

# Simon Foucart

Texas A & M

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Monday, October 10, 2022

Time: 3:00 p.m.

Location: Weber 223

Title: Singular Flavors of Compressive Sensing

Abstract: About fifteen years ago, a couple of groundbreaking papers revealed the possibility of faithfully recovering high-dimensional signals from far fewer measurements than expected. This realization, coupled with the conception of practical procedures to perform the recovery, gave rise to a vigorous scientific field called compressive sensing. There is a rich and elegant mathematical theory behind the scene, drawing from—and contributing to—optimization, probability, high-dimensional geometry, numerical analysis, etc. I will first present a personally biased survey of the field, which heavily relies on the so-called restricted isometry property (RIP). Then I will deviate from the traditional route and explain the necessity of a modified RIP. I will highlight some advantages of building the theory directly from this modification, including the streamlining of one-bit compressive sensing. Along the way, I will touch on the recovery of low-rank matrices as an extension to the recovery of sparse vectors.

Host: David Aristoff

