Indian institutions, Fermilab team up for SRF technology

From left: Rajeshwar Singh Sandha, RRCAT; Jishnu Dwivedi, RRCAT; Rohan Mittal, Devi Ahilya; Fermilab's Joe Ozelis and Archana Sharma, BARC.

Technical specifications and instructions help, but as Jishnu Dwivedi knows, building a superconducting radio frequency cavity requires more than a few thousand pages of text and diagrams.

"When you read from books, a lot of information does not directly apply to your project," said Dwivedi, a mechanical engineer visiting Fermilab from the Raja Ramanna Center for Advanced Technology in India. "By being here, we can see the components and get a good feel of the design, manufacturing and testing requirements."

In September, Dwivedi finished a three-month stay at Fermilab's Technical Division as part of the collaboration formalized in February between four Indian institutions and Fermilab. Back in India, the collaboration is working on its first single-cell cavity, which will be shipped to Fermilab for processing and testing, Dwivedi said. He expects a more complex multi-cell cavity to be ready in about a year.

Physicists and engineers from Indian institutions are involved in all aspects of Fermilab's SRF development that supports future accelerators. Responsibilities include design and fabrication for a new type of cavity and cryomodule, along with corresponding test stands.

Read more.

— Chris Knight
Call for nominations for the Director’s Award

More than 200 Fermilab employees, users and contractors volunteer their time to support Fermilab’s K-12. These volunteers help education programs at the laboratory’s outreach programs, classroom activities and with the Lederman Science Center exhibits.

Director Pier Oddone wants to recognize their efforts.

The selection committee is asking for nominations for the Director’s Award, an annual award that acknowledges exceptional volunteer work. The winner receives a $1,000 prize.

Employees, users and contractors should nominate volunteers for this award before the Oct. 26 deadline, said Fermilab scientist Herman White, chair of the selection committee.

"We want as big a pool as possible," White said. "We want to not only recognize the award winner, but also some of those others who have been nominated."

Jean Slaughter, of the Accelerator Physics Center, received the 2008 award for her classroom presentations and her role mentoring high school students in research physics.

Nomination forms are available online. Employees, users and contractors are eligible for the award. Submit nominations by e-mail to Gayle Millman or by mail at MS 226.

Director Pier Oddone will present the $1,000 award at the reception, which will take place from 5 to 6 p.m. on Nov. 4 on the second floor crossover.

Learn more.

In the News

The hearing was on the particle physics and nuclear physics programs of the DOE Office of Science. It carried the title Investigating the Nature of Matter, Energy, Space and Time. As far as I know, this is the first hearing on particle and nuclear physics in more than a decade. Preparing for a hearing is always an interesting exercise. Thanks to our historian Adrienne Kolb, I obtained the testimony from past directors Wilson and Lederman, and found some treasures. Wilson's testimony in 1977 is quite remarkable and prescient with the vision of colliding protons and anti-protons at 2 TeV!

Some of the more challenging questions came from the Chairman of the Committee, Representative Brian Baird of Washington state. In particular, he was interested in why we should spend $1.3B per year in particle and nuclear physics when the nation has so many other dire needs. He told us this is a question that he feels he has to answer for his constituents. It is question we must be comfortable in answering. We must be ready to explain what the nation gains by expanding the frontiers of knowledge, by deriving applications that come from the extreme requirements as we expand that frontier, and by the influence that these activities have on science, technology, engineering and math (STEM) education at all levels. The record of our discipline in these three areas is outstanding and we must keep it that way to earn our keep.

Shutdown Report

Oct. 2-5
- Three stores provided approximately 51.5 hours of luminosity
- Three TeV quenches during shot setup
- Power supply repairs held off NuMI
- Accumulator magnet LCW leak
- NuMI horn trips
- Backup helium compressor brought online

*The integrated luminosity from Sept. 28 to Oct. 4 was 40.73 inverse pico barns.

Read the Current Accelerator Update
Read the Early Bird Report
View the Tevatron Luminosity Charts

Legislation is important in setting overall policy both within Congress and the Administration.
Robert Wilson's weird dream lab: Fermilab part 1

From *Summer of Science*, Sept. 26, 2009

Perhaps I'm biased, but Fermilab is one of my favorite places. Not only is it home to the biggest kind of Big Science — the Tevatron — but it also manages to be the quirkiest of the National Labs. I went there for the first time as a science writing intern in the summer of 2005 and, as this trip should make clear, never really looked back.

Fermilab was built on a green field site, meaning that there was almost nothing there before the lab. Since building where there is no existing infrastructure is so much more expensive than upgrading (or simply repurposing) existing lab space and equipment, it is rarely done anymore. The Superconducting Super Collider's green field construction contributed significantly to its burgeoning cost estimates and thus played a role in its cancellation. By contrast, Brookhaven's Relativistic Heavy Ion Collider makes use of a myriad of pre-existing accelerator components and the Large Hadron Collider is housed in the tunnel formerly used by CERN's Large Electron-Positron Collider.

Read more

In the News

Neutrinos could encode messages to submarines

From *New Scientist*, Oct. 5, 2009

Earth-penetrating neutrinos might one day be used to send messages to lurking submarines. The scheme could provide one-way communication with subs without requiring them to surface.

Neutrinos are particles that interact so weakly with matter that they can pass through the planet like light through glass. In 1977, physicists proposed that they might be used to send messages around, or through, the globe. But because neutrinos interact so rarely, the conclusion was that it would be almost impossible to detect a signal.

Now advances in emitters and detectors make a neutrino com-link feasible in the near future, says physicist Patrick Huber of Virginia Tech in Blacksburg, Virginia.

"This whole thing started as a lunch
discussion," says Huber. "You say, yeah people have been talking about that, but it's basically impossible. Then you sit down, do a little calculation, and you find that actually the numbers are not that crazy."

Read more