

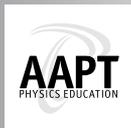


workshop for
**new physics and
astronomy faculty**

NOVEMBER 13-16, 2014

AMERICAN CENTER FOR PHYSICS
COLLEGE PARK, MD

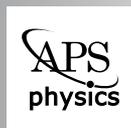
THE WORKSHOP FOR
NEW PHYSICS AND
ASTRONOMY FACULTY
IS SPONSORED BY



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AMERICAN ASTRONOMICAL SOCIETY



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NEW FACULTY ADVISORY COMMITTEE

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BREAKOUT II

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Sarit Dhar

Auburn University

BREAKOUT II

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BREAKOUT III

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BREAKOUT I

Camillo Mariani

Virginia Poly. Inst. & State Univ.

BREAKOUT II

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BREAKOUT III

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BREAKOUT I

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BREAKOUT II

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BREAKOUT III

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BREAKOUT I

Birol Ozturk

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BREAKOUT II

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BREAKOUT I

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BREAKOUT II

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University of Memphis

BREAKOUT III

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Rust College

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Adrienne L. Traxler

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Representatives of the Chinese Physical Society

Qiang Chen

Beihang University

BREAKOUT I

Dongmei Gu

Chinese Physical Society

BREAKOUT II

Mu Gu

Tongji University

BREAKOUT II

Xiaofeng Jin

Fudan University

BREAKOUT III

Bangfen Zhu

Tsinghua University

BREAKOUT I

THURSDAY, NOVEMBER 13

11 A.M.–6:00 P.M.	WORKSHOP REGISTRATION Holiday Inn - College Park, MD	GRAND BALLROOM FOYER
1:30–3:00 P.M.	WORKSHOP Effective Grant Proposal Writing and Grant Opportunities with Research Corporation Richard Wiener, Program Officer, Research Corporation for Science Advancement; rwiener@rescorp.org	GRAND BALLROOM AB
3:00–4:30 P.M.	WORKSHOP Grant Opportunities at the National Science Foundation Joyce Evans, Div. of Undergraduate Education, jevans@nsf.gov Kevin Lee, Division of Undergraduate Education, klee@nsf.gov Kathleen McCloud, Division of Physics, kmcloud@nsf.gov James Neff, Division of Astronomical Sciences, jneff@nsf.gov Guebre Tessema, Div. of Materials Research, gtessema@nsf.gov	GRAND BALLROOM AB
4:30–5:00 P.M.	BREAK	GRAND BALLROOM FOYER
5:00–5:15 P.M.	OPENING REMARKS Welcome and Introductions Robert Hilborn, Associate Executive Officer, AAPT, Chair, Physics and Astronomy New Faculty Workshop Beth Cunningham, Executive Officer, AAPT Cathy O’Riordan, Physics Resources Vice President, AIP Kate Kirby, Executive Officer, APS Kevin Marvel, Executive Officer, AAS	GRAND BALLROOM AB
5:15–6:15 P.M.	LARGE GROUP SESSION Learner-Centered Teaching in Physics and Astronomy Edward Prather, University of Arizona	GRAND BALLROOM AB
6:15–7:30 P.M.	DINNER	GRAND BALLROOM CD
7:30–8:30 P.M.	LARGE GROUP SESSION Think-Pair-Share Practical Details Edward Prather, University of Arizona	GRAND BALLROOM AB

FRIDAY, NOVEMBER 14

6:30–7:30 A.M.	BREAKFAST - Holiday Inn - College Park	MOOSE CREEK STEAK HOUSE
8:00 A.M.	SHUTTLE BUS LEAVES (ON TIME) FOR AMERICAN CENTER FOR PHYSICS	
8:30–9:30 A.M.	LARGE GROUP SESSION Interactive Lecture Demonstrations David Sokoloff, University of Oregon Ron Thornton, Tufts University	CONFERENCE ROOM A
9:30–10:15 A.M.	SMALL GROUP SESSIONS Upper-Level Curriculum (I - breakout group) Corinne Manogue, Oregon State University	CONFERENCE ROOM A

FRIDAY, NOVEMBER 14 (CONT.)

	<p>Real-Time Physics / ILD (II - breakout group) CONFERENCE ROOM B David Sokoloff, University of Oregon, and Ron Thornton, Tufts University</p> <p>Lecture Tutorials (III - breakout group) CONFERENCE ROOM C Edward Prather and Gina Brissenden, University of Arizona</p>
10:15–10:45 A.M.	BREAK ACP ROTUNDA
10:45–11:30 A.M.	<p>SMALL GROUP SESSIONS</p> <p>Upper-Level Curriculum (II) CONFERENCE ROOM A Corinne Manogue</p> <p>Real-Time Physics / ILD (III) CONFERENCE ROOM B David Sokoloff and Ron Thornton</p> <p>Lecture Tutorials (I) CONFERENCE ROOM C Edward Prather and Gina Brissenden</p>
11:30 A.M.–12:15 P.M.	<p>SMALL GROUP SESSIONS</p> <p>Upper-Level Curriculum (III) CONFERENCE ROOM A Corinne Manogue</p> <p>Real-Time Physics / ILD (I) CONFERENCE ROOM B David Sokoloff and Ron Thornton</p> <p>Lecture Tutorials (II) CONFERENCE ROOM C Edward Prather and Gina Brissenden</p>
12:15–1:15 P.M.	GROUP PHOTO AND LUNCH ACP CAFETERIA
1:15–2:15 P.M.	<p>LARGE GROUP SESSION CONFERENCE ROOM A</p> <p>Peer Instruction James Fraser, Queen's University</p>
2:15–3:15 P.M.	<p>SMALL GROUP DISCUSSIONS CONFERENCE ROOMS A, B, C</p> <p>Topics from Pre-Workshop Survey</p>
3:15–3:45 P.M.	BREAK ACP ROTUNDA
3:45–4:45 P.M.	<p>LARGE GROUP SESSION CONFERENCE ROOM A</p> <p>Just-in-Time Teaching Andy Gavrin, Indiana University-Purdue University-Indianapolis</p>
4:45–5:45 P.M.	<p>LARGE GROUP SESSION CONFERENCE ROOM A</p> <p>Evaluation and Assessment Karen Cummings, Southern Connecticut State University</p>
5:45 P.M.	SHUTTLE BUS LEAVES FOR HOLIDAY INN - COLLEGE PARK
6:30–7:30 P.M.	DINNER - HOLIDAY INN - COLLEGE PARK GRAND BALLROOM AB
7:30–8:30 P.M.	<p>LARGE GROUP SESSION GRAND BALLROOM AB</p> <p>The Physics IQ Test Richard Berg, University of Maryland, College Park</p>

SATURDAY, NOVEMBER 15

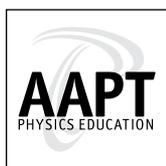
6:30–7:30 A.M.	BREAKFAST - Holiday Inn - College Park	MOOSE CREEK STEAK HOUSE
7:45 A.M.	SHUTTLE BUS LEAVES (ON TIME) FOR AMERICAN CENTER FOR PHYSICS	
8:30–10:00 A.M.	LARGE GROUP SESSION	CONFERENCE ROOM A
	Research in Physics Education: A Resource for Improving Student Learning Lillian C. McDermott and Peter Shaffer, University of Washington	
10:00–10:30 A.M.	BREAK	ACP ROTUNDA
10:30–11:15 A.M.	SMALL GROUP SESSIONS	
	Interactive Engagement in Upper-Level Courses (I) Corinne Manogue, Oregon State University	CONFERENCE ROOM A
	PhET Simulations (II) Michael Dubson, University of Colorado, Boulder	CONFERENCE ROOM B
	Physlets, Open Source Physics, Easy-Java Scripts (III) Mario Belloni, Davidson College	CONFERENCE ROOM C
11:15 A.M.–12:00 P.M.	SMALL GROUP SESSIONS	
	Interactive Engagement in Upper-Level Courses (II) Corinne Manogue	CONFERENCE ROOM A
	PhET Simulations (III) Michael Dubson	CONFERENCE ROOM B
	Physlets, Open Source Physics, Easy-Java Scripts (I) Mario Belloni	CONFERENCE ROOM C
12:00–1:00 P.M.	LUNCH	ACP CAFETERIA
1:00–1:45 P.M.	SMALL GROUP SESSIONS	
	Interactive Engagement in Upper-Level Courses (III) Corinne Manogue	CONFERENCE ROOM A
	PhET Simulations (I) Michael Dubson	CONFERENCE ROOM B
	Physlets, Open Source Physics, Easy-Java Scripts (II) Mario Belloni	CONFERENCE ROOM C
1:45–2:30 P.M.	SMALL GROUP SESSIONS	
	Participants from Ph.D.-granting Institutions	CONFERENCE ROOM A
	Participants from Primarily Undergraduate Institutions	CONFERENCE ROOM C
2:30–3:00 P.M.	BREAK	ACP ROTUNDA
3:00–4:00 P.M.	LARGE GROUP SESSION	CONFERENCE ROOM A
	Problem Solving Ken Heller, University of Minnesota	
4:00–4:45 P.M.	SMALL GROUP SESSIONS	
	Digital Libraries (I) Eleanor Sayre, Kansas State University	CONFERENCE ROOM A
	Tenure Matters (II) Robert Hilborn, AAPT	CONFERENCE ROOM B
	Problem Solving (III) Ken Heller, University of Minnesota	CONFERENCE ROOM C

SATURDAY, NOVEMBER 15 (CONT.)

4:45–5:30 p.m.	SMALL GROUP SESSIONS	
	Digital Libraries (II) Eleanor Sayre	CONFERENCE ROOM A
	Tenure Matters (III) Robert Hilborn	CONFERENCE ROOM B
5:30–6:15 P.M.	SMALL GROUP SESSIONS	
	Digital Libraries (III) Eleanor Sayre	CONFERENCE ROOM A
	Tenure Matters (I) Robert Hilborn	CONFERENCE ROOM B
6:15 P.M.	SHUTTLE BUS LEAVES FOR HOLIDAY INN - COLLEGE PARK	
	DINNER	
	GRAND BALLROOM AB	
7:45–8:15 P.M.	LARGE GROUP SESSION	
	Case Study as a Way to Understand Physics	
	Xiaofeng Jin, Fudan University, Shanghai	
GRAND BALLROOM AB		

SUNDAY, NOVEMBER 16

6:30–7:45 A.M.	BREAKFAST - Holiday Inn - College Park	MOOSE CREEK STEAK HOUSE
	Hotel Checkout - by 12:00 noon	
8:15–9:00 A.M.	LARGE GROUP SESSION	
	Case Study Discussion of Student Behavior	
9:00–10:15 A.M.	LARGE GROUP SESSION	
	Teaching for Retention and Diversity	
10:15–10:30 A.M.	LARGE GROUP SESSION	
	Time Management	
10:30–11:15 A.M.	LARGE GROUP SESSION	
	Evaluation Procedures, Final Words, Adjourn	
11:15 – 11:30 A.M.	LARGE GROUP SESSION	
	Evaluation Procedures, Final Words, Adjourn	
GRAND BALLROOM AB		



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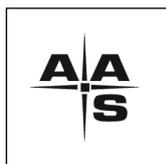
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AMERICAN ASSOCIATION OF PHYSICS TEACHERS

Founded in 1930, AAPT is the premier professional society established to advance the greater good through physics education. With the support of our members worldwide, AAPT is an action oriented organization designed to develop, improve, and promote best practices for physics education as part of the global need for qualified Science, Technology, Engineering, and Mathematics teachers who will inspire tomorrow's leaders and decision makers.

We serve our members through networking, publications, and programs, 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 world to promote a better understanding of physics at all levels.

AAPT provides networking opportunities through online discussion lists, social media, the Workshops for New Physics and Astronomy Faculty (with APS and AAS); Physics Department Chairs Conference (with APS), and our two national annual meetings. The association supports physics educators through our publications, the *American Journal of Physics* and *The Physics Teacher*; *Physical Review Special topics – Physics Education Research* (with APS and the APS Forum on Education) and the *eNNOUNCER*; NSF-funded programs including the PER User's Guide, the Physics Teacher Education Coalition, PhysTEC (with APS); Physics Teaching Resource Agents institutes; the digital physics library, ComPADRE (with APS and AIP); Physics Program Reviews, and the student programs and scholarships that we administer, including the Lotze Scholarship for Future Teachers.



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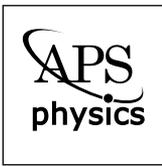
2000 FLORIDA AVE. NW,
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AMERICAN ASTRONOMICAL SOCIETY

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 50,000 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), *Reviews of Modern Physics*, and its two newest journals, *Physical Review Applied* and *PRX*. 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 programs to improve undergraduate and graduate education and to improve the preparation 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, and conferences and workshops on education at various levels. For many years APS has worked to increase diversity in the physics community, and in 2012 launched the APS Bridge Program (www.apsbridgeprogram.org), a national effort to increase the number of underrepresented minorities that receive a PhD in Physics. In addition, APS recently began sponsorship of the Conferences for Undergraduate Women in Physics – regional conferences to encourage participation of women in the discipline.



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AMERICAN INSTITUTE OF PHYSICS

AIP's mission is to advance, promote and serve the physical sciences for the benefit of humanity.

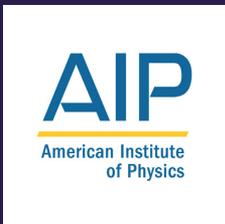
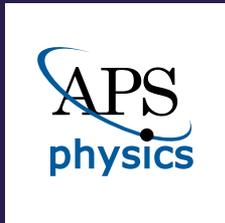
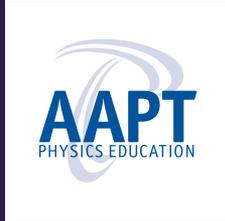
AIP offers authoritative information, services, and expertise in physics education and student programs, science communication, government relations, career services for science and engineering professionals, statistical research in physics employment and education, industrial outreach, and the history of physics and allied fields.

AIP Member Societies cover a broad range of fields in the physical sciences and collectively represent more than 120,000 scientists, engineers, educators and students in the global physical sciences community.



THIS PROJECT IS SUPPORTED IN PART BY THE NATIONAL SCIENCE FOUNDATION.

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