

Gordon Research Conference on Physics Research and Education
Experimental Research and Labs in Physics Education
Preliminary Program

SUNDAY June 6

- 4:00 pm - 8:00 pm Arrival and check-in ([Office Closed 6:00 pm - 7:00 pm](#))
- 6:00 pm Dinner
- [7:30 pm - 7:40 pm](#) [Welcome / Introductory Comments by GRC Site Staff](#)
- 7:40 pm - 9:30 pm **Undergraduate Research**
- Discussion Leader: **John Mateja**, (Murray State University)
- 7:40 pm - 8:20 pm **Peter Collings** (Swarthmore College)
 "Undergraduate Research: Faculty Scholarship and Student Education"
- 8:20 pm - 8:35 pm Discussion
- 8:35 pm - 9:15 pm **Jerry Gollub** (Haverford College)
 "Research with Students in Nonlinear Physics"
- 9:15 pm - 9:30 pm Discussion

MONDAY June 7

- 7:30 am - 8:30 am Breakfast
- 9:00 am - 12:30 pm **Upper-level Labs**
- Discussion Leader: **Bob DeSerio** (University of Florida)
- 9:00 am - 9:40 am **Mark Masters** (Indiana University-Purdue University Fort Wayne)
 "Using concept building laboratories to improve student research skills"
- 9:40 am - 10:00 am Discussion
- 10:00 am Coffee Break
- 10:30 am - 11:10 am **Nilgun Sungar** (California Polytechnic State University)
 "Capstone projects in an experimental nonlinear dynamics course"
- 11:10 am - 11:30 am Discussion
- 11:30 am - 12:10 pm **Mark Beck** (Whitman College)
 "Fundamentals of Quantum Mechanics in the Undergraduate Classroom and Laboratory"
- 12:10 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:00 pm Free Time
- 4:00 pm - 6:00 pm **Poster Session**

- 6:00 pm Dinner
- 7:30 pm - 9:30 pm **Experiments, Simulations and Modeling**
Discussion Leader: **Jennifer Blue** (Miami University, Ohio)
- 7:30 pm - 8:10 pm **Priscilla Laws** (Dickinson College)
“Enhancing Student Understanding of 1D and 2D Motions: The Role of Sequencing Topics, Kinesthetic Experience, Video Analysis, and Analytic Mathematical Modeling”
- 8:10 pm - 8:30 pm Discussion
- 8:30 pm - 9:10 pm **Fred Goldberg** (San Diego State University)
“Integrating Experiments and Computer Simulations to Promote Learning”
- 9:10 pm - 9:30 pm Discussion

TUESDAY June 8

- 7:30 am - 8:30 am Breakfast
- 9:00 am - 12:30 pm **Advanced Lab**
Discussion Leader: **Gabriel Spalding** (Illinois Wesleyan University)
- 9:00 am - 9:40 am **John Brandenberger** (Lawrence University)
“Teaching Innovation Through Undergraduate Research”
- 9:40 am - 10:00 am Discussion
- 10:00 am Coffee Break
- 10:30 am - 11:10 am **Alma Zook** (Pomona College)
“Helping your students to assemble their experimentalist’s toolbox, and getting your entire department to help”
- 11:10 am - 11:30 am Discussion
- 11:30 am - 12:10 pm **Dick Peterson** (Bethel University)
“Blurring the Boundary: Advanced Labs and Undergraduate Research”
- 12:10 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:00 pm Free Time
- 4:00 pm - 6:00 pm **Poster Session**
- 6:00 pm Dinner
- 7:30 pm - 9:30 pm **Panel: Hands-on Experiments for Diverse Populations**
Discussion Leader: **Dan Smith** (South Carolina State University)
- 7:30 pm - 8:00 pm **Pratibha Jolly** (University of Delhi, India)
“PHYSWARE: A collaborative project to promote active learning in the developing world”

- 8:00 pm - 8:30 pm **Jim Nelson** (Physics Teaching Resource Agents)
"AAPT/PTRA Professional Development Program - Part of the Solution"
- 8:30 pm - 9:00 pm **Keivan Stassun** (Vanderbilt University)
"The Fisk-Vanderbilt Masters-to-PhD Bridge Program: A Model for Broadening Participation of Underrepresented Groups in the Physical Sciences"
- 9:00 pm - 9:30 pm Panel Discussion

WEDNESDAY June 9

- 7:30 am - 8:30 am Breakfast
- 9:00 am - 12:30 pm **Innovative Labs and Approaches**
Discussion Leader: **David Jackson** (Dickinson College)
- 9:00 am - 9:40 am **Joseph Amato** (Colgate University)
"Using the 'Black Box' Approach to Enliven Introductory Physics Labs"
- 9:40 am - 10:00 am Discussion
- 10:00 am Coffee Break
- 10:30 am - 11:10 am **Matthew Lang** (Massachusetts Institute of Technology)
"Optical Trapping for Undergraduates"
- 11:10 am - 11:30 am Discussion
- 11:30 am - 12:10 pm **Jan-Peter Meyn** (University of Erlangen-Nurnberg, Germany)
"Looking at real experiments first - curricular and technical approaches for teaching elementary quantum physics"
- 12:10 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:00 pm Free Time
- 4:00 pm - 6:00 pm **Poster Session**
- 6:00 pm Dinner
- 7:00 pm - 7:30 pm **Business Meeting**
(Nominations for the next Vice Chair; Fill out Conference Evaluation Forms; Discuss future Site & Scheduling preferences; Election of the next Vice Chair)
- 7:30 pm - 9:30 pm **Frontiers in Experimental Physics**
Discussion Leader: **Ann Silversmith** (Hamilton College)
- 7:30 pm - 8:10 pm **Sara Eno** (University of Maryland)
"Searching for New Physics at the LHC"
- 8:10 pm - 8:30 pm Discussion
- 8:30 pm - 9:10 pm **Charlie Johnson** (University of Pennsylvania)
"Undergraduate Adventures in Nanotechnology: Carbon Nanotubes, Graphene, Nanoparticles, and all that"

9:10 pm - 9:30 pm Discussion

THURSDAY June 10

7:30 am - 8:30 am Breakfast

8:30 am - 9:00 am **Business Meeting** (We will only use it if there is unfinished business from Wednesday evening)

9:00 am - 12:30 pm **Labs and Conceptual Learning**

Discussion Leader: **Homeyra Sadaghiani** (California State University – Pomona)

9:00 am - 9:40 am **Dean Zollman** (Kansas State University)
“Contemporary physics for students and teachers with limited mathematics skills”

9:40 am - 10:00 am Discussion

10:00 am Coffee Break

10:30 am - 11:10 am **John Belcher** (Massachusetts Institute of Technology)
“Incorporating Experiments into a Studio Physics Curriculum at MIT: Mechanics and Electromagnetism”

11:10 am - 11:30 am Discussion

11:30 am - 12:10 pm **MacKenzie Stetzer** (University of Washington)
“The role of experiments in improving conceptual understanding: Insights from research on laboratory-based instruction in introductory and more advanced courses”

12:10 pm - 12:30 pm Discussion

12:30 pm Lunch

1:30 pm - 4:00 pm Free Time

4:00 pm - 6:00 pm **Poster Session**

6:00 pm Dinner

7:30 pm - 9:30 pm **Keynote Session: Mentoring Through Research**

Discussion Leader: **Mel Sabella** (Chicago State University)

7:30 pm - 8:10 pm **Eric Mazur** (Harvard University)
“Using seminar-based instruction to convey contemporary research to undergraduates”

8:10 pm - 8:30 pm Discussion

8:30 pm - 9:10 pm **Hideo Mabuchi** (Stanford University)
“Physics with photons, from quantum to bio: Student development as a primary goal of academic scientific research”

9:10 pm - 9:30 pm Discussion

FRIDAY June 11

7:30 am - 8:30 am Breakfast

9:00 am Departure