

Colloquium

**DEPARTMENT OF
MATHEMATICS & STATISTICS**
University of Michigan-Dearborn

MONDAY, OCTOBER 20TH, 2025

3:30PM - 4:30PM | 2048 CB

**ON KLOOSTERMAN SUMS AND THEIR
MATRIX GENERALIZATIONS**

Speaker: Elad Zelingher



Elad Zelingher is a mathematician working in number theory and representation theory. He completed his PhD at Yale University in 2022 and is currently a Donald J. Lewis Postdoctoral Research Assistant Professor at the University of Michigan-Ann Arbor. Using integral representations of L-functions, Elad studies special functions that arise in representation theory that can be viewed as finite field analogs of classical special functions from analysis, such as the Bessel, gamma, and beta functions. Elad also develops freely available computational tools in number theory and representation theory which can be found on his website, check them out!

Abstract

In 1926 in his work on quadratic forms, Hendrik Kloosterman introduced an interesting exponential sum related to the arithmetic of a finite field. Almost 100 years later, these sorts of sums and their generalizations are important ubiquitous objects in number theory and representation theory. They were studied extensively by great mathematicians such as Deligne and Katz. In this talk I will give an overview of the classical story of Kloosterman sums. Then I will discuss matrix generalizations of these sums due to Erdélyi--Tóth and my results expressing them in terms of classical Kloosterman sums.

Refreshments will be provided!