MONTANA STATE UNIVERSITY | College of LETTERS & SCIENCE

Physics Colloquium

Thursday, January 19, 2017
4:30 – 5:20 PM
Barnard/EPS 103

Exploring Excitons in Solids with Multidimensional Coherent Spectroscopy

Dr. Christopher Smallwood
University of Michigan
Ann Arbor, Michigan

Abstract:

Excitons, which consist of bound electron-hole pairs in solid-state media, are among the most important types of electrical excitations that can be created when a material is exposed to light. Exciton physics is relevant to the underlying processes of photovoltaic solar cells, light-emitting diodes, and quantum cascade lasers. Excitons in spatially confined semiconductors like quantum dots have been proposed as candidates for qubits in quantum computation. Excitons in semiconductors like gallium arsenide heterostructures constitute an important model system in solid-state physics, which is useful for studying phenomena ranging from quantum mechanical tunneling to Bose-Einstein condensation. I will discuss recent efforts using optical multidimensional coherent spectroscopy (MDCS) to elucidate the physics of excitons in InGaAs double quantum wells, as well as the potential future directions of MDCS in exciton research.

Host: Randy Babbitt

***** Refreshments served in the Barnard Hall second floor atrium at 3:45 *****
Dr. Smallwood is a candidate for Physics Faculty Position