

COLLOQUIUM SERIES

Homecoming Edition

Department of Mathematics & Statistics



Friday
May 1, 2026

In many scientific and engineering applications, we are interested in detecting objects or structures that are not directly visible. This leads to inverse problems, where the goal is to recover hidden information from indirect measurements. In this talk, we will explore inverse problems arising from partial differential equations, with a focus on wave propagation and plate models. We will discuss how one can use boundary or far-field data to reconstruct unknown obstacles or cavities and introduce sampling-type methods that provide efficient and robust reconstruction techniques. The emphasis will be on intuition and key ideas rather than technical details, making the talk accessible to a broad audience.

Rafael Ceja Ayala graduated from Sacramento State with a BA in mathematics in 2018 and a PhD in Applied Math in 2024 from Purdue University. He is currently a Presidential Postdoctoral Fellow at Arizona State University. His research focuses on developing analytical and computational methods for recovering hidden structures from indirect data, with applications ranging from materials science to imaging.

Join us for math, food, and community!

2:15–2:50pm — Reception in **Brighton 118** (Free Snacks!)

3:00–4:15pm — Research talk and Q&A in **Sequoia 301**

Post talk — Continued conversation & pizza with the speaker

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To request reasonable accommodations, contact joshua.wiscons@csus.edu by April 20.