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## Director's Matters

*Guest column by Gary White, Director, Society of Physics Students*

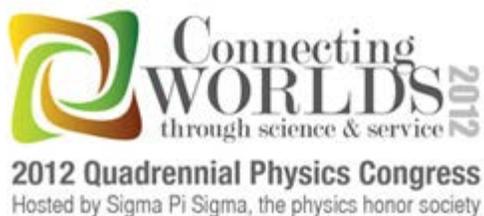


### Imagine Connecting Worlds: The 2012 Physics Congress

Imagine . . . if the earth was the size of a potato, we'd be living our lives entirely within the peel.

I've been thinking about this a lot lately, especially as the 2012 Physics Congress approaches, with its provocative theme of "Connecting Worlds, Through Science and Service," so beautifully rendered in the logo shown. The striking imagery and theme, with its space-based graphics and its cool organic green and brown hues, starts me wondering about other life in this vast universe, and literally, to what other worlds we might connect.

This event is sponsored every four years by the physics honor society, Sigma Pi Sigma, which is housed within the Society of Physics Students at AIP. For what is likely to be the largest gathering of physics majors ever assembled, about 800 participants are expected to meet from November 8–10, in Orlando, FL, near the Kennedy Space Center, to explore this theme.



First, our world: the entire occupancy of this planet, as far as we can tell, is constrained to a thin surface layer of the earth—the peel of our potato—throughout which we space our skyscrapers and stadiums, our mansions, apartments, and igloos, our aircraft and submarines, our tour buses and rickshaws, our cruise ships and dinghies. The thickness of this shell is barely more than a thousandth of the earth's width across, yet it contains virtually all of life that we know about, all manner of microbes, algae, insects, daffodils, vermin, fowl, people, elephants, trees, and whales, not to mention the mountains and oceans! So, if we imagine a gigantic, alien potato peeler, poised to scrape off the usual

amount of skin to make some global fries, all that we know would be taken off with the peel (except, perhaps, a few adventurous souls on the space station and a bit of other space paraphernalia).

Far from making global fries, we have not even been able to reach into our potato planet to any

significant depth at all. Yet we have managed to land on our moon, a smallish cherry tomato that orbits our spud a half-room away—a tenuous connection to another world, but real nonetheless. In this picture, Apollo 13 would be smaller than a red blood cell! When I think about it, travelling essentially without power across that room along gravitational stream lines, around the cherry tomato and back again to the potato, and through the top layer of that skin, it fills me with some serious awe.

"Connecting Worlds" in a literal sense is difficult but . . . well, awesome. Of course, though, the Physics Congress planners are thinking figuratively, too: worlds of public service, worlds of different cultures, and worlds of new technologies, for example. The lineup of speakers is truly amazing—from Jocelyn Bell Burnell, co-discoverer of pulsars, astronaut John Grunsfeld, and Nobel Prize winner John Mather, to author Freeman Dyson, exoplanet pioneer John Johnson, and binary star expert Mercedes Richards—and is filled with scientists who have really shown how to serve society and connect the uninitiated with their cutting-edge science. In some ways, though, the heart of the Congress is the sequence of workshops in which participants discuss and debate the future directions of the societies (SPS and Sigma Pi Sigma) after hearing from scientists in the trenches. Topics like Connecting Scientists and Science Policy, Connecting Science and Technology, Connecting Students and Careers, and Connecting Physics and the Public are sure to engage the participants and provide actionable outcomes. Bookending the Congress will be tours of the Kennedy Space Center and an art competition, rounding out the experience and better connecting the left and right brain worlds, if yours were ever feeling disconnected.

So, consider connecting your disjoint worlds, be they spud-like or not, and join Sigma Pi Sigma at the Physics Congress. Registration begins in May, and you can check out further details on the conference website, <http://www.spscongress.org/>.

## Publishing Matters

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### AIP welcomes new managing editor

AIP's Publisher's Office is pleased to introduce to the AIP community a new managing editor: Kharissia Pettus. Kharissia received her PhD in chemistry from the University of California, San Diego, and some of her research was published in AIP's own *The Journal of Chemical Physics*. She has worked in an editorial capacity on both journals and textbooks and has a master's of public administration, with a concentration on environmental policy. Kharissia started work at AIP on February 24, and will be applying her knowledge and experience to ensure the success of a subset of AIP journals. She will work closely with the editors as well as the author/reviewer community to focus on analysis and strategy for editorial development. Join your colleagues in welcoming Kharissia to the AIP publishing team.



## Physics Resources Matters

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### News from the Biophysical Society and The Optical Society

AIP's Media Services team mustered their resources to help communicate big

news from the Biophysical Society's 56th Annual Meeting in San Diego, CA, which was held the last week in February. This meeting featured research at the boundary between biology and physics, with topics that ranged from potential new targets for [treating Alzheimer's disease](#), to the powerful [double punch of artificial drugs](#) and how we can learn a bit about cardiac health from the humble [hibernating woodchuck](#).



One week later, the team also supported The Optical Society by helping to promote the cutting-edge research presented at the Optical Fiber Communication Conference and Exposition/National Fiber Optic Engineers Conference (OFC/NFOEC), which was held March 4–8 at the Los Angeles Convention Center. This conference covered topics of interest in telecommunications, optical networks, data communications, and more. Of particular interest were two presentations: a new [graphene-based optical modulator](#) that is poised to help break current data speed records and an equally record-setting [wireless data bridge](#), which took communications that important "last mile."

### Happenings on "The Hill"

February and March have been months of many hearings and a lot of activity on Capitol Hill. Members of Congress have had the opportunity to ask questions regarding President Obama's FY 2013 budget request during hearings on the requests for several federal agencies. Representatives have inquired about duplicative research and development programs, how to improve US science education, homeland security, and the direction of next-generation space programs. They have honed in on specific initiatives including commercial space transportation issues within the Federal Aviation Administration and major research equipment and facilities construction at the NSF. Representatives discussed how we can prioritize science programs on subjects including cybersecurity, satellite technology, and clean energy. They have asked how the science community is working to increase American competitiveness and what scientists can do to improve our technology workforce needs.

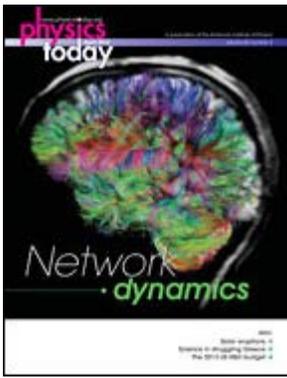


A hearing in the House Committee on Science, Space, and Technology addressed the challenges and opportunities associated with the International Space Station, and a hearing in the House Energy and Commerce Committee addressed what can be done regarding rising gas prices. American competitiveness was the ongoing topic of numerous discussions in the Senate as well as the House of Representatives.

The Government Relations team summarizes these and other hearings in [FYI: The AIP Bulletin of Science Policy News](#). Staff also met with members of Congress to discuss the importance of sustained science funding during this climate of tightened budgets.

### Off the Press

**Physics Today, April 2012 issue.** Cover—The human brain consists of nearly



$10^{11}$  neurons and some  $10^4$  times that number of connections, organized into a complex network of local circuits and long-range fiber pathways. The diffusion spectrum image shown here reveals part of that web: The threadlike structures are nerve bundles, each containing thousands of nerve fibers. The brain is just one of countless networks whose behavior scientists seek to understand. For details on their properties and often counterintuitive dynamics, refer to the article by Adilson Motter and Réka Albert on [page 43](#). (Image courtesy of Van Wedeen and Lawrence Wald, MGH-UCLA NIH Human Connectome Project.)

## Coming Up

Wednesday, April 11

- Employee birthday breakfasts (College Park, MD, and Melville, NY)

Thursday, April 12

- Committee on Publishing Partnerships meeting (College Park, MD)

Friday, April 13

- Congressional Fellows interviews (College Park, MD)

April 14–15

- AAS-sponsored workshop on observations and outreach for Solar Eclipse 2017 (College Park, MD)

April 16–19

- 2012 Industrial Physics Forum (Trieste, Italy)

April 18–19

- Astronomical Plates workshop, sponsored by AIP Center for History of Physics and AAS (College Park, MD)

April 23–26

- Individual TIAA counseling sessions (Melville, NY)