

# Colloquium

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Unless stated otherwise, colloquia are scheduled for Thursdays 4:15-5:15pm in WH-100E with refreshments served from 4:00-4:15 pm in WH-102.

Organizers: Vladislav Kargin, Cary Malkiewicz, Hung Tong-Viet, and Adrian Vasiu

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## Spring 2024

### Thursday Feb 29 4:15-5:15pm, WH-100E

Speaker: **Alex Iosevich** (University of Rochester)

Topic: **Signal recovery, uncertainty principles and Fourier restriction theory**

**Abstract:** We are going to consider functions  $f: \mathbb{Z}_N \rightarrow \mathbb{C}$  and view them as signals. Suppose that we transmit this signal via its Fourier transform  $\widehat{f}(m) = \frac{1}{N} \sum_{x=0}^{N-1} e^{-\frac{2\pi i}{N} xm} f(x)$ , and

and that the values of  $\widehat{f}(m)$ ,  $m \in S$ , are lost. Under what circumstances is it possible to recover the original signal? We shall see how this innocent question quickly leads us into the deep dark forest of Fourier analysis.

### Thursday March 14 4:15-5:15pm, WH-100E

Speaker: **John Klein** (Wayne State University)

Topic: **On a rationality problem in quantum information theory**

**Abstract:** In this talk, I shall consider the case of quantum systems consisting of  $n$  parties, in which each party is in possession of a qubit, i.e., a two dimensional complex vector space. Each qubit is allowed to evolve independently, and the group  $G$  of local symmetries governs the evolution of the  $n$ -qubit system.

My goal will be to provide a complete description of the field  $G$ -invariant complex valued functions on the space of mixed states of this quantum system. Such functions are to be viewed as detailed measures of entanglement.

### **PETER HILTON MEMORIAL LECTURE**

### Thursday April 11th 3:00pm-4:00pm, LH-009

Speaker: **Alex Eskin** (University of Chicago)

Topic: **Polygonal Billiards and Dynamics on Moduli Spaces**

**Abstract:** Billiards in polygons can exhibit bizarre behavior, some of which can be explained by deep

connections to several seemingly unrelated branches of mathematics. These include algebraic geometry, Teichmüller theory and ergodic theory on homogeneous spaces. The talk will be an introduction to these ideas, aimed at a general mathematical audience.

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