AIP Matters

Monday, March 28, 2011

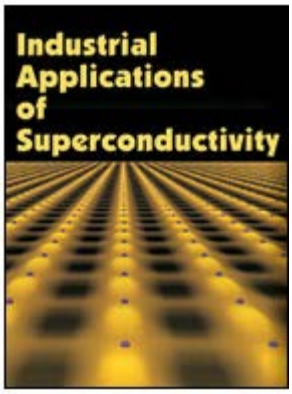
Director's Matters

By H. Frederick Dylla, Executive Director & CEO

Superconductivity in Super Bowl country

For fans of American football, the event of the year was Super Bowl XLV, held on February 6 in the new Dallas Cowboys Stadium. An estimated 58,000 fans viewed the action in person, and more than 110 million watched it on television.

Another super event occurred in Dallas last week—the centennial observance of the discovery of superconductivity at the March meeting of the American Physical Society (APS). Although it can't rival the Super Bowl in size, the APS March meeting—attended by more than 7800 scientists and engineers—is the largest physics meeting of the year.

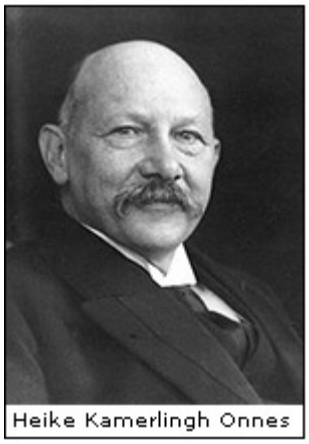


At the meeting, AIP Corporate Associates joined forces with the APS Forum on Industrial and Applied Physics to hold the 53rd Industrial Physics Forum (IPF). Sessions centered on industrial applications of superconductivity—the disappearance of resistance to the flow of electricity in a limited set of materials at low temperatures, a property discovered by Heike Kamerlingh Onnes at Leiden University in the Netherlands 100 years ago.

The 50th anniversary of superconductivity was celebrated at IBM Research Laboratories. During that event, one scientist, Brian Pippard, observed that the essential problems of understanding superconductivity had been solved with the publication of the BCS theory in 1957 by John Bardeen, Leon Cooper, and Robert Schrieffer, a theory which earned the threesome a Nobel Prize.

At last week's 100th anniversary celebration, the first of several IPF sessions explored the history of our understanding of superconductors, with particular emphasis on manipulating properties for practical applications. The audience was treated to a trio of physicists who established their reputations in this field decades ago and are still making contributions: Seamus Davis from Brookhaven National Laboratory, Malcolm Beasley from Stanford University, and Paul Grant, retired from IBM.

The next two sessions explored the applications of superconductivity. A half century after Kamerlingh Onnes's observation, superconductivity was largely a laboratory


Heike Kamerlingh Onnes

curiosity. Fast forward another 50 years to the present: Kathleen Amm from General Electric recounted the successful industrialization of magnetic resonance imaging as a life-saving medical technology, which now represents a multibillion-dollar, worldwide market. Indeed, MRI is the single largest application of superconducting materials to date.

Alex Malozemoff from American Superconductor told us about the current market for superconducting power hardware. His company makes superconducting wire from a class of cuprate materials discovered in 1986 at the IBM lab in Zurich. Why use superconductors in the power grid? One important reason is that superconducting materials can carry much more power than ordinary metal wires. Superconductors can also be used in devices that protect against power surges in the grid. These advantages have been explored in pilot installations in New York City and on Long Island. George Crabtree of Argonne National Laboratory reviewed US Department of Energy studies of superconducting materials, magnets, and electric power applications and how they can help meet our nation's energy needs.

During the second IPF session devoted to superconductivity applications, several speakers focused on small-scale applications, including a rebirth of work of superconducting computer elements based on quantum computation (Michel Devoret from Yale University), superconducting digital electronics used in wireless networks (Oleg Mukhanov from Hypres), detector arrays in the current generation of radio telescopes that revival the resolution of optical telescopes because of low-noise superconducting microwave detectors (Paul Richards from the University of California, Berkeley), the use of the world's most sensitive magnetic detectors (SQUIDS) in fields from geology to medicine to cosmology (John Clarke from UC Berkeley), and the real-life story of a startup company based on magnetic imaging (T. Venkatesan, the founder of Neocera).

For those interested in these superb talks, the speakers provided excellent presentations that were broadcast live as webinars; replays will be available on the AIP Industrial Physics Forum site by April 15. Thanks are due to Bo Hammer from AIP, Kate Kirby from APS, and the IPF planning committee for organizing this splendid event.

PUBLISHING MATTERS

Reaching out to authors in China and Japan

Many prospective authors from non-English-speaking countries need assistance in preparing their manuscripts for English-language publications. They face more challenges than

native speakers in getting their research papers accepted—their English must be as sound as their science. Last week, AIP announced an agreement with Edanz Group to provide local support to Chinese and Japanese authors. Those referred to Edanz by AIP will receive a discount for language-editing services. More importantly, our alliance with Edanz shows AIP's commitment to work with authors to help them successfully publish in AIP's scholarly journals. As part of the agreement, AIP and Edanz will also offer joint training programs on effective communication of scientific research. For more information, see the release.

Journal of Laser Applications relaunched on Scitation

In October 2010, AIP and the Laser Institute of America (LIA), an AIP Affiliated Society, entered into a strategic partnership to leverage our capabilities and strengthen the value of partners' offerings to the community. AIP was entrusted with publishing the *Journal of Laser Applications* (*JLA*)—LIA's flagship journal, which covers topics related to photonic technology—on behalf of the society. Last week the AIP publishing team was pleased to announce the journal's relaunch on Scitation. The dynamic Scitation platform will enhance *JLA* readers' experience by providing more appealing views and by helping them find the information they want more quickly. For more information, see the release.

PHYSICS RESOURCES CENTER MATTERS

Improving *CiSE*'s brand

The importance of product branding was the focus of a recent story in the Bisnow newsletter. The story covered a "Lunch and Learn" session on branding, one of a series of events sponsored by Association Media and Publishing. At the lunch session, association members, including *Physics Today* marketing director Jeff Bebee, shared their expertise on that topic. Bebee talked about when AIP and the IEEE Computer Society decided 11 years ago to copublish *Computing in Science and Engineering (CiSE)*. The organizations thought they had a winning publication because it started off with 10 times the readers of other journals and charged a fraction of the usual subscription price. Yet *CiSE* suffered double-digit renewal declines, and few people were familiar with it. Bebee offered members of AIP Member Societies a discount on *CiSE*, and he found other ways to promote the magazine, such as a successful subscription invitation that was included with reminders for members to renew their dues (see image)—all of which helped increase subscriptions. Even more satisfying, says Bebee, "People don't come up to me [anymore] and say, 'Is this a new journal?' "

WHAT'S HAPPENING THIS WEEK

Tuesday, March 29

- Audit Committee Meeting (College Park, MD)
- AIP Executive Committee Meeting (College Park, MD)

Wednesday, March 30

- AIP Assembly of Society Officers (College Park, MD)
- Blood donation drive (Melville, NY)

Thursday, March 31

- AIP Governing Board Meeting (College Park, MD)

We invite your feedback to this newsletter via email to aipmatters@aip.org.

For past issues of this newsletter, visit the AIP Matters archives.