

**56th Midwest Solid State Conference**  
**October 9-10, 2010**  
**Nielsen Hall Department of Physics and Oklahoma Memorial**  
**Union**

**Program**

**Friday, October 8th**

6:00-10:00 pm Registration and Reception, Sooner Legends Hotel, Sooner Room

A registration reception will be hosted in the Sooner Legends hotel, with *hors d'oeuvres* and refreshments available.

8:00-9:00pm Public Lecture by A. J. Leggett: Sam Noble Natural History Museum

Although not part of the conference proper, Prof. Leggett has kindly agreed to give a talk to the general public. Due to time constraints, it partially overlaps the informal reception and registration.

*“Does the everyday world really obey quantum mechanics?”*

Abstract:

Quantum mechanics has been enormously successful in describing nature at the atomic level, and most physicists believe that it is in principle the “whole truth” about the world even at the everyday level. However, such a view *prima facie* leads to a severe problem: in certain circumstances, the most natural interpretation of the theory implies that no definite outcome of an experiment occurs until the act of “observation”. For many decades this problem was regarded as “merely philosophical”, in the sense that it was thought that it had no consequences which could be tested in experiment. However, in the last dozen or so years the situation has changed very dramatically in this respect. I will discuss the problem, some popular “resolutions” of it, the current experimental situation and prospects for the future.

## Saturday, October 9th

- 8:00 - 8:30 am Morning Coffee and Late Registration  
8:30 - 8:45 am Opening of conference  
Paul Bell, Dean of the OU College of Arts and Sciences  
Matthew Johnson, Director of C- SPIN

### Plenary Session

- 8:45 - 9:45 am A. J. Leggett, University of Illinois, Urbana-Champaign  
*“Testing Quantum Mechanics”*  
9:45 - 10:00 am Coffee Break

### First Invited Session

- 10:00 - 10:15 am Welcome from OU Vice President for Research  
Kelvin Drogemeier  
10:15 - 11:00 am Robert McDermott, University of Wisconsin  
*“Microwave Photon Counter Based on Josephson Junctions”*  
11:00 - 11:45 am Chih-Wei Lai, Michigan State University  
*“Cavity exciton-polariton condensates”*  
11:45 - 12:00 pm Walk to Memorial Union  
12:00 - 1:30 pm Lunch in the University Club  
1:30 - 1:45 pm Return from lunch

*During the lunch interval, the History of Science Collection has kindly agreed to open part of its collection for display. Peter Barker, a professor in the History of Science department, will be present to answer questions about the collection. The collection is on the 5th floor of Bizzel Library.*

### First Contributed Session

- 1:45 - 2:15 pm John Malone, Missouri State University  
*“IV Characteristics of Single-Walled and Multi-Walled Carbon Nanotubes Sensitized with Photoreactive Oxides”*  
2:15 - 2:45 pm Stuart Tessmer, Michigan State University  
*“Single-Electron Capacitance Spectroscopy of Individual Dopants in Silicon”*  
2:45 - 3:15 pm Elizabeth Golavatski, University of Iowa  
*“Model for spin torque and domain wall velocity in ferromagnetic semiconductor  $\pi$  and  $2\pi$  Néel walls ”*

## Saturday, October 9th, continued

3:15 - 3:30 pm Coffee Break

### Second Invited Session

3:30 - 4:15 pm Nancy Sandler, Ohio University

*“Spin-Orbit, Kondo, and Graphene”*

4:15 - 5:00 pm Nadya Mason, University of Illinois, Urbana-Champaign

*“Spectroscopy of Hybrid Superconductor-Carbon Nanostructure Systems”*

5:00 - 5:30 pm Poster set-up, Lab tour

5:30 - 7:00 pm Poster Session and Reception in Baird Lounge in the OU Memorial Union

7:00 - 8:30 pm Dinner Banquet

## Sunday, October 10th

8:00 - 8:30 am Morning Coffee

### Second Contributed Session

8:30 - 9:00 am G. A. Csathy, Purdue University

*“Nonconventional Odd Denominator Fractional Quantum Hall States in the Second Landau Level ”*

9:00 - 9:30 am C. C. Geppert, University of Minnesota

*“Electrical Measurement of the Spin Hall Effect in Fe/In<sub>x</sub>Ga<sub>1-x</sub>As Heterostructures ”*

9:30 - 10:00 am M. C. Debnath, University of Oklahoma

*“High-mobility InSb epilayers and InSb/Al<sub>0.2</sub>In<sub>0.8</sub>Sb quantum wells grown on off-axis (001) and (211) Ge substrates ”*

10:00 - 10:15 am Coffee Break

### Third Invited Session

10:15 - 11:00 Giovanni Vignale, University of Missouri, Columbia

*“Many-body effects on the optical and magnetic properties of doped graphene sheets ”*

11:00 - 11:45 D. Keith Roper, University of Arkansas

*“Ordered nano-architectures and plasmon enhancement near semiconductor bandgaps in the near-IR ”*

11:45 - 12:00 Concluding remarks