduce a new estimator that in many cases works as well as Fourier analysis of gridded data with very few caveats: the resulting estimator can be computed in quasilinear time, analysis of finite-sample bias is natural and direct, and the approach is equally applicable in multiple dimensions with similar or identical runtime cost guarantees. After discussing the conceptual shift used in designing this estimator and the computational apparatus to rapidly and robustly compute it, I will close with some applications in exploratory analysis and model building with environmental data.

## Bio:

Chris Geoga is an Assistant Professor in Statistics. He obtained his Ph.D. at Rutgers University under the supervision of Michael Stein in 2023, and from 2016-2022 worked in the Division of Mathematics and Computer Science at Argonne National Laboratory with Mihai Anitescu.

Chris's work is primarily focused on modeling dependence structure in complex spatial and spatio-temporal data at scale, and it borrows heavily from topics in applied mathematics like numerical analysis and fast algorithms for dense linear algebra. Outside of work, Chris enjoys rock climbing, jazz music, and libre software.