Colloquium 2023-2024

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 $f: {\mathbb Z}_N \to {\mathbb C}$ and view them as signals. Suppose that we transmit this signal via its Fourier transform $$\widehat{f}(m)=\frac{1}{N} \sum_{x=0}^{N-1} e^{-\frac{2 \pi i xm}{N}} f(x),$$
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> 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.
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> 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, Teichmuller theory and ergodic theory on homogeneous spaces. The talk will be an introduction to these ideas, aimed at a general mathematical audience.