

# FIAP Winter 2016 - 2017 Newsletter

American Physical Society Forum on Industrial & Applied Physics

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## Editor in Chief

Derrick C. Mancini

Comments and questions can be sent to [fiap\\_newsletter@aps.org](mailto:fiap_newsletter@aps.org).

Opinions expressed represent the views of the individual authors and not the American Physical Society or author's employers.

## FIAP Elections

The ballots have been sent to all FIAP members. Please take a moment to vote among these excellent candidates:

### Vice-Chair

Ichiro Takeuchi, University of Maryland  
Matthew Thompson, Tri-Alpha Energy, Inc.

### Secretary/Treasurer

Garmani Karunasiri, Naval Postgraduate School  
Thomas Meitzler, US Army Research Development & Engineering Command

### Members-at-Large (vote for three)

Todd Brintlinger, NRL

Tirtha Chatterjee, Dow Chemical Company  
Bruce Dunham, SLAC  
James Gimlett, DARPA  
Paul Grant, W2AGZ Technologies  
Abdel Isakovic, Khalifa University, UAE

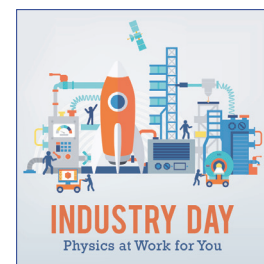
The ballot should have arrived around Dec 7 by email from APS-FIAP Election Coordinator [noreply@directvote.net](mailto:noreply@directvote.net)

Biographies and statements from each candidate are included on the voting website. Please contact Steven Lambert ([lambert@aps.org](mailto:lambert@aps.org)) if you did not receive an email invitation to vote.

## Industry Day at March Meeting 2017

Preparations are underway for March Meeting which will be held March 13-17 in New Orleans. Matt Kim, FIAP Vice Chair, has put together an excellent program of FIAP sessions with the theme “Industry at Work for You.” We will again have Industry Day, with a main focus on Wednesday, March 15. There will be additional satellite sessions on other days. You can see the program [here](#), which includes technical talks, a panel discussion about entrepreneurship

in physics, receptions, and many opportunities for networking. This is also a good place for students and early career physicists to learn about careers in industry and to hear talks from industry leaders about their technical work. Put this on your calendar and plan to join us in New Orleans.



## Actualization of the Internet of Things - FIAP Topical Conference

The World Wide Web was invented by physicists, emerging from scientists at CERN who needed a means to send information quickly to geographically dispersed team members. But the internet has yet to reach even a fraction of its potential, and today it serves primarily to move information among computers. Interactions with physical objects are starting to happen, and an explosion of possibilities has caught the imagination of scientists, engineers, computer experts, and the general public.

The phrase the Internet of Things, (IoT) is now being used to represent this interconnection of large numbers of physical entities. FIAP will hold its first topical conference to bring together those technologists with the skill sets to actualize the IoT:

### Actualization of the Internet of Things

April 17-19, 2017

Marriott Hotel and Monterey Conference Center, Monterey CA  
[www.aps.org/units/fiap/meetings/conference/index.cfm](http://www.aps.org/units/fiap/meetings/conference/index.cfm)

As an APS meeting, we certainly intend to engage physicists who have interest in this area. In addition, we will include experts in robotics, automation, sensors (without limitation on the definition of a sensor), algorithms, and physical actuation. We also welcome the

participation of scientists and engineers from across the technological spectrum (EE, ME, AE, etc.) to allow the sort of cross-disciplinary conversations and innovation that will be necessary to build the IoT. The conference features three keynote speakers and five topical sessions. Each session has four or five expert presenters to give an overview of today's status and tomorrow's challenges, with emphasis on areas where the physics community can make an impact.



You can find a preliminary schedule and registration information at this [link](#). Please share this information with your colleagues and plan to participate in this exciting event. Contact Steven Lambert ([lambert@aps.org](mailto:lambert@aps.org)) with any questions.

# Industrial Physics Advisory Board

APS has formed a new Industrial Physics Advisory Board (IndBoard) to provide additional input for APS about physics in the private sector. Two immediate goals are:

- Work with the APS Office of Public Affairs to give advice on policy issues
- Oversee the preparation of a report: *The Impact of Industrial Physics on the U.S. Economy*

## The IndBoard has been formed with these members:

Jim Bray	GE	Chief Scientist
Walter Buell	Aerospace Corp.	Director, Elect. & Photonics Lab
Bob Doering	Texas Instruments	Research Manager
Alex Majewski	United Technologies	Fellow, Space Systems
Heike Riel	IBM	Director, Physical Sciences

Chad Rigetti	Rigetti Quantum Computing	Founder & CEO
Mike Tamor	Ford	Technical Fellow

## Ex-Officio members

Dave Seiler	NIST	Division Chief, also Past Chair of FIAP
John Rumble	R&R Data	President, also FIAP Councilor

Bob Doering was unanimously elected the Chair of the IndBoard and will serve for two years. There are two ex-officio members who will help to ensure a strong connection with FIAP. The IndBoard has held four phone conferences so far and convenes at least quarterly. The staff contact is Steven Lambert ([lambert@aps.org](mailto:lambert@aps.org)) and he welcomes comments or suggestions.

# Industry Mentoring for Physicists (IMPact)

APS has launched a new Industry Mentoring for Physicists program (IMPact) which connects graduate students and post-docs with physicists working in the private sector. The mentoring is intended to be short-term, with four discussions recommended during 90 days. Response has been strong with 120 Mentors and more than 300 Mentees registered so far. There have been 90 matches to date with very positive feedback from participants after the recommended 90-day discussion period.

Do you have physics experience in the private sector or as an entrepreneur that you can share with others? Are you a graduate student or early career member that would like to learn about physicists in industry? Registering for IMPact takes only five minutes, so go to the [IMPact website](#) and get started. Both Mentors and Mentees must be APS members to participate.

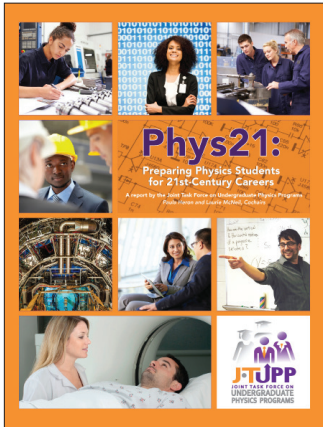


# Free Job Postings for Internship Jobs

It's not too soon to think about summer internships! The APS offers free job postings for internships which can help you find the best candidates. The postings also appear on the *Physics Today* Jobs site and are on-line for 60 days. You get access to a targeted audience of physics students plus members of AAPT, AVS, and the IEEE Computer Society. Free internship postings are available year round, but remember this free service as you start planning for your summer programs. Don't miss this chance to connect with students, share about the interesting work underway in your company, and broaden your candidate pool for future job openings. You can find details on this [page](#) of the APS Careers website.



# Phys21: Preparing Physics Students for the 21st Century



The education landscape is changing, and the students who attend college are increasingly diverse. Many undergraduate physics programs, which in the past have served their students well as preparation for various careers, are finding that the needs of today's employers are rapidly evolving. New occupations for physics graduates require skill sets that faculty members may not fully understand. Consequently, physics departments are often ill

equipped to design a program of study that addresses the needs of these students and their future employers.

For this reason the American Physical Society (APS) and the American Association of Physics Teachers (AAPT) in 2014 assembled a group of academic and industrial physicists to form the Joint Task Force on Undergraduate Physics Programs (J-TUPP) to

provide guidance to physics departments seeking to improve the career readiness of their graduates. The report of that task force, *Phys21: Preparing Physics Students for 21st Century Careers*, has now been released. It is intended to help physics faculty members to see beyond the "standard model" of preparing majors for physics graduate school and describes ways they can modify their programs to better prepare their graduates for the diverse careers that they will pursue, from engineer to entrepreneur to high school physics teacher to physics researcher.

It is the hope of the task force that industrial and applied physicists will engage in discussions of the recommendations of the report and find ways to partner with the physics education community to promote changes in physics programs that will help enhance the career readiness of their graduates. Doing so will help ensure the health of the physics profession into the future.

The full report as well as some supplementary material is available on the J-TUPP website (<http://www.compadre.org/JTUPP/>).

Paula Heron and Laurie McNeil  
J-TUPP Co-chairs

## New FIAP fellows

Please join us in congratulating the newly elected APS Fellows nominated by FIAP, also listed at this [link](#).

### **Adler, Edward**

#### **Boeing**

*Citation: For significant scientific advancement in the application of plasma-based electronic systems to advanced space communications, and for the advancement of systems and processes necessary to transition novel physics into technical innovation, both in government and private sector capacities.*

### **Brown, Robert G.W.**

#### **American Institute of Physics**

*Citation: For leadership and pioneering contributions in research, development, and technology transfer of many commercially important optoelectronic concepts, devices, and applications.*

### **Gordon, Michael S.**

#### **IBM Thomas J. Watson Research Center**

*Citation: For excellence in the application of concepts from nuclear physics in lithography, soft-error physics, metrology, and materials characterization.*

### **Hussain, Muhammad M.**

#### **King Abdullah University of Science & Technology**

*Citation: For contributions to exploration, evaluation, and transition of planar and nonplanar high-k/metal gate complementary metal oxide semiconductor electronics, silicon/silicon-germanium/III-V nanotube devices, and*

*flexible, stretchable, reconfigurable complementary metal-oxide-semiconductor electronic systems.*

### **Iyer, Subramanian**

#### **University of California - Los Angeles**

*Citation: For the commercialization of semiconductor and packaging technology products.*

### **Lambert, Steven**

#### **American Physical Society**

*Citation: For developing innovations in hard disk drive heads and disks which helped sustain the dramatic increases in capacity delivered by the magnetic recording industry.*

### **Léonard, François**

#### **Sandia National Laboratories**

*Citation: For fundamental studies of the physics of nanoscale electronic devices."*

### **Steiner, Mathias B.**

#### **IBM Research Laboratory**

*Citation: For outstanding contributions to industrial and applied physics, especially in the development of novel methods for the experimental investigation and technological application of nanometer scale materials.*

### **Sun, Handong**

#### **Nanyang Technological University**

*Citation: For outstanding contributions to optoelectronics with novel characterization and deep understanding of photonic materials and structures, leading to practical high-performance devices.*



## Ye, Peide “Peter”

### **Purdue University**

*Citation: For contributions to scientific understanding and technical development of transistor technology on novel channel materials.*

Nominations are open now for 2017, see information at this [link](#).

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Please consider which of your colleagues are deserving of this distinction. Serving a diverse and inclusive community of physicists worldwide is a primary goal for APS. Nominations of qualified women, members of underrepresented minority groups, and scientists from outside the United States are especially encouraged.

## Recognizing our peers- 2017 winners of prizes administered by FIAP

FIAP has the privilege of administering three prizes awarded to physicists for their work in industry. These colleagues will be recognized at the 2017 March Meeting:

### **2017 George E. Pake Prize ([link](#))**

**Tze-Chiang Chen**

*IBM T.J. Watson Research Center*

*Citation: For expert leadership in semiconductor technology development and deployment, as well as basic science stewardship.*

### **2017 Distinguished Lectureship Award on the Applications of Physics ([link](#))**

**Rudolf M. Tromp**

*IBM Thomas J. Watson Research Center*

*Citation: For extensive and significant contributions to the field of surface physics.*

### **2017 Prize for Industrial Applications of Physics ([link](#))**

**Asad Khan**

*Kent Displays*

*Citation: For novel contributions to the physics of bistable, reflective cholesteric liquid crystals, and the commercial applications of pressure-sensitive liquid crystal displays, including switchable windows, eWriters and numerous new products.*

Please visit the links above for more information about these prizes including how to nominate someone for the next award cycle.

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## Conference on Frontiers of Characterization and Metrology for Nanoelectronics

The conference organizers are pleased to announce a call for papers at the **2017 International Conference on Frontiers of Characterization and Metrology for Nanoelectronics (FCMN)** which will be held at the Monterey Marriott in Monterey, CA, Mar. 21-23, 2017! Monterey is a scenic California coastal city that rises from the pristine Monterey Bay to pine forested hillsides with sweeping bay views. This is the 11th in the series of conferences devoted to metrology frontiers for the semiconductor industry. The conference will examine the latest advances in characterization and metrology, including applications beyond CMOS, that will help shape the future of the nanoelectronics industry.

The conference is organized via a partnership between NIST, the

AVS, FIAP/APS, NSF, and SEMI. For additional details, topics, confirmed speakers, and registration information please visit the FIAP/APS website at [www.aps.org/units/fiap/meetings/meeting.cfm?name=FCMN17](http://www.aps.org/units/fiap/meetings/meeting.cfm?name=FCMN17) or our website at <http://www2.avs.org/conferences/FCMN/index.htm>! Please feel free to forward the link to interested colleagues.

For questions please feel free to contact David Seiler, at [david.seiler@nist.gov](mailto:david.seiler@nist.gov).

Regards,

David Seiler, NIST

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## Letter from the FIAP Newsletter Editor *December 15, 2016*

Welcome to our Winter edition of the FIAP Newsletter. I am pleased to have the opportunity to serve as the new editor of the Newsletter. I want to give our heartfelt thanks from the members of the FIAP to Joseph Mantese of United Technologies for his efforts as the previous editor, and his willingness to assist me with the Newsletter in the future. I would also like to thank Steven Lambert

for helping me organize my first issue. We are looking forward to helping the members of the FIAP stay better informed with seasonal issues of the Newsletter.

Sincerely,

Derrick C. Mancini, Illinois Institute of Technology