

Department of Mathematical Sciences
Faculty and Graduate Research Colloquium

“Phase retrieval and the recovery of vectors from saturated measurements”

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1:00-1:50 PM, RB 449

Abstract:

Frames, like orthonormal bases, provide a continuous, linear, and stable reconstruction formula for vectors in a Hilbert space. Unlike orthonormal bases, frames allow for redundancy, which makes them more flexible for both theoretical work and practical applications. One such application is phase retrieval, which is used in fields like X-ray crystallography and coherent diffraction imaging, where only the intensity of each linear measurement is available, and the phase information is lost. In this talk, I will introduce the concepts of frames and phase retrieval, then discuss a real-world scenario where sensors are set up to clip any measurement that exceeds a threshold due to saturation. This problem, known as declipping or saturation recovery, focuses on reconstructing a vector from such clipped measurements. This talk will focus on methods for recovering vectors using phase retrieval and saturation recovery techniques