THE UNIVERSITY OF DENVER
Department of Physics & Astronomy
Presents
Rachel Bennet, Andrew Fullard,
Geoffrey Diederich, Leah Huk & Alex Hojem
Physics & Astronomy Department Graduate Students

Wednesday, May 27, 2015, 4:00 PM
Room 105, Olin Hall, University of Denver Campus
2190 E. Iliff Ave.

Rachel Bennet (Research Advisor: Dr. Mark Siemens)
Transient grating spectroscopy with a continuously-tunable grating constant
We introduce a new geometry for transient grating spectroscopy, which allows for easy and precise changes to the grating constant and thus the penetration of the surface acoustic wave. This allows for quick characterization of the mechanical properties of a material at varying depths, and may be modified to examine electronic properties as well.

Andrew Fullard (Research Advisor: Dr. Jennifer Hoffman)
Flux Correction for Compact Extended Sources in the AKARI All-Sky Survey Far-IR Mapping Data
Presenting a scheme to correct contour photometry of the far-infrared AKARI All-Sky Survey for compact extended sources. Results of its application to a large sample of planetary nebulae.

Geoffrey Diederich (Research Advisor: Dr. Mark Siemens)
Exciton-Phonon Interaction Dynamics in Type I Core/Shell Quantum Dots
We use 2 dimensional coherent spectroscopy to study the effect of addition of a ZnS shell onto CdSe quantum dots on phonon-exciton interactions. We also model the phonon-exciton interaction to explain the Stokes shift in the spectra.

Leah Huk (Research Advisor: Dr. Jennifer Hoffman)
Spectropolarimetric Modeling of Type IIn SNe from Distributed Emission Sources
The multi-component emission line profiles and polarization signatures in the spectra of SNe Type IIn arise from strong interaction between the ejecta and pre-existing dense circumstellar material (CSM). I use a three dimensional Monte Carlo radiative transfer code called SLIP to investigate the contribution of a distributed emission source to the polarization signatures of type IIn SNe. I present comparisons of the model results with spectropolarimetric observations of SN 1997eg, as well as comparisons with previous central emission source models.

Alex Hojem (Research Advisor: Dr. Barry Zink)
Thermal effects on spin currents in non-local metallic spin valves
One of the biggest challenges in the emerging field of spintronics is understanding the transport of spins across heterojunctions formed of ferromagnetic and non-ferromagnetic materials. While there has been a fair amount of research studying nonlocal spin values, only lately has much attention been paid to the thermal effects in the device. Presented here is our work on fabrication and initial measurement of thermal effects in working nonlocal spin value devices for injection and detection of pure spin currents.

HOST: Dr. Mark Siemens, (303) 871-3541, Mark.Siemens@du.edu
Please join us for follow-up discussions and refreshments in
Physics Building Room 116, 5:00-6:00 PM