Particle-physics fireworks on the Fourth of July

This year, July 4 held special meaning for the physics community here and around the world. Very early in the morning, scientists announced evidence that they had detected a new particle, resembling the long-sought Higgs boson, which would provide the last piece in the decades-long puzzle of known subatomic particles and the forces that govern them.

On that day, two international research collaborations working at the Large Hadron Collider (LHC), a $7-billion*, cutting-edge particle physics facility at CERN in Europe, announced their results at a major particle physics conference in Melbourne, Australia.

Beginning at 2:45 am, US Eastern time, AIP news teams were up covering the story for our various news products. AIP staff watched the seminars live on the World Wide Web, which incidentally, was invented at CERN just 22 years ago.

Inside Science posted updates on the dazzling experimental results on their Twitter feeds and Facebook pages as they were being announced. Inside Science editorial manager Ben Stein and graduate-student intern Virat Markendaya produced more in-depth material throughout the day. Virat posted an Inside Science blog entry and prepared a feature article for Inside Science News Service, which was cited favorably by the Knight Science Journalism Tracker. Meanwhile, Physics Today posted updates on its social-media feeds and a Physics Update piece on the Higgs. Physics Today and Inside Science shared information and resources to enhance their coverage of this momentous event.

For the Inside Science News Service feature, Virat interviewed prominent University of Michigan theorist Gordon Kane and Brookhaven National Laboratory’s Howard Gordon, who described the considerable US participation in the LHC. In the two experimental collaborations alone, over 1,500 researchers from the US participate, with considerable involvement from the US national labs funded by the Department of Energy’s Office of Science.
There is perhaps no greater example of the international spirit of science than the LHC. CERN invites participation in its experiments, which are truly probing the frontiers of science, beyond its European Member States to other countries—more than 100 in all, including the United States. One of the spokespersons of the experiments announcing the new particle was Joe Incandela, an American physicist from the University of California at Santa Barbara. In his closing remarks, Incandela said, “I would like to thank the Member States of CERN. I'm not from a Member State, but I think it’s extraordinary that they've opened CERN up and these projects to all countries in the world, and that's a magnificent thing, because these results are now global and shared by all of mankind.”

The LHC results came on the heels of Fermilab's July 2 announcement that an analysis of data from the now-retired Tevatron accelerator provided valuable evidence for the particle as well. Many key papers on the Higgs boson were published in US journals, including a seminal Peter Higgs paper in the 1964 *Physical Review Letters*, published by APS.

Hailing from the graduate science writing program at New York University, Virat is the first participant in an AIP News & Media Services (NMS) internship-for-credit program, the brainchild of NMS's Christina Unger. Through this program, aspiring science writers gain first-hand experience with the Inside Science editorial staff and acquire invaluable published clips for securing a science-writing career in this challenging market. Inside Science plans to continue internships throughout the year, with a fall intern coming from the graduate science writing program at the University of California, Santa Cruz, which NMS science writers Jenny Lee and Catherine Meyers also attended. The students work remotely with Inside Science staff from their campuses and receive internship credit as a result of their experiences.

The newly discovered particle captured widespread attention in the mainstream media. *Physics Today’s Science and the Media* reporter Steve Corneliussen noted a quote from University of Chicago physicist Michael Turner that appeared in *The Washington Post*: “It looks like a Higgs; it quacks like a Higgs; but we need DNA tests (more data) to make sure it is the Higgs.”

The detection of this new particle culminates a search for a heavy particle believed to give mass to elementary particles such as electrons and quarks. If the new particle is indeed the long-sought “Higgs boson,” it would be the last undiscovered particle in the bedrock standard model that describes known subatomic particles and the forces that govern them. But in addition to providing the last piece in the puzzle for the standard model, it opens the way to new physics. Deviations between the standard model's predictions of the Higgs boson and experimentally measured properties of the Higgs can point the way to potentially new particles and phenomena.

In any case, this announcement marks the beginning of an exciting new era for particle physics—one that confirms the value and necessity of international collaborations for pursuing the frontiers of science.

*According to the CERN FAQ-LHC The Guide, accessible from the CERN Facts and Figures page, the LHC cost $6.51 billion Swiss francs to construct, which converts to $6.65 billion US dollars in today's (7/9/2012) exchange rates, which was rounded up to $7 billion for this article. The quoted cost includes machine R&D and injectors, tests and pre-operation.*
Impact factors rise across AIP’s journal portfolio

From a recent AIP press release: The impact factors of many AIP journals have increased significantly, according to the Thomson Reuters 2011 Journal Citation Reports. Among the top performers are The Journal of Chemical Physics, whose impact factor rose by 14%, the Journal of Renewable and Sustainable Energy, whose impact factor rose by 39%, and Physics Today, AIP’s flagship magazine, whose 27% impact factor increase is widely regarded as an impressive achievement for a well-established publication.

This year, Applied Physics Letters and the Journal of Applied Physics retained their positions as the first and second most-cited journals in the Applied Physics category. Also noteworthy, Physics of Fluids holds a position among the top three most-cited journals in both the Physics, Fluids & Plasmas, and Mechanics categories, and Physics of Plasmas continues to be the most-cited journal dedicated to plasma physics. For more information, see the full release.

Physics Resources Matters

New searching capabilities for online oral histories

Niels Bohr Library & Archives staff have just added an important new search feature to AIP’s online oral histories. Users can now search for any word they wish to find across all of the online transcripts. This enables researchers to more easily find interviews that pertain to their area of research. For example, someone researching the “atomic bomb” will find 158 interviews (out of about 770 online) that mention this term somewhere in the interview. Similarly, there are 37 hits for “star wars,” and six for “Higgs.” The search results are sorted by relevance, so interviews with more occurrences of the search term will appear at the top of the search results.

Staff continue to add transcripts to the website on a regular basis and have added audio clips for Bryce S. DeWitt, John Bardeen, Richard Garwin, and others. Of note—the Richard Feynman interview, added to the online collection in March, has quickly become the most popular of all our online oral histories.

Career Network joins IEEE Computer Society at Interop

Last month in Las Vegas, Career Network (CN) partnered with the IEEE Computer Society
(IEEECS) at Interop, an annual gathering of more than 13,000 business-technology professionals.

Career Network has managed the IEEECS jobs board since 2008. At Interop, the IEEECS and CN worked together to promote the website, in conjunction with membership and publications. Besides offering meeting participants a brochure and one-page flier about the job site, CN staff chatted with job seekers and encouraged them to post resumes and search jobs on the site. Dozens of job posting leads were generated at the booth and through informal meetings with other exhibitors.

With IEEECS headquartered in Southern California, the meeting also provided a rare opportunity for CN's Bonnie Feldman and Justin Stewart to meet in person with the dedicated IEEECS staff.

Connecting worlds within the Physics Today's Exhibitor Lounge

In May, Gary White, (now former) director of SPS/SPS, promoted the 2012 Sigma Pi Sigma Congress in a novel way: from the Physics Today Exhibitor Lounge at the CLEO Conference in San Jose, CA. Gary spoke with many exhibitors and companies about sponsorship opportunities. The reception went beyond expectations, as Gary met with decision-makers at small and large companies, many of whom have physics backgrounds. Conversations with these corporate physicists were peppered with nostalgic references to their college days and their own SPS involvement, whether they were at the beginning of their careers or at the top of the corporate ladder. Because the Congress is the world's largest gathering of physics students, it can be a great drawing card for companies that eventually want to hire the best and brightest, and companies that want these future researchers to use their products.

Off the Press

Physics Today, July 2012

Cover: A metronome clicks off musical beats with almost perfect regularity. Humans, in contrast, do not play perfectly on the beat, even when they try to, and the rhythmic imperfections lend warmth to musical performance. As discussed in the Quick Study by Holger Hennig, Ragnar Fleischmann, and Theo Geisel, those imperfections can be statistically analyzed and the statistics applied to give machine-generated rhythms a human touch.
ACP recognized for supporting gift drive

At its 40th Anniversary celebration, the College Park Youth and Family Services (CPYFS) has honored many partners who have supported their services over the years. The American Center for Physics received a certificate of appreciation for four years of participation in the CPYFS holiday gift drive, which provides direct assistance to local families in need. Judith Mulvey of the AIP Statistical Research Center was on hand to accept the certificate on behalf of ACP.

Those present at the celebration heard first-hand accounts of how CPYFS positively impacted the lives of their clients, addressing both material and emotional needs. Thanks to all ACP employees who have contributed to the holiday drive's success. Your generosity makes a difference.

Coming Up

Tuesday, July 10
- Employee appreciation lunches, 12–1 pm (Melville, NY and College Park, MD)

Wednesday, July 11
- July birthday breakfasts (Melville, NY and College Park, MD)

July 15 – 18
- Special Libraries Association Annual Conference (Chicago, IL)

July 24 – 26
- CESSE Annual Meeting (Louisville, KY)

July 28 – August 1
- ACA Annual Meeting (Boston, MA)
- AAPT Summer Meeting (Philadelphia, PA)
Tuesday, July 31

- **Marcum Workplace Challenge**, 7 pm. A 3.5 mile run/walk, accompanied by Long Island’s largest office picnic. (Jones Beach State Park, NY)