

# Matrix Computations and Scientific Computing Seminar

Organizer: J. Demmel and M. Gu

Wednesday, 11:00 am–12:00 pm, 380 Soda Hall

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Apr 19     **Shiyu Tan**, Shanghai Institute of Optics and Fine Mechanics,  
CAS

*Image Reconstruction in Snapshot Spectral GISC camera*

The image information acquisition abilities of conventional cameras are usually much lower than the Shannon Limit since they do not make use of the correlation between pixels of an image. In this talk, we discuss the GISC (ghost imaging via sparsity constraints) spectral camera. The GISC camera applies a random phase modulator to encode the spectral images, and recovers them with convex optimization techniques based on total variation (TV) and nuclear norm regularizations, utilizing spatial and spectral correlation characteristics of the images. We will also discuss various enhancement techniques to improve the quality of the reconstructed images in low sampling ratio or low SNR situations. We show numerical and experimental results to illustrate the performance of these methods.