

Colloquium

University of Notre Dame
Department of Mathematics

Steven Karp - University of Notre Dame

Speaker: Steven Karp

University of Notre Dame

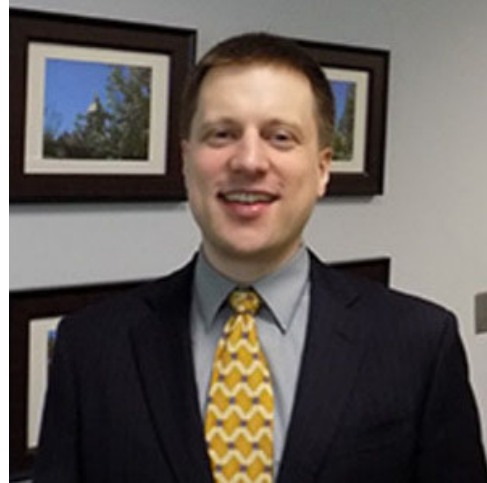
Will give a lecture entitled

Totally positive spaces: combinatorics, topology, and dynamics

Date: Tuesday, December 6, 2022

Time: 4:00 PM

Location: 127 Hayes-Healy Hall



Zoom URL: www.google.com/url?q=https://notredame.zoom.us/j/95136713347?pwd%3Dc1IOT0FBUWsyYjZ3aVRTZ3hmSDZUdz09&sa=D&source=calendar&ust=1670341842335663&usg=AOvVaw2BEwWHQeETs0K9Gz2i-JPw

Departmental Tea: Tea in Room 257 (lounge in Hurley Hall) at 3:30 p.m.

Abstract:

Total positivity studies spaces and their positive parts. For example, an $n \times n$ matrix is totally positive if all of its square submatrices have a positive determinant. Such matrices can be parametrized using networks, they decrease sign variation, and all their eigenvalues are real and positive. Over the past 30 years, the positive parts of matrix spaces and their generalizations, such as algebraic groups and flag varieties, have been extensively studied. I will present joint work with Pavel Galashin and Thomas Lam on determining the topology of these spaces, including a proof that the totally nonnegative part of a partial flag variety is a regular CW complex, resolving conjectures of Postnikov and of Williams. I will also present joint work with Tony Bloch on gradient flows on totally nonnegative flag varieties.