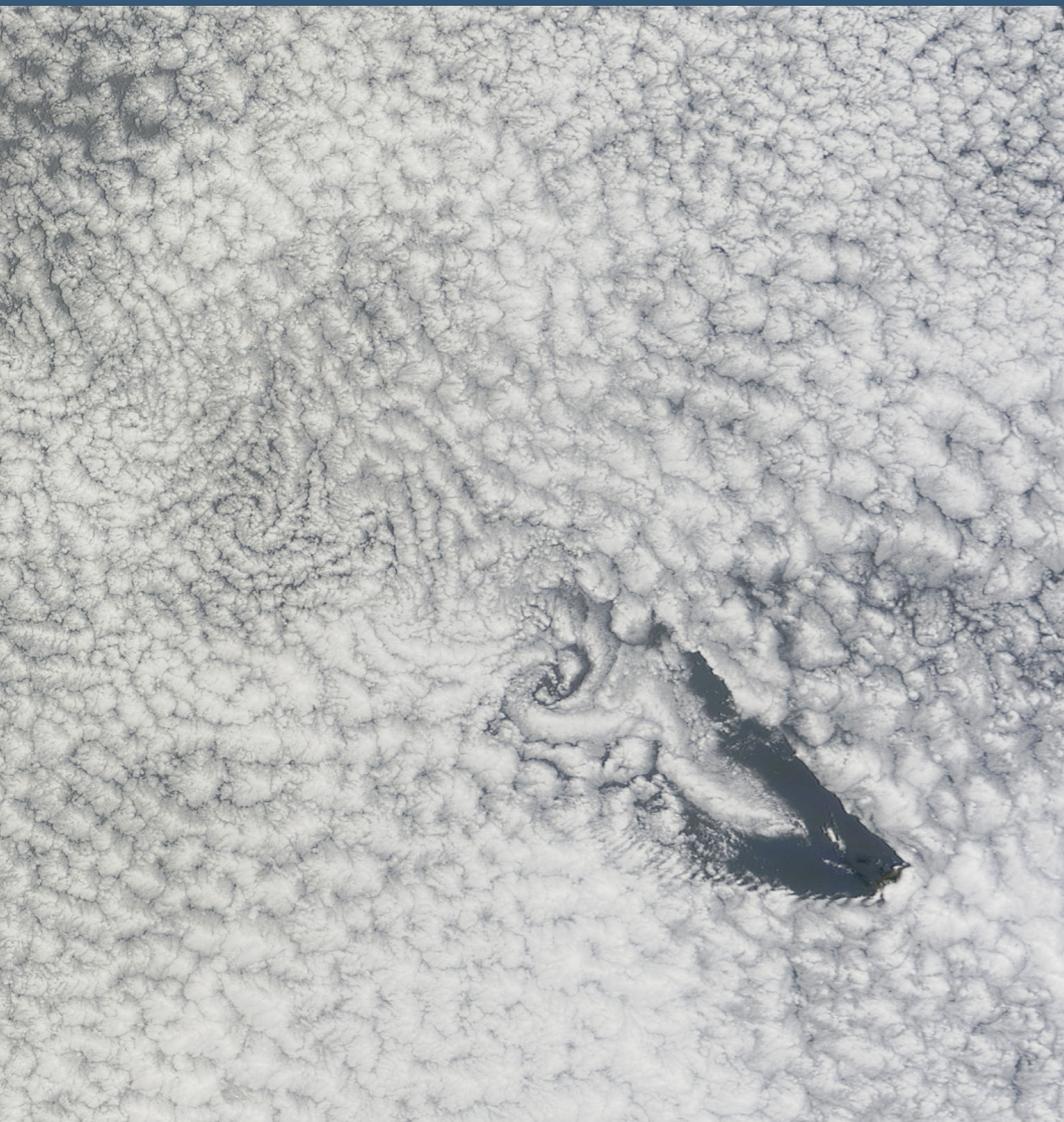


workshop for
**new physics and
astronomy faculty**



June 17-20, 2013
American Center for Physics
College Park, MD

New Faculty Advisory Committee

Beth Cunningham, American Association of Physics Teachers
Paul Gueye, Hampton University
Jack Hehn, American Institute of Physics (retired)
Warren Hein, American Association of Physics Teachers (retired)
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Edward Prather, American Astronomical Society
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**RESEARCH CORPORATION
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Coe College

Breakout I

Ma'arib Alsahhaf

Princess Nora bint Abdulrahman University

Breakout II

Erik Aver

Gonzaga University

Breakout III

Mario Borunda

Oklahoma State University

Breakout I

David Brain

University of Colorado-Boulder

Breakout II

Brant Carlson

Carthage College

Breakout III

Gary Case

La Sierra University

Breakout I

Jonathan Celli

University of Massachusetts-Boston

Breakout II

Utpal Chatterjee

University of Virginia

Breakout III

Zengjun Chen

Tuskegee University

Breakout I

James Clem

Grove City College

Breakout II

Moumita Das

Rochester Institute of Technology

Breakout III

Casey Davenport

United States Air Force Academy

Breakout I

Rachele Dominguez

Randolph-Macon College

Breakout II

Maxim Dzero

Kent State University

Breakout III

Susan Enders

Doane College

Breakout I

Jeremy England

Massachusetts Institute of Technology

Breakout II

Briana Fiser

High Point University

Breakout III

Anna Frebel

Massachusetts Institute of Technology

Breakout I

Kayt Frisch

Dordt College

Breakout II

Matthias Fuchs

University of Nebraska-Lincoln

Breakout III

Li Gao

California State University-Northridge

Breakout I

Stephen Gillam

Indiana University-Purdue University-Fort Wayne

Breakout II

Ryan T. Gordon

Western Illinois University

Breakout III

Rebecca Grouchy

Coastal Carolina University

Breakout I

Erin Hackett

Coastal Carolina University

Breakout II

Ulrike Hager

Colorado School of Mines

Breakout III

Jason Hancock

University of Connecticut

Breakout I

Xiao Hu

Rowan University

Breakout II

Anota Ijaduola

University of North Georgia

Breakout III

Thushari Jayasekera

Southern Illinois University

Breakout I

Jason Kestner

University of Maryland-Baltimore County

Breakout II

Mary Kidd

Tennessee Technological University

Breakout III

Kiyong Kim

University of Maryland

Breakout I

Markus Klute

Massachusetts Institute of Technology

Breakout II

Uwe Konopka

Auburn University

Breakout III

Ashwani Kumar

Monmouth College

Breakout I

Keji Lai

University of Texas at Austin

Breakout II

Blake Laing

Southern Adventist University

Breakout III

Andrew Mason

University of Central Arkansas

Breakout I

Workshop Participants

Michelle Milne

St. Mary's College of Maryland
Breakout II

Oleg Mryasov

University of Alabama
Breakout III

Anne Murdaugh

Rollins College
Breakout I

Moses Ntam

Tuskegee University
Breakout II

Steven Olmschenk

Denison University
Breakout III

Gregory Pawloski

University of Minnesota
Breakout I

Gil Paz

Wayne State University
Breakout II

Dmytro Pesin

University of Utah
Breakout III

Annika Peter

The Ohio State University
Breakout I

Michael Peterson

California State University-Long Beach
Breakout II

Alexandra Pope

University of Massachusetts-Amherst
Breakout III

Quan Qing

Arizona State University
Breakout I

Matt Redshaw

Central Michigan University
Breakout II

Jason Reed

Virginia Commonwealth University
Breakout III

Erin Rericha

Vanderbilt University
Breakout I

Humberto Rodriguez-Gutierrez

University of Louisville
Breakout II

Claudia Scarlata

University of Minnesota
Breakout III

Monika Schleier-Smith

Stanford University
Breakout I

Jeremy Schmit

Kansas State University
Breakout II

Jason Shulman

The Richard Stockton College of New Jersey
Breakout III

Parampreet Singh

Louisiana State University
Breakout I

Michael Solonto

Lynchburg College
Breakout II

Sheyum Syed

University of Miami
Breakout III

Eric Toberer

Colorado School of Mines
Breakout I

Karen Vardanyan

Southern Illinois University Edwardsville
Breakout II

Michael Walters

SUNY Plattsburgh
Breakout III

Nevin Weinberg

Massachusetts Institute of Technology
Breakout I

Laura Wessels

University of Nebraska-Kearney
Breakout II

Michael Williams

Massachusetts Institute of Technology
Breakout III

Kathrin Wimmer

Central Michigan University
Breakout I

Jared Workman

Colorado Mesa University
Breakout II

Matthew Wright

Adelphi University
Breakout III

Jonathan Wrubel

Creighton University
Breakout I

Jun Yan

University of Massachusetts-Amherst
Breakout II

Zhenyu Ye

University of Illinois-Chicago
Breakout III

Ho-Ung Yee

University of Illinois-Chicago
Breakout I

Francisco Yumiceva

Florida Institute of Technology
Breakout II

Debing Zeng

Saint Peter's University
Breakout III

Fangqiang Zhu

Indiana University-Purdue University-Indianapolis
Breakout I

Paolo Zuccon

Massachusetts Institute of Technology
Breakout II

Workshop Schedule

Monday, June 17

- 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 – Hilton Garden Inn – Azalea Ballroom**
- 1:30–3:00 p.m. **Optional Workshop: Grant Opportunities at Research Corporation**
Richard Wiener, Program Officer, rwiener@rescorp.org
- 3:00–4:30 p.m. **Optional Workshop: Grant Opportunities NSF Program Officers**
Duncan McBride, Division of Undergraduate Education
dmcbride@nsf.gov
Kathleen McCloud, Division of Physics
kmcloud@nsf.gov
Daniel Evans, Division of Astronomical Sciences
devans@nsf.gov
Gary White, Division of Undergraduate Education
gwhite@nsf.gov
Dan Finotello, Division of Materials Research
dfinotel@nsf.gov
- 4:30–5:00 p.m. **Break – Azalea Ballroom Foyer**
- 5:00–5:15 p.m. **Welcome and Opening Remarks**
Robert Hilborn, Associate Executive Officer, AAPT,
Chair, New Physics and Astronomy Faculty Workshop
Beth Cunningham, Executive Officer, AAPT
Renee Michelle Goertzen, Education Programs Manager, APS
Kevin Marvel, Executive Officer, AAS
Fred Dylla, Executive Director, AIP
Duncan McBride, National Science Foundation
- 5:15–6:15 p.m. **Large Group Session – Dogwood Ballroom**
Introduction to Peer Instruction
Eric Mazur, Harvard University
- 6:15–7:30 p.m. **Dinner – Azalea Ballroom**
- 7:30–8:30 p.m. **Large Group Session – Dogwood Ballroom**
Peer Instruction Practical Details
Eric Mazur, Harvard University
Angelica Natera, Harvard University

Tuesday, June 18

- 6:30–7:30 a.m. Breakfast – Hilton Garden Inn, Great American Grill
8:00 a.m. Shuttle bus leaves for American Center for Physics
8:30–10:00 a.m. Large Group Session – Conference Room A
Research in Physics Education: A resource for improving student learning – Conference Room A
Lillian McDermott and Peter Shaffer
University of Washington
- 10:00–10:15 a.m. Refreshment Break – ACP Rotunda
10:15–11:15 a.m. Large Group Session – Conference Room A
Learner-Centered Teaching in Physics and Astronomy
Edward Prather, University of Arizona
- 11:15–12:00 a.m. Small Group Sessions
- *PhET (I)* – Conference Room A
Michael Dubson, University of Colorado-Boulder
 - *Upper-level Physics (II)* – Conference Room B
Ken Krane, Oregon State University
 - *Lecture Tutorials (III)* – Conference Room C
Edward Prather, Gina Brissenden, University of Arizona
- 12:00–1:00 p.m. Group Photo and Lunch – ACP Cafeteria
1:00–1:45 p.m. Small Group Sessions
- *PhET (II)* – Conference Room A
 - *Upper-level Physics (III)* – Conference Room B
 - *Lecture Tutorials (I)* – Conference Room C
- 1:45–2:30 p.m. Small Group Sessions
- *PhET (III)* – Conference Room A
 - *Digital Libraries (I)* – Conference Room B
 - *Lecture Tutorials (II)* – Conference Room C
- 2:30–3:00 p.m. Refreshment Break – ACP Rotunda
3:00–4:15 p.m. Large Group Session – Conference Room A
Just-in-Time Teaching
Mario Belloni, Davidson College
- 4:15–5:00 p.m. Small Group Discussion – Conference Rooms A, B, and C
Various Topics (presiders TBD)
- 5:00–6:00 p.m. Large Group Session – Conference Room A
Help Your Students Develop Expertise in Problem Solving
Ken Heller, University of Minnesota
- 6:00 p.m. Shuttle bus leaves for Hilton Garden Inn
6:30–7:30 p.m. Dinner – Azalea Ballroom
7:30–8:30 p.m. Large Group Session – Dogwood Ballroom
The Physics IQ Test
Richard Berg, University of Maryland

Wednesday, June 19

- 6:30–7:30 a.m. **Breakfast – Hilton Garden Inn**, Great American Grill
- 7:45 a.m. **Shuttle bus leaves for American Center for Physics**
- 8:15–9:15 a.m. **Large Group Session – Conference Room A**
Active Learning with Interactive Lecture Demonstrations (ILD)
David Sokoloff, University of Oregon
Ronald Thornton, Tufts University
- 9:15–10:00 a.m. **Small Group Sessions**
- *Upper-level Physics (III)* – Conference Room A
Corinne Manogue, Oregon State University
 - *ILD/Real Time Physics (II)* – Conference Room B
David Sokoloff and Ron Thornton
 - *Physlets, Easy Java Simulations, and Open Source Physics (I)*
Conference Room C
Wolfgang Christian, Davidson College
- 10:00–10:30 a.m. **Break – ACP Rotunda**
- 10:30–11:15 a.m. **Small Group Sessions**
- *Upper-level Physics (I)* – Conference Room A
 - *ILD/Real Time Physics (III)* – Conference Room B
 - *Physlets, Easy Java Simulations, and Open Source Physics (II)*
Conference Room C
- 11:15–12:00 p.m. **Small Group Sessions**
- *Upper-level Physics (II)* – Conference Room A
 - *ILD/Real Time Physics (I)* – Conference Room B
 - *Physlets, Easy Java Simulations, and Open Source Physics (III)*
Conference Room C
- 12:00–1:00 p.m. **Lunch – ACP Cafeteria**
- 1:00–2:00 p.m. **Large Group Session – Conference Room A**
Evaluation and Assessment
Noah Finkelstein, University of Colorado
- 2:00–3:00 p.m. **Small Group Sessions**
Primarily Undergraduate Institutions – Conference Room B
M.S. and Ph.D. Granting Institutions – Conference Room A
- 3:00–3:45 p.m. **Small Group Sessions**
- *Digital Libraries (I)* – Conference Room A
Bruce Mason, University of Oklahoma
 - *Tenure Matters (II)* – Conference Room B
Robert Hilborn, AAPT
Steve Turley, Brigham Young University
 - *Problem Solving (III)* – Conference Room C
Ken Heller, University of Minnesota

Wednesday, June 19 (cont.)

- 3:45–4:15 p.m. Refreshment Break – ACP Rotunda
- 4:15–5:00 p.m. Small Group Sessions
- *Digital Libraries (II)* – Conference Room A
 - *Tenure Matters (III)* – Conference Room B
 - *Problem Solving (I)* – Conference Room C
- 5:00–5:45 p.m. Small Group Sessions
- *Digital Libraries (III)* – Conference Room A
 - *Tenure Matters (I)* – Conference Room B
 - *Problem Solving (II)* – Conference Room C
- 5:45 p.m. Shuttle bus leaves for Hilton Garden Inn
- 5:45–6:15 p.m. Reception – Azalea Ballroom
- 6:15–7:30 p.m. Dinner – Azalea Ballroom

Thursday, June 20

- 6:30–7:30 a.m. Breakfast – Hilton Garden Inn, Great American Grill
Hotel Check-Out
- 8:15–9:00 a.m. Large Group Session – Azalea Ballroom
Case Studies, Discussion of Student Behavior
Tim Slater, University of Wyoming
- 9:00–10:15 a.m. Large Group Session
Retention and Diversity
Carl Wieman, University of Colorado
- 10:15–10:30 a.m. Break – Azalea Ballroom Foyer
- 10:30–11:15 a.m. Large Group Session
Time Management
Tim Slater
- 11:15 –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.

Beth Cunningham
Executive Officer

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One Physics Ellipse, College Park, MD 20740-0845; 301-209-3333; www.aapt.org



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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2000 Florida Ave. NW, Suite 400, Washington, DC 20009-1231; 202-328-2010; www.aas.org



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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This project is supported in part by the National Science Foundation.
Grant No. DUE-0813481

American Association of Physics Teachers

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