

Calendar

[Have a safe day!](#)

Friday, Jan. 15

3:30 p.m.

DIRECTOR'S COFFEE
BREAK - 2nd Flr X-Over
THERE WILL BE NO JOINT
EXPERIMENTAL-
THEORETICAL PHYSICS
SEMINAR THIS WEEK

Sunday, Jan. 17

2:30 p.m.

[Gallery Chamber Series](#) - 2nd

Flr Art Gallery

The Chicago Chamber
Musicians

Tickets: \$17

Tuesday, Jan. 19

2:30 p.m.

[Particle Astrophysics Seminar](#)

(NOTE DATE) - One West
Speaker: Marcelle Santos,
University of Sao Paulo Title:
Galaxy Cluster Analysis of the
SDSS Coadd Data

3:30 p.m.

DIRECTOR'S COFFEE
BREAK - 2nd Flr X-Over
THERE WILL BE NO
ACCELERATOR PHYSICS
AND TECHNOLOGY
SEMINAR THIS WEEK

**Click here for [NALCAL](#),
a weekly calendar with links
to additional information.**

[Upcoming conferences](#)

Campaigns

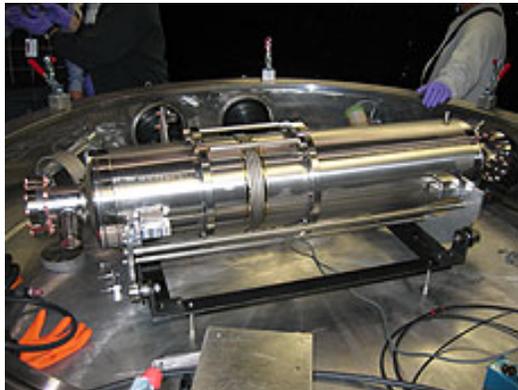
[Take Five](#)

[Tune IT Up](#)

H1N1 Flu

From symmetry breaking

US sends first ILC-type cavities to Japan



ILC-type cavity during helium vessel welding.

A Fermilab shipment of cavities to the Japanese laboratory KEK marks a major milestone in the advancement of US particle accelerator technology and the development of the proposed International Linear Collider.

Fermilab shipped two high-gradient nine-cell ILC-type cavities for use in the S1-global effort, a prototype at KEK of the ILC main linac. These cavities were “dressed”, or sealed in a helium vessel and outfitted with the components needed to hook it up to a power source.

SRF cavities enable accelerators to increase particle beam energy levels while minimizing the use of electrical power by all but eliminating electrical resistance. Future experiments into the origins of the universe and nature of matter, including the proposed ILC and Project X, both of which Fermilab would like to host, will require advanced SRF technology.

“This proves we are ready to seal high-performance cavities in helium vessels and show in tests that they meet ILC standards. That’s not an easy thing to do,” says Tug Arkan, Fermilab project engineer for the cryomodule assembly facilities group, about the US contribution. “Still, it’s not over yet. We still have to put it all together in Japan.”

The processing and assembly of the cavities depended heavily on the contribution of scientists and engineers across the globe, including at [Argonne National Laboratory](#),

Recovery Act Feature

Stimulus spending on SRF heats up with vacuum oven



Paul DeLisle (left), chief engineer at T-M Vacuum Products, stands with Rennie Wessner, vice president of T-M Vacuum Products, in front of the type of vacuum oven that Fermilab will use to treat SRF cavities.

When Rowen Stuffer got into the sheet-metal business in the 1940s, he manufactured ice cream trucks, among other products. Today his business is building equipment for next-generation particle accelerators.

In November Fermilab ordered a \$475,000 vacuum oven from T-M Vacuum Products, the small, family-owned business that Stuffer started 40 years ago. The company now specializes in manufacturing vacuum ovens and furnaces.

Fermilab will use the vacuum oven to treat superconducting radio-frequency cavities. The laboratory made the purchase using funds from the American Recovery and Reinvestment Act.

“It is our first order directly related to the Recovery Act, which is nice to see,” said Rennie Wessner, vice president of T-M Vacuum Products and granddaughter of Stuffer.

Superconducting cavities are the technology of choice for next-generation accelerators and have potential applications in medicine, energy and material science.

In order for a superconducting cavity to accelerate the maximum number of particles over the minimal distance – a performance measure called the acceleration gradient –

For information about H1N1, visit Fermilab's flu information [site](#).

Weather

 **Cloudy**
32°/20°

[Extended Forecast](#)
[Weather at Fermilab](#)

Current Security Status

[Secur Level 3](#)

Wilson Hall Cafe

Friday, Jan. 15

- Chorizo burrito
- Chunky vegetable soup w/ orzo
- Buffalo chicken wings
- Cajun breaded catfish
- Teriyaki pork stir-fry
- Honey mustard ham & Swiss panini
- Assorted sliced pizza
- Carved turkey

[Wilson Hall Cafe menu](#)

Chez Leon

Wednesday, Jan. 20

Lunch

- Penne pasta w/ spinach & mushrooms in Alfredo sauce
- Green salad
- Italian cream cake

Thursday, Jan. 21

Dinner

- Pasta carbonara
- Stuffed filet of sole w/ crabmeat
- Sautéed spinach w/ lemon & pine nuts
- Salad of field greens, pear & shaved parmesan
- Pecan rum cake

[Chez Leon menu](#)

Call x3524 to make your reservation.

Archives

[Thomas Jefferson National Accelerator Facility](#), [SLAC National Accelerator Laboratory](#), [Cornell University](#), [INFN](#), and [DESY](#).

Arkan and two Fermilab technicians followed the cavities to Japan on January 5 to begin the multi-week process of assembling the US-built cavities and two German-built cavities from DESY into an ILC-like cryomodule. INFN in Italy constructed a cryostat to work with the cavities. Next, four Japanese-built cavities will complete a second four-cavity cryomodule. Physicists will test the connections in March.

[Read more](#)

-- Tona Kunz

Photo of the Day

Winter descends on Village



David Shemanske of FESS submitted this photo of impressively long icicles hanging from the roof of a building in the Fermilab Village.

In the News

World experts in Lead this week for DUSEL planning

From *The Black Hills Pioneer*, Jan. 14, 2010

LEAD -- A panel of world experts in underground excavation and design will assemble in Lead this week to discuss their next move in designing a massive cavity for the DUSEL proposal.

A recent contract to determine the properties of rock at the 4,850-foot level of the former Homestake gold mine has been completed, and Dr. Kevin Lesko, lead scientist for the proposal to build an estimated \$550 million federal underground lab in Lead, said he will be in town this week to meet with his Large Cavity Advisory Board to plan the next move. The Large Cavity Advisory Board is comprised of four world experts in underground

scientists use a number of methods to clean and purify the hollow structures. One treatment uses a vacuum oven to bake each cavity at 800 degrees Celsius for hours at a time, removing hydrogen from the pure niobium material.

"Removing the hydrogen helps achieve an optimal gradient," said Fermilab engineer Mayling Wong.

Fermilab required a specialized oven that would not only hold the meter-long cavity but also have an extremely high vacuum and temperature, the essential components for maintaining the ultra-clean environment that the cavities require. T-M Vacuum Products had the technical expertise and the ability to customize the oven for Fermilab's needs, such as making it longer and building a load cart to hold the cavities, Wong said.

T-M Vacuum Products has 38 full-time employees. Each oven takes 4,000 man-hours to assemble, and almost 100 percent of the manufacturing takes place in the company's 53,000-square-foot factory in Cinnaminson, N. J.

"We are very proud of putting on our 'Made in the USA' sticker," Wessner said. "It's not easy to do these days."

Fermilab expects the vacuum oven to arrive in June.

-- Elizabeth Clements

Milestones

Awards:

DOE has awarded five-year research grants to 69 scientists from across the nation as part of its new Early Career Research Program. The following four scientists who received grants conduct their research in connection with Fermilab:

- Valerie Halyo, Princeton University (US CMS)
- Rupak Mahapatra, Texas A&M (CDMS)
- Alysia Marino, University of Colorado (MINOS)
- Chris Mauger, Los Alamos (LBNE)

More information on the awards is given in the [DOE press release](#).

Deaths:

Retired Fermilab employee George Termanen passed away on Tuesday, Jan.

[Fermilab Today](#)

[Result of the Week](#)

[Safety Tip of the Week](#)

[User University Profiles](#)

[ILC NewsLine](#)

Info

Fermilab Today

is online at:

www.fnal.gov/today/

Send comments and suggestions to:

today@fnal.gov

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excavation. Its purpose is to plan construction for a large cavity that is 165-170 feet in length - larger than all the faces of Mount Rushmore. The space will house a neutrino experiment that will shoot a beam of the tiny, elusive particles from Fermilab in Chicago to the 4,850-foot level of the lab. Inside the massive cavity scientists will study the properties of neutrinos in what has been dubbed the Long Baseline Neutrino Experiment. The experiment is one of the largest planned for the DUSEL, and one which has wide-reaching support from multiple agencies and national labs.

[Read more](#)

In the News

Hubble reaches back 13 billion years to reveal Universe 2.0 - Did dark matter destroy the original?

From *The Daily Galaxy*, Jan. 6, 2010

Editor's Note: *This article features Fermilab scientists Dan Hooper and Alexander Belikov.*

No galaxies have been seen before at such early epochs as that seen in this deepest image of the universe ever taken in near-infrared light by NASA's Hubble Space Telescope. The faintest and reddest objects (left inset) in the image are galaxies that correspond to "look-back times" of approximately 12.9 billion years to 13.1 billion years ago.

A longstanding enigma is that it still appears that these early galaxies did not emit enough radiation to "reionise" the early Universe by stripping electrons from the neutral hydrogen that cooled after the Big Bang. This "reionisation" event occurred between about 400 million and 900 million years after the Big Bang, but astronomers still don't know which light sources caused it to happen. These newly discovered galaxies date from this important epoch in the evolution of the Universe.

[Read more](#)

12th, at the age of 90. He served at Fermilab as a design drafter in Accelerator Mechanical Support Drafting from July of 1980 until his retirement in January of 1998. There will be a memorial service for him today at Yurs Funeral Home, Route 25 & 64, St. Charles, from 4 to 6 p.m.

Submit your [milestones](#) to *Fermilab Today*.

Announcements

Latest Announcements

[Renewal of LTD, Life and Insurance Coverages](#)

[Weekly time sheets due today](#)

[Barn dance Jan. 17](#)

[Tai Chi For Health begins Jan. 21](#)

["Evolution in the 21st Century" - Jan. 22](#)

[CSO Musicians perform Sunday in Gallery Chamber Series](#)

[Muntu African Dance Theatre Feb. 6](#)

["BLAST! The Movie": intro, film and Q&A - Feb. 19](#)

[Fermilab Family Open House Feb. 21](#)

[Python Programming class offered Feb. 24-26](#)

[International folk dancing, Thursdays at Kuhn Village Barn](#)

[Scottish country dancing Tuesdays at Kuhn Village Barn](#)

[Argentine Tango at Fermilab through Jan. 25](#)

[Romanian/fusion dance workshop Jan. 28 at Kuhn Village Barn](#)

[English country dancing Feb. 7, with live music](#)

[Applications accepted for awards in URA Visiting Scholars program](#)

[Atrium events - book through Office of Communication](#)

[2010 standard mileage reimbursement rate](#)

[Fermilab Natural Areas newsletter](#)

[Elder Care: Where do I begin? interactive seminar](#)

[FRA scholarship 2010](#)

[East gate began closing 1-5 a.m. Jan. 5](#)

[Submit an announcement](#)

Classifieds

Find new [classified ads](#) on *Fermilab Today*.