

# SDSU Mathematics Colloquium Distinguished Lecture Series

**Topological Data Analysis of  
Spatial Complex Systems**

**Monday, November 15, 2021**  
**4pm–5pm, GMCS 405**  
Departmental Tea at 3:30pm



**SPEAKER: Professor Mason Porter**

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Department of Mathematics

## **ABSTRACT**

From the venation patterns of leaves to spider webs, roads in cities, social networks, and the spread of COVID-19 infections and vaccinations, the structure of many systems is influenced significantly by space. In this talk, I'll discuss the application of topological data analysis (specifically, persistent homology) to spatial systems. I'll discuss a few examples, such as voting in presidential elections, city street networks, spatiotemporal dynamics of COVID-19 infections and vaccinations, and webs that were spun by spiders under the influence of various drugs.

## **BIO**

Mason is a Fellow of the American Mathematical Society, American Physical Society, and Society for Industrial and Applied Mathematics. In recognition of his mentoring of undergraduate researchers, Mason won the 2017 Council on Undergraduate Research (CUR) Faculty Mentoring Award in the Advanced Career Category in the Mathematics and Computer Science Division. Thus far, 24 students have completed their PhD degrees under Mason's mentorship. Mason has also mentored several postdocs, more than 30 masters students, and more than 100 undergraduate students on research projects. Mason's research interests lie in theory and (rather diverse) applications of networks, complex systems, and nonlinear systems.

**LOCATION: GMCS 405**