

SEMINAR SERIES

**Wednesday, September 25th,
2024 | 12-1 p.m.**

**Drachman Hall, Rm A112
N Martin Ave,
Tucson, AZ 85719**

**Zoom ID:
884 0735 4171**



Speaker: Dan Rowe, PhD

Functional Magnetic Resonance
Imaging: From Measurements
to Brain Activation

Abstract: In fMRI, the signal measured by the scanner depends upon each voxel's physical properties through an approximate Fourier relationship. Images reconstructed using the inverse Fourier transform result in complex-valued images due to inhomogeneous magnetic fields. This inverse Fourier transform can be represented as a matrix isomorphism to determine processing and reconstruction induced correlations. Statistical models for detection of task-related magnitude and/or phase activation are presented. Potential valuable physiological information within the often discarded phase image time series is described. Statistical utilization of complex-valued images have been shown to lead to increased detection power, detection of potential additional biological information, and thus should be considered.

Bio: Dan Rowe is a Professor of Computational Statistics at Marquette University. He received a BS in Physics from UC Irvine and PhD in Statistics from UC Riverside. He was a postdoc in fMRI at Caltech before being an Assistant and Associate Professor of Biophysics at the Medical College of Wisconsin. He was the founding chair and first member of the Section on Imaging Statistics. He is an elected fellow of the ASA. Current research is complex-valued fMRI image reconstruction, processing, and activation.