



APS CUWiP @ OU 2020 Parallel Sessions

Parallel Session I: Saturday, 9:45am-10:30am

I.A: Room 170 **Panel on “Careers outside of academia”**

Panel members:

Dr. Erin Cooper, Software Engineer contracting for FAA

Dr. Rhiannon Griffin, Software Engineer contracting for FAA

Li Murphy, Boeing

Dr. Amanda Schilling, Science Librarian, University of Oklahoma

Panel moderator: Joseph Hyunseop Choi, University of Oklahoma

I.B: Room 270 **Panel on “Women in leadership roles / Women as role models”**

Panel members:

Dr. Sara Barber, Professional Staff; Committee on Science, Space, and Technology; U.S. House of Representatives

Dr. Jane Irungu, University of Oklahoma

Dr. Renu Malhotra, University of Arizona

Dr. Margaret Murnane, JILA and University of Colorado, Boulder

Dr. Risa Wechsler, Stanford University

Panel moderator: Dr. Doerte Blume

I.C: Room 103 **“Modeling low dimensional functional materials”**

Speaker: Dr. Talat Rahman, University of Central Florida

Abstract: Driven by the desire for a sustainable future, the last decade has seen a concerted effort in accelerating the discovery of materials for energy needs, thanks to a large extent to the Obama Administration’s Materials Genome Initiative (MGI). After some reflections on how this initiative has led to a paradigm shift in our research methodology, and how progress on this front has naturally embraced the infusion of data analytics, I will focus on a few materials which have captured the imagination of scientists worldwide. As with graphene, a single sheet of carbon atoms exfoliated from graphite, a common lubricant

Parallel Session I: Saturday, 9:45am-10:30am (Continued)

molybdenum disulphide (MoS_2) has shown remarkable optical properties when peeled off as single sheet consisting of a layer of molybdenum atoms sandwiched between two layers of sulfur atoms. Perhaps even more appealing is a layer of boron and nitrogen atoms on a hexagonal lattice (h-BN), emanating from another old rugged material, that could serve as a single photon emitter (for possible applications in quantum computing) or as a catalyst for energy needs, comparable to (very expensive) platinum. I will present some results from our work that provides a framework for manipulating the functionality of these interesting two-dimensional applications. I will also touch briefly on my journey in the world of physics from Pakistan to the US and then around the world.

Session chair: Delaram Nematollahi, University of Oklahoma

I.D: Room 203 **Workshop on “Transferring to a four-year college”**

Speakers: The Transfer Team from the Office of Admissions & Recruitment at the University of Oklahoma

Description: Members of the Transfer Team from the Office of Admissions & Recruitment at the University of Oklahoma will discuss the transfer admissions process, transfer resources, and common challenges that transfer students may experience.

Session chair: Andrea De La Torre, University of Oklahoma

I.E: Room 251 **“Bias and gender issues”**

Speaker: Dr. Ferah Munshi, University of Oklahoma

Session chair: London Willson, University of Oklahoma

Parallel Session II: Saturday, 11:00am-11:45am

II.A: Room 170 **“Engineering/Physics Engineering Graduate School”**

Session convener: Dr. John Antonio, Interim Dean, Gallogly College of Engineering, University of Oklahoma

Session chair: Dr. Desmond Villalba, Drury University

II.B: Room 270 **“Hands-on networking workshop”**

Workshop contributors:

Dr. Rhiannon Griffin, Software engineer contracting for FAA

Dr. Amanda Schilling, Science librarian, University of Oklahoma

Dr. Elizabeth Behrman, Wichita State University

Dr. Sara Barber, Professional Staff; Committee on Science, Space, and Technology; U.S. House of Representatives

Jessica Burgess, *Education Outreach Lead*, Educational Programs Department, Argonne National Laboratory

Dr. Erin Cooper, Software engineer contracting for FAA

Li Murphy, Boeing

Capt. Zhanna A Shirshikova, Electronic Warfare Officer (EWO), USAF

Cheryl McGee, Licensed Professional Counselor, Licensed Alcohol and Drug Counselor with Mental Health Designation (LPC, LADC/MH)

Workshop convener: Dr. Doerte Blume

II.C: Room 103 **“REU application workshop”**

Speaker: Brenda Morales, Oklahoma State University

Session chair: Dr. Melissa Halford, Auburn University

II.D: Room 203 **“The proton radius puzzle”**

Speaker: Dr. Evangeline Downie, Columbian College

Session Chair: Mayuri Kawale, University of Oklahoma

Parallel Session II: Saturday, 11:00am-11:45am (continued)

II.E: Room 251 **“Elements of Student Success and Retention”** (preliminary title)

Speaker: Dr. Sherri Irvin, Associate Dean of the Graduate College, University of Oklahoma

Session chair: London Willson, University of Oklahoma

II.F: Room 302 **“Academic Life Coaching: From Surviving to Thriving”**

Speakers: Dr. Kathleen Shea Smith and team, University of Oklahoma

Session chair: AJ Yates, University of Oklahoma

Parallel Session III: Saturday, 3:00-3:45pm

III.A: Room 170 **“A glimpse at the APS Bridge Program at UCF”**

Speaker: Talat Rahman, University of Central Florida

Abstract: The APS Bridge Program launched in 2013 to increase the number of physics PhDs who stem from underrepresented minority (URM) group has already made good inroads with 7 national sites and a large number of partnering institutions. A handful of students have already obtained their PhD and a good number of them will be doing so in the near future. UCF became an APS Bridge site in 2015. Since then the program has facilitated the recruitment of over two dozen graduate students from URM groups. The strong emphasis on various forms of mentoring for the Bridge Program students has in turn made us more aware of the mentoring needs of all graduate students. In this talk I will discuss our strategies for recruiting, mentoring and retention of students in the programs, highlighting good practices that have led to successes and lessons learned from our failures. I will also comment on some of the effects this program has had on departmental culture, climate and attitudes towards students.

Session chair: Sarah Stangl, University of Oklahoma

Parallel Session III: Saturday, 3:00-3:45pm (continued)

III.B: Room 270 **Panel on “Careers outside of academia”**

Panel members:

Dr. Amanda Schilling, Science librarian, University of Oklahoma

Dr. Sara Barber, Professional Staff; Committee on Science, Space, and Technology; U.S. House of Representatives

Capt. Zhanna A. Shirshikova, Electronic Warfare Officer (EWO), USAF

TBD

Panel moderator: Joseph Hyunseop Choi, University of Oklahoma

III.C: Room 103 **“Experimental Trends and Opportunities in Condensed Matter Physics”**

Speaker: Dr. Giti Khodaparast, Virginia Tech

Session chair: Dr. Ann Viano, Rhodes College

Abstract:

Professor Giti Khodaparast research activities at Virginia Tech have been focused to utilize and enhance the importance and power of magneto-optical spectroscopy to explore quantum coherence, correlations, and many-body effects in several materials systems that can play important roles in developing concepts for the next generation of devices or shed lights on the underlying interactions at the nanoscale. She has established modern experimental techniques including femtosecond time resolved optical, magneto-optical, and nonlinear spectroscopy at the physics department. In addition, she has established strong national and international collaborations with large research facilities including the National High Magnetic Field Laboratory in Florida, and the Megagauss Laboratory in Kashiwa, Japan.

This talk will focus on exploring current trends and opportunities in the exciting and fast evolving field of condensed matter physics. In addition, she will share her experiences being a graduate student at the University of Oklahoma and later a post-doctoral associate at Rice University, before becoming a faculty at Virginia Tech.



Parallel Session III: Saturday, 3:00-3:45pm (Continued)

III.D: Room 203 **LGBTQIA+ session**

LGBTQIA+ stands for “lesbian, gay, bisexual, transgender, intersex, queer/questioning, asexual and many other terms (such as non-binary and pansexual)

Speaker: Cheryl McGee, Licensed Professional Counselor, Licensed Alcohol and Drug Counselor with Mental Health Designation (LPC, LADC/MH)

Session chair: Elizabeth Ellithorpe, University of Oklahoma

III.E: Room 251 **“Undergraduate research opportunities – OK-LSAMP as an example”**

Speaker: Brenda L. Morales, Oklahoma State University

Session chair: Dr. Allison Kirkpatrick, Kansas University

III.F: Room 302 **“Academic Life Coaching: From Surviving to Thriving”**

Speakers: Dr. Kathleen Shea Smith and team, University of Oklahoma

Session chair: AJ Yates, University of Oklahoma

Parallel Session IV: Sunday, 8:50am-9:35am

IV.A: Room 170 **“Hands-on networking workshop”**

Workshop contributors:

Dr. Elizabeth Behrman, Wichita State University

Dr. Sara Barber, Professional Staff; Committee on Science, Space, and Technology; U.S. House of Representatives

Dr. Amanda Schilling, Science librarian, University of Oklahoma

Dr. Erin Cooper, Software engineer contracting for FAA

Capt. Zhanna A Shirshikova, Electronic Warfare Officer (EWO), USAF

Workshop convener: Dr. Doerte Blume

IV.B: Room 270 **Panel on “Career outside of academia: High school teacher”**

Panel members:

Keely Cox, Lawton High Lawton, Lawton

Chelsea Foo, Santa Fe High School, Edmond

Ann Williams, Putnam City West High School, Oklahoma City

Panel moderator: Dr. Kieran Mullen, University of Oklahoma

IV.C: Room 103 **Panel on “Work-life / work-family balance”**

Panel members:

Dr. Julie Gunderson, Hendrix College

Dr. Desmond Villalba, Drury University

Dr. Ann Wright, Hendrix College

Panel moderator: Dr. Allison Kirkpatrick, Kansas University

IV.D: Room 203 **“Mental Health”**

Speaker: Dr. Brittany Stewart, Staff Psychologist, University of Oklahoma Counseling Center, Goddard Health Center

Session chair: Dibyashree Sengupta, University of Oklahoma

Parallel Session IV: Sunday, 8:50am-9:35am (Continued)

IV.E: Room 251 **“Alternative Career Path: From Physics to Atmospheric Sciences”**

Speaker: Dr. Petra Klein, Executive Associate Dean, University of Oklahoma

Session chair: Andrea De La Torre, University of Oklahoma

Parallel Session V: Sunday, 9:45am-10:30am

V.A: Room 170 **“Science Policy in Congress”**

Speaker: Dr. Sara Barber, Professional Staff; Committee on Science, Space, and Technology; U.S. House of Representatives

Abstract: Sara Barber defended her doctoral dissertation on remnant planetary systems around white dwarf stars in May of 2015. By October of that year, she found herself in Washington, DC working alongside the professional staff of the House Committee on Science, Space, and Technology as part of a science policy fellowship. At the end of her fellowship, Sara was invited to join the staff of the Science Committee and since that time has been working on a portfolio that includes STEM education and diversity, NSF oversight, research facilities, academic security, gun violence research, and other research policy issues. In this talk, Sara will describe her transition from graduate school to a science policy career in Congress. She will also provide insight into what a day in the life entails for a Congressional committee staffer and how she applies the skills she obtained during graduate school to her current work.

Session Chair: Sarah Stangl, University of Oklahoma

V.B: Room 270 **“Navigating traditional white spaces with marginalized identities”**

Speaker: Dr. Rodney Bates, Director of Graduate Student and Postdoc Retention, University of Oklahoma

Session chair: Elizabeth Ellithorpe, University of Oklahoma

Parallel Session V: Sunday, 9:45am-10:30am (Continued)

V.C: Room 103 **“Quantum Machine Learning”** (preliminary title)

Speaker: Dr. Elizabeth Behrman, Wichita State University

Abstract: Quantum computing is becoming a reality, at least on a small scale. However, major bottlenecks exist. In this talk, I will show how we can obviate the algorithm design obstacle, by discarding the conventional algorithmic approaches in favor of machine learning. Our quantum neural networks (QNN) are also robust to both noise and decoherence, and scaleup is immediate. Benchmarking shows that the QNN has inherent speedup and power over conventional neural networks.

Session chair: Mayuri Kawale, University of Oklahoma

V.D: Room 203 **“How to write a successful CV/Resume/Letter of interest?”**

Speaker: Dr. Kieran Mullen, University of Oklahoma

Session chair: Dr. Melissa Halford, Auburn University

V.E: Room 251 **“Communicating Science: Effective Delivery to Any Audience”**

Speaker: Jessica Burgess, *Education Outreach Lead*, Educational Programs Department, Argonne National Laboratory

Abstract:

Communicating science to those outside of your field is hard! In this interactive presentation you will learn why science communication matters, the science behind how our brain receives information and effective strategies for delivering science to any audience that you can use immediately!

Session chair: Saloni Bhatiani, University of Oklahoma

Parallel Session VI: Sunday, 11:00-11:45am

VI.A: Room 170 **Panel on “Importance of staying involved – campus and community”**

Panel members:

Dr. Rodney Bates, Director of Graduate Student and Postdoc Retention,
University of Oklahoma

Javad Dowran, Graduate student, University of Oklahoma, OSA/SPIE Student
Chapter

Evelyn Vargas-Olmos, Undergraduate student, University of Oklahoma, Vice
President of Women in Physics

Panel moderator: Maria Schutte, University of Oklahoma

VI.B: Room 270 **“Impostor syndrome --- interactive Bingo game”**

Session leaders:

Dr. Ferah Munshi, University of Oklahoma

Dr. Nate Kaib, University of Oklahoma

VI.C: Room 103 **“Nuclear Physics”** (preliminary title)

Speaker: Dr. Flera Rizatdinova, Oklahoma State University

Session chair: Veena Balakrishnan, University of Oklahoma

VI.D: Room 203 **Panel on “Careers in academia panel: Faculty at two- and four-year colleges”**

Panel members:

Dr. Julie Gunderson, Hendrix College

Dr. Mary Kidd, Tennessee Technological University

Dr. Ann Viano, Rhodes College

Dr. Ann Wright, Hendrix College

Panel moderator: Dr. Deborah Watson, University of Oklahoma

VI.E: Room 251 **Panel on “Applying to graduate school”**

Panel members:

Hannah Day, University of Oklahoma

Amber Roepe, University of Oklahoma

Dr. Arne Schwettmann, University of Oklahoma

Panel moderator: Dr. Eric Abraham, University of Oklahoma