PHOTONICS SEMINAR

Dr. David Brady

Coding for Compressive Imaging and Tomography

September 26, 2013

2:00-3:00 p.m.

Room 906

Photonics Center

8 Saint Mary's Street

Refreshments will be served!

Images, and Fourier or Radon transformations of images, typically exhibit smooth structures such that data within local neighborhoods is highly correlated. Such correlations imply that the data rate for measurements over smooth surfaces is less than the number of measurement pixels might suggest. Data rates may be increased by modulating images prior to measurement to decrease the correlation between adjacent pixels. Such modulation is typically implemented using coded apertures or references structures. This talk explores the use of image space coding to enable physical layer compressive measurement of spectral data cubes, temporal data cubes, focal stacks and multidimensional x-ray tomography and x-ray scatter structures.

Dr. David J. Brady is the Michael J. Fitzpatrick Professor of Photonics at Duke University, where he leads the Duke Imaging and Spectroscopy Program. Professor Brady is the author of "Optical Imaging and Spectroscopy," and is a Fellow of IEEE, OSA and SPIE. He is the 2013 winner of SPIE's Dennis Gabor Award. Brady is a founder of Centice Corporation, which builds coded aperture Raman spectrometers and spectral imagers; Aqueti, which builds gigapixel cameras; and Applied Quantum Technologies, which is developing x-ray scatter imaging systems.

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