



UNIVERSITY of
DENVER

PHYSICS AND ASTRONOMY

Presents

A miniature confocal microscope for 3-D imaging in the brain

Wednesday, January 13, 2016

4:00 PM

F.W. Olin Hall Room 105

2190 E. Iliff Avenue

Presented by

Dr. Emily Gibson

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Microscopy has greatly expanded the capabilities for cellular-level biological imaging. In the field of neuroscience, high resolution imaging of action potentials in individual neurons can be viewed in real-time using fluorescent genetically encoded calcium indicators (GECI) or voltage indicators (GEVI). These new optical proteins combined with new developments in deep brain optical imaging in awake behaving animals will have great potential for understanding neural circuitry down to the cellular level. I will discuss recent work in my lab on the development of a miniature confocal microscope for 3-D imaging using adaptive optics. Future uses of this device include live imaging in awake behaving animals. In addition, the same device can allow for optical control of neurons using light to activate optogenetic proteins that can excite or suppress individual neurons to study behavior.

BIO: Dr. Gibson is an assistant professor in the department of Bioengineering located at the University of Colorado Anschutz Medical Campus. She earned her PhD in Physics from the University of Colorado at Boulder with a specialization in nonlinear optics. She was subsequently a National Research Council/National Academy of Sciences fellow in Biophysics, where she applied her optics background to studies of protein dynamics. Since becoming a faculty member, she has focused on development of optical technologies for cellular and tissue-level imaging.

HOST: Dr. Mark Siemens, (303) 871-3541, Mark.Siemens@du.edu

Join us for refreshments & follow-up discussions in Physics Building Room 116, 5:00-6:00 PM