

workshop for
**new physics and
astronomy faculty**



June 28 - July 1, 2010

American Center for Physics
College Park, MD

New Faculty Advisory Committee

Paul Gueye, Hampton University

Warren Hein, American Association of Physics Teachers

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Tim Slater, American Astronomical Society

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**American Association
of Physics Teachers**



American Astronomical Society



American Physical Society

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Breakout Session II

Vasudeva Rao Aravind

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Western Illinois University
Breakout Session I

P K Babu

Western Illinois University
Breakout Session II

Daniel Batchelder

Florida Institute of Technology
Breakout Session III

Xuemei Cheng

Bryn Mawr College
Breakout Session I

Philip Choi

Pomona College
Breakout Session II

Michael Daugherty

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, Chat-
tanooga
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

Jack Maseberg

Fort Hays State University
Breakout Session I

John McGuire

Michigan State University
Breakout Session II

Andrew Meyertholen

University of California - San Diego
Breakout Session III

Thomas Oberst

Westminster College
Breakout Session I

Amy Oldenburg

University of North Carolina
Breakout Session II

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 Staii

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

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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

Workshop Schedule

Monday, June 28

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

11:45a.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

Tuesday, June 29

- 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**



AAPT 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

American Association of Physics Teachers
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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.

Kevin Marvel
Executive Officer

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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
Executive Officer

Theodore Hodapp
Director of Education and Diversity

American Physical Society
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American Astronomical Society



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Cover Image: 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.

American Association of Physics Teachers

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