Department of Applied and Computational Mathematics and Statistics Colloquium

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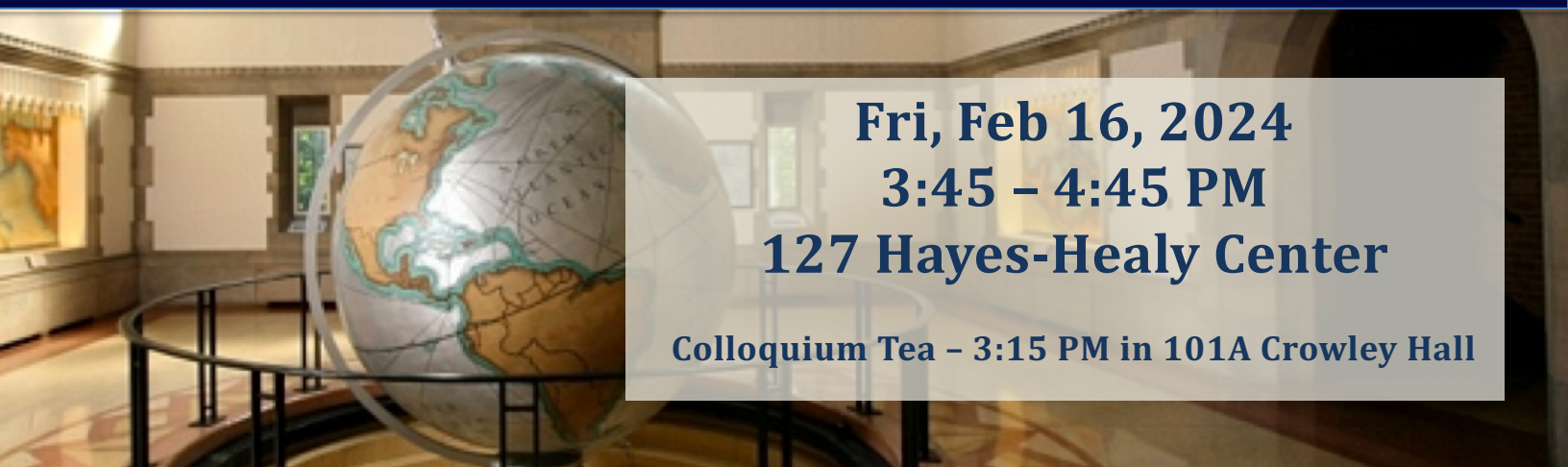
Dynamical Systems Analysis Using Topological Signal Processing

Topological Signal Processing (TSP) is a collection of tools that leverage applied topology to analyze a variety of input data. TSP is advantageous for the analysis of complex dynamical systems, and for tackling classical signal processing problems such as pulse-counting, peak-picking, and zeros-bracketing. This talk will describe some of the key tools in TSP such as persistent homology from applied topology and will showcase their fruitful application to different data types, e.g., point clouds, images, time series, and probability density functions. We will also present recent results on using TSP for studying both deterministic and stochastic dynamical systems and discuss current and future work that leverages recent advances in auto-differentiation of persistence.



Fri, Feb 16, 2024
3:45 – 4:45 PM
127 Hayes-Healy Center

Colloquium Tea – 3:15 PM in 101A Crowley Hall