New Faculty Advisory Committee

Paul Gueye, Hampton University
Warren Hein, American Association of Physics Teachers
Charles Henderson, Western Michigan University
Robert Hilborn, the University of Texas at Dallas
Theodore Hodapp, American Physical Society
Kenneth Krane, Oregon State University
Jorgé A. López, University of Texas, El Paso
Tim McKay, University of Michigan
Laurie McNeil, University of North Carolina, Chapel Hill
Tim Slater, American Astronomical Society
Steven Turley, Brigham Young University

Sponsored by

American Association of Physics Teachers
American Astronomical Society
American Physical Society
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Breakout Session II

Vasudeva Rao Aravind  
Clarion University  
Breakout Session III

Esteban Araya  
Western Illinois University  
Breakout Session I

P K Babu  
Western Illinois University  
Breakout Session II

Daniel Batcheldor  
Florida Institute of Technology  
Breakout Session III

Xuemei Cheng  
Bryn Mawr College  
Breakout Session I

Philip Choi  
Pomona College  
Breakout Session II

Michael Daugherity  
Abilene Christian University  
Breakout Session III

Bruno deHarak  
Illinois Wesleyan University  
Breakout Session I

Denis Demchenko  
Virginia Commonwealth Univ.  
Breakout Session II

Kathryn Devine  
Albertson College  
Breakout Session III

Eric Deyo  
Fort Hays State University  
Breakout Session I

Khalid Eid  
Miami University - Oxford  
Breakout Session II

Benjamin Evans  
Elon University  
Breakout Session III

Naz Afarin Fallahian  
Bloomsburg University  
Breakout Session I

Maryam Farzaneh  
Denison University  
Breakout Session II

Francesc Ferrer  
Washington Univ. - St. Louis  
Breakout Session III

Amy Forestell  
SUNY New Paltz  
Breakout Session I

Martin Forstner  
Syracuse University  
Breakout Session II

Nathan Frank  
Augustana College  
Breakout Session III

Anthony Gerig  
Viterbo University  
Breakout Session I

Guillermo Gonzalez  
Grove City College  
Breakout Session II

Thomas Gredig  
California State University - Long Beach  
Breakout Session III

Alexei Grigoriev  
University of Tulsa  
Breakout Session I

Joshua Hamblen  
University of Tennessee, Chattanooga  
Breakout Session II

Austin Harton  
Chicago State University  
Breakout Session III

Timothy Head  
Abilene Christian University  
Breakout Session I

Andrew Ivanov  
Kansas State University  
Breakout Session II

Hironori Iwasaki  
Michigan State University  
Breakout Session III

Prashanth Jaikumar  
California State University Long Beach  
Breakout Session I

Menka Jain  
University of Connecticut  
Breakout Session II

Oana Jurchescu  
Wake Forest University  
Breakout Session III

James Kelly  
Centre College of Kentucky  
Breakout Session I

Minjoon Kouh  
Drew University  
Breakout Session II

Chao-Lin Kuo  
Stanford University  
Breakout Session III

Matthew LaHaye  
Syracuse University  
Breakout Session I

Kevin Lannon  
University of Notre Dame  
Breakout Session II

Albert Lee  
California State University - Los Angeles  
Breakout Session III

Lika Levi  
Manhattan College  
Breakout Session I

Chunfei Li  
Clarion University  
Breakout Session II

Yingmei Liu  
Oklahoma State University  
Breakout Session III

Zhiheng Liu  
Brooklyn College-CUNY  
Breakout Session I

Dinah Loerke  
University of Denver  
Breakout Session II

Dwight Luhman  
Carleton College  
Breakout Session III
Workshop Participants

Nathan Lundblad  
Bates College  
Breakout Session I

Alysia Marino  
University of Colorado - Boulder  
Breakout Session II

Marcelo Marucho  
University of Texas - San Antonio  
Breakout Session III

Alysia Marino  
University of Colorado - Boulder  
Breakout Session II

Marcelo Marucho  
University of Texas - San Antonio  
Breakout Session III

Jack Maseberg  
Fort Hays State University  
Breakout Session I

John McGuire  
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Breakout Session II

Andrew Meyertholen  
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Breakout Session III

Thushara Perera  
Illinois Wesleyan University  
Breakout Session III

Eric Perlman  
Florida Institute of Technology  
Breakout Session I

Elisha Polomski  
University of Wisconsin-Eau Claire  
Breakout Session II

Allen Price  
Emmanuel College  
Breakout Session III

Jiong Qiu  
Montana State University  
Breakout Session I

Takeshi Sakamoto  
Wayne State University  
Breakout Session II

Giovanna Scarel  
James Madison University  
Breakout Session III

Ana Katrin Schenk  
Randolph College  
Breakout Session I

Cristian Staai  
Tufts University  
Breakout Session II

Frederick Strauch  
Williams College  
Breakout Session III

Tony Sumaryada  
Frostburg State University  
Breakout Session I

Sumanta Tewari  
Clemson University  
Breakout Session II

Peifang Tian  
John Carroll University  
Breakout Session III

Stephen Tsui  
California State University - San Marcos  
Breakout Session I

Erkan Tuzel  
Worcester Polytechnic Institute  
Breakout Session II

Jay Vaishnav  
Bucknell University  
Breakout Session III

Wenyong Wang  
University of Wyoming  
Breakout Session I

Ke-Gang Wang  
Florida Institute of Technology  
Breakout Session II

Heather Whitney  
Cumberland University  
Breakout Session III

Joshua Willis  
Abilene Christian University  
Breakout Session II

Dexian Ye  
Virginia Commonwealth Univ.  
Breakout Session I

Chandra Yelleswarapu  
University of Massachusetts  
Breakout Session III

Samya Zain  
Susquehanna University  
Breakout Session I

Zhenrong Zhang  
Baylor University  
Breakout Session II

Julie Ziffer  
University of Southern Maine  
Breakout Session III
Monday, June 28

10:00 a.m.–4:00 p.m. Workshop Registration – Hilton Garden Inn, Greenbelt
   Azalea Ballroom Foyer

11:45 a.m.–12:45 p.m. Lunch - Great American Grill, Hilton Garden Inn

1:15–3:15 p.m. Optional Workshop: Grant Opportunities
   NSF Program Officers
   Wendy Fuller-Mora, Materials Research
   Kathleen McCloud, Physics
   Azalea Ballroom

3:30–4:30 p.m. Optional Workshop: Grant Opportunities at Research Corporation
   Richard Wiener, Research Corporation
   Azalea Ballroom

4:30–5:00 p.m. Break – Azalea Ballroom Foyer

5:00–5:15 p.m. Welcome and Opening Remarks
   Robert Hilborn,
   University of Texas at Dallas
   Chair, New Physics and Astronomy Faculty Workshop
   Duncan McBride
   National Science Foundation

5:15–6:00 p.m. Large Group Session I
   “Introduction to Peer Instruction”
   Eric Mazur, Balkanski Professor of Physics and of Applied Physics, Harvard University

6:00–6:45 p.m. “Peer Instruction Workshop”
   Eric Mazur, Balkanski Professor of Physics and of Applied Physics, Harvard University

6:45–8:15 p.m. Dinner – Azalea & Dogwood Ballroom (Roosevelt Ballroom)
   Sponsored by Research Corporation
6:00–7:45 a.m. Breakfast – Hilton Garden Inn, Azalea Ballroom
8:00 a.m. Shuttle bus leaves for American Center for Physics
8:30–9:30 a.m. Large Group Session II – Conference Room A
   “Learner-Centered Teaching in Physics and Astronomy”
   Edward Prather, University of Arizona
9:30–10:30 a.m. Large Group Session III – Conference Room A
   “How to Get Your Students to Prepare for Every Class”
   Andrew Gavrin, IUPUI
10:30–10:45 a.m. Refreshment Break – ACP Rotunda
10:45–11:30 a.m. Small Group Sessions
   • PhET (I) – Conference Room A
     Katherine Perkins, University of Colorado-Boulder
   • Tenure Matters (II) – Conference Room B
     Robert Hilborn, University of Texas at Dallas
   • Think-Pair-Share (III) – Conference Room C
     Edward Prather, Gina Brissenden, University of Arizona
11:30–12:15 p.m. Small Group Sessions
   • PhET (II) – Conference Room A
   • Tenure Matters (III) – Conference Room B
   • Think-Pair-Share (I) – Conference Room C
12:15–1:30 p.m. Group Photo and Lunch – ACP Cafeteria
1:30–2:15 p.m. Small Group Sessions
   • PhET (III) – Conference Room A
   • Tenure Matters (I) – Conference Room B
   • Think-Pair-Share (II) – Conference Room C
2:30–3:30 p.m. Large Group Session IV – Conference Room A
   “Assessment and Evaluation”
   Noah Finkelstein, University of Colorado-Boulder
3:30–4:00 p.m. Refreshment Break – ACP Rotunda
4:00–5:00 p.m. Large Group Session V – Conference Room A
   “Help Your Students Develop Expertise in Problem Solving”
   Ken Heller, University of Minnesota
Tuesday, June 29 (cont.)

5:00–6:00 p.m.  Small Group Sessions  
*Primarily Undergraduate Institutions* – Conference Room C  
*M.S. and Ph.D. Granting Institutions* – Conference Room A

6:00–7:00 p.m.  Dinner – ACP Cafeteria

7:00–8:30 p.m.  Large Group Session VI – Conference Room A  
*“The Physics IQ Test”*  
Richard Berg, University of Maryland

Wednesday, June 30

6:00–7:30 a.m.  Breakfast – Hilton Garden Inn, Azalea Ballroom

7:45 a.m.  Shuttle bus leaves for American Center for Physics

8:15–8:30 a.m.  Administrative Matters – Conference Room A  
Robert Hilborn

8:30–9:15 a.m.  Small Group Sessions  
• *Introductory Physics (I)* – Conference Room A  
  Ted Hodapp, APS and Warren Hein, AAPT  
• *Problem Solving (II)* – Conference Room B  
  Ken Heller, University of Minnesota  
• *Upper-level Physics (III)* – Conference Room C  
  Ken Krane, Oregon State University

9:15–10:00 a.m.  Small Group Sessions  
• *Introductory Physics (II)* – Conference Room A  
• *Problem Solving (III)* – Conference Room B  
• *Upper-level Physics (I)* – Conference Room C

10:00–10:30 a.m.  Break – ACP Rotunda

10:30–11:15 a.m.  Small Group Sessions  
• *Introductory Physics (III)* – Conference Room A  
• *Problem Solving (I)* – Conference Room B  
• *Upper-level Physics (II)* – Conference Room C

11:15–12:30 p.m.  Lunch – ACP Cafeteria
Wednesday, June 30 (cont.)

12:30–1:30 p.m.  Large Group Session VIII – Conference Room A
“Active Learning with Interactive Lecture Demonstrations (ILD)”
David Sokoloff, University of Oregon
Ronald Thornton, Tufts University

1:30–2:15 p.m.  Small Group Sessions
• Physlets, Easy Java Simulations, and Open Source Physics (I)
  Conference Room A
  Mario Belloni, Davidson College
• ILD/Real Time Physics (II) – Conference Room B
  David Sokoloff and Ron Thornton
• Digital Libraries (III) – Conference Room C
  Bruce Mason, University of Oklahoma

2:15–3:30 p.m.  Small Group Sessions
• Physlets, Easy Java Simulations, and Open Source Physics (II)
  Conference Room A
• ILD/Real Time Physics (III) – Conference Room B
• Digital Libraries (I) – Conference Room C

3:30–4:00 p.m.  Refreshment Break – ACP Rotunda

4:00–4:45 p.m.  Small Group Sessions
• Physlets, Easy Java Simulations, and Open Source Physics (III)
  Conference Room A
• ILD/Real Time Physics (I) – Conference Room B
• Digital Libraries (II) – Conference Room C

4:45-6:15 p.m.  Large Group Session VII
“Research in Physics Education: A resource for improving student learning” – Conference Room A
Lillian C. McDermott and Peter Shaffer, University of Washington

6:15 p.m.  Bus to Hilton Garden Inn

6:30–7:00 p.m.  Reception – Azalea & Dogwood Ballroom (Roosevelt Ballroom)

7:00–8:00 p.m.  Dinner – Azalea & Dogwood Ballroom (Roosevelt Ballroom)
Thursday, July 1

7:00–8:30 a.m.  Breakfast – Hilton Garden Inn, Azalea Ballroom

Hotel Check-Out

8:30–9:30 a.m.  Large Group Session VIII
“Time Management”
Tim Slater, Robert Hilborn
Azalea Room – Hilton Garden Inn

9:30–11:00 a.m.  Large Group Session IX
“Diversity and Retention”
Diola Bagayoko, Southern University System
Distinguished Professor
Azalea Room – Hilton Garden Inn

11:00 –11:30 a.m.  Final Summary, Evaluations and Adjournment
American Association of Physics Teachers

Founded in 1930, The American Association of Physics Teachers (AAPT) is dedicated to enhancing the understanding of physics through teaching. For our 10,000+ members who serve physics students across the spectrum of schools, colleges, and universities, AAPT is a professional home that helps bring together knowledgeable and innovative colleagues who care deeply about physics teaching and education, and that offers valuable resources and benefits.

We serve our members through programs, publications, and networking, but also reach out to the larger community of physics and science teachers—current and future—and we look after issues of significance in science education. Our national office works closely with our dedicated volunteers around the nation and beyond to promote a better understanding of physics at all levels. The association supports physics educators at all levels through our two publications, the *American Journal of Physics* and *The Physics Teacher*; NSF-funded programs including the Physics Teaching Resource Agents institutes; the digital physics library, ComPADRE (with APS and AIP); the Physics Teacher Education Coalition, PhysTEC (with APS and AIP); the Workshops for New Physics and Astronomy Faculty (with APS and AAS); our two national annual meetings; and the student programs and scholarships that we administer, including the Lotze Scholarship for Future Teachers, the High School Physics Teacher Grant, the Physics Bowl, and the U.S. Physics Olympiad.

Warren Hein
*Executive Officer*

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American Astronomical Society

The American Astronomical Society promotes the advancement of astronomy and closely related branches of science. It was founded in 1899. AAS members include professional researchers in the astronomical sciences, and also educators, students, and others interested in the advancement of astronomical research. The Society operates in five major areas: Publications, Meetings, Education, Public Policy and Employment in order to ensure that astronomy remains healthy and vital for the benefit of our profession and society at large. AAS publishes *The Astrophysical*
Journal and The Astronomical Journal, which are among the most important scholarly journals in the field. The Bulletin of the American Astronomical Society reports the latest institutional developments and documents the content of AAS and its divisions’ annual meetings. More information about the Society’s activities and membership are available on the AAS website, www.aas.org.

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American Physical Society

With more than 47,000 members worldwide, the American Physical Society works to advance and disseminate the knowledge of physics. Since its formation in 1899, it has been dedicated to providing its members and the international physics community with the latest research results through meetings and the most highly respected international journals in physics. These journals include Physical Review Letters, the Physical Review (with a Special Topics series including a journal on Physics Education Research), and Reviews of Modern Physics. The APS conducts more than 20 meetings per year, to connect physicists and disseminate physics knowledge and information relevant to the community. In addition, APS vigorously lobbies for funding for physics research and education, provides the physics community with timely information about government affairs, carries out studies of physics-based topics of importance to the country, and promotes the interests of the physics community through extensive public information efforts such as www.PhysicsCentral.com, a website for the public.

APS is actively involved in educational programs to improve undergraduate education and to improve the education of future physics and physical science teachers through its leadership in the Physics Teacher Education Coalition (www.PhysTEC.org). APS partners with AAPT in PhysTEC and on numerous other education programs including, the New Faculty Workshop, the ComPADRE digital library of educational resources, and conferences and workshops on education at various levels. For many years APS has worked to increase the number of female and minority physicists, and has several significant programs that advance these goals. Information about these and other APS programs can be found at www.aps.org.

Kate Kirby  
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Theodore Hodapp  
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This shot was composed by firing 2 laser pointers simultaneously on to a CD while pouring CO2 gas from above. Photo courtesy of Live Physics Photo Gallery, LivePhysics.com.

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