

## Calendar

### [Have a safe day!](#)

Wednesday, Sept. 29  
10 a.m.

[Particle Astrophysics Seminar](#) - One West

Speaker: Jorge Molina, Universidad Nacional de Asuncion, Paraguay  
Title: Status Report of the Damic Experiment

3:30 p.m.

DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

4 p.m.

[Fermilab Colloquium](#) - One West

Speaker: Joerg Jaeckel, Durham University

Title: Fundamental Physics at Low Energies

Thursday, Sept. 30  
2:30 p.m.

[Theoretical Physics Seminar](#) - Curia II

Speaker: Basudeb Dasgupta, The Ohio State University

Title: Two Easy Pieces: Self-Interacting Neutrinos and the MSW Resonance for Photons

3:30 p.m.

DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

4 p.m.

[Accelerator Physics and Technology Seminar](#) - One West

Speaker: Sang-ho Kim, Oak Ridge National Laboratory

Title: Design and Operating Experience with the SNS Superconducting Linac

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

[Upcoming conferences](#)

## Campaigns

## Feature

### Heroes of the Tevatron: electrical tape and ingenuity



Tevatron repair team: (from left to right) James Williams, Bill Dymond, Scott McCormick, Sali Sylejmani and Dan Lambert

On Friday afternoon before Labor Day weekend, pressure in the Tevatron's cryostat vacuum system suddenly started rising. The Accelerator Division mechanical support team tracked the issue to a faulty rubber O-ring, the part that seals the vacuum between two superconducting magnets.

Placing a new O-ring around the beamline would have required at least a 10-day shutdown to warm up the Tevatron from about minus 500°F, to disassemble the tube, replace the ring, to complete a full mechanical and vacuum certification of the entire section and to cool it back down. This would have been frustrating for the Tevatron's scientists, who had just ended a scheduled four-week shutdown and were anxious to get back to their experiments.

Accelerator Division mechanical support supervisor Scott McCormick wouldn't accept such a solution.

"This big machine is four miles in circumference, with a thousand-some superconducting magnets, and one piece of rubber is gonna stop us?" he said. "I don't think so. Not if we can help it."

Four years ago, McCormick and senior operations specialist Dave Augustine had done an experiment testing this exact scenario. During a scheduled shutdown, they removed the clamp from a similar juncture and wrapped the interface in electrical tape. The resulting vacuum held for more than a year. In a real emergency, this would buy them more than enough time until a permanent repair could be made.

So, after much discussion and safety optimization, they decided to try it on the actual leak during the holiday

## From FESS

### How data improve operations

*Randy Ortgiesen, head of the Facilities Engineering Services Section, wrote this week's column.*

Since my [last column in July](#), several Fermilab representatives have participated in Mission Readiness peer reviews at Princeton Plasma Physics and Thomas Jefferson Laboratories. Information and processes they discussed during these reviews will assist us in our preparations for Fermilab's Mission Readiness peer review in July 2011.



Randy Ortgiesen

One area of focus for these peer reviews is that of managed data. Before you can manage something, you need to know what it is and how it's being used. This definitely applies to facility and infrastructure data.

At Fermilab, we use three systems for facility management: a Computerized Maintenance Management System; a building controls, automation and monitoring system (Metasys); and a Geographic Information System. We continue to develop new applications for these systems that support and often simplify the work of facility managers, building managers and project planners across the site.

The CMMS includes several thousand pieces of equipment that are identified and tracked for maintenance purposes across all buildings and utility systems to ensure proper and timely maintenance. Likewise, Metasys, a direct digital control system, allows lab personnel to monitor and control operating parameters such as pressure and temperature for critical pieces of equipment such as cooling water systems. If a specific piece of equipment begins to operate outside of the desired range of parameters, Metasys can switch on backup equipment and notify personnel so that they can take preemptive actions to avoid unplanned downtime.

The latest addition to our facility and infrastructure data portfolio is the GIS, which helps us manage the data for all underground utilities including excavation permits, repairs, updates and planning efforts. The laboratory is currently pursuing the ability to link from the GIS to the CMMS and Metasys systems to offer near real-time snapshots of building maintenance and operations.

[Take Five](#)[Tune IT Up](#)[Weather](#)

 Mostly Sunny  
75°/53°

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

[Current Security Status](#)[Secou Level 3](#)[Wilson Hall Cafe](#)

Wednesday, Sept. 29

- Breakfast: English muffin sandwich
- Chicken noodle soup
- Steak sandwich
- Maple Dijon salmon
- Mongolian beef
- California club
- Assorted sliced pizza
- Chicken pesto pasta

[Wilson Hall Cafe Menu](#)[Chez Leon](#)

Wednesday, Sept. 29

- Lunch
- Brandy-pork tenderloin
  - Cauliflower gratin
  - Cinnamon apple crisp

Thursday, Sept. 30

CLOSED

[Chez Leon Menu](#)

Call x3524 to make your reservation.

[Archives](#)

weekend. Four leak detectors, six vacuum pumps, five technicians, one roll of 5/8-inch black electrical tape and a day and a half later, the Tevatron was up and running without a hitch.

"Whenever you are working with a vacuum, there's always an element of risk to the machine," said James Williams, AD senior technician who helped with the fix.

AD run coordinator Cons Gattuso said, "Having the repair only take two days is a big relief when it comes to planning on the run coordination side of things."

Although mechanical failures are much rarer now than they used to be, McCormick said that O-ring failure is likely to occur more often as the Tevatron ages. But even with this solution in hand, the team isn't basking in their success.

"This is our job; it never ends just because we found another solution," McCormick said. "There's always a better, faster, safer way to get us back online."

-- Sara Reardon



A faulty rubber O-ring threatened to take the Tevatron out of operation for more than a week.

[In the News](#)

## Relativity comes down to Earth

From *Nature.com*, Sept. 27, 2010

Albert Einstein's theories of relativity, which predict that relative speed and gravity affect the passing of time, have never been easy to bring home to the general public. In the early 1970s, scientists demonstrated relativity by putting synchronized atomic clocks on jumbo jets that flew eastwards and westwards around Earth. The westbound plane — the one flying against Earth's rotation — gained time compared with a fixed reference clock on the ground. But this wasn't exactly an everyday scenario.

Chin-wen Chou and his colleagues at the National Institute of Standards and Technology (NIST) in Boulder, Colorado, have now demonstrated Einstein's theories on more mundane scales. In tests of the special and general theories of relativity, the NIST researchers show that time speeds up if you climb just one rung up a

These systems will become even more important to Fermilab's mission as we repurpose existing buildings and transition from project to project. They help us minimize the impact on ongoing operations and allow the laboratory and its infrastructure to perform efficiently and effectively.

[Safety Update](#)

## ES&H weekly report, Sept. 28

This week's safety report, compiled by the Fermilab ES&H section, includes seven incidents, none of which were recordable. Three of the incidents required only first aid treatment. Find the full report [here](#).

[Safety report archive](#)

[Accelerator Update](#)

Sept. 24-27

- Four stores provided ~43.5 hours of luminosity
- TeV D1 BPMs problems
- TeV quenched during shot setup
- Time Line Generator problems
- Linac technicians worked on LRF3
- NuMI is off for a month

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

[Announcements](#)

## Latest Announcements

[Dances of France at International Folk Dancing - Sept. 30](#)

[Accelerate to a Healthy Lifestyle program](#)

[Fermilab Prairie Harvest - Oct. 2](#)

[Indian Creek road closed 7 a.m.-3:30 p.m. through Oct. 1](#)

[Americans with Disabilities Act update - Oct. 4](#)

[Mental Health seminar, Part I - Oct. 5](#)

[Autism Awareness seminar - Oct. 6](#)

[Argentine Tango, Wednesdays through Oct. 6](#)

[Toastmasters - Oct. 7](#)

[Fermilab Today](#)[Result of the Week](#)[Safety Tip of the Week](#)[CMS Result of the Month](#)[User University Profiles](#)[ILC NewsLine](#)[Info](#)[Fermilab Today](#)

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ladder, and slows down if you travel at just 36 kilometres per hour. Their results are reported in Science this week<sup>1</sup>.

Holger Müller, a physicist at the University of California, Berkeley, says that the study shows that relativity is no longer confined to experiments working with huge speeds and distances. "This is mainly a grand technological feat, but has an almost philosophical component," he says. "It shows that relativity is something tangible."

[Read more](#)

[Looking for league bowlers](#)

[School's Out Day Camp - Oct. 11](#)

[Fibromyalgia Awareness seminar - Oct. 11](#)

[Mental Health Awareness Part II - Oct. 12](#)

[Down Syndrome Awareness seminar - Oct. 13](#)

[Access 2007: Intro class - Oct. 13](#)

[Excel 2007: Intro class - Oct. 20](#)

[Excel 2007: New Features class - Oct. 20](#)

[Fright Fest discount tickets at Six Flags](#)

[Silk and Thistle Scottish dancing resumes at the Barn Tuesdays](#)

[Regal Movie Theater discount tickets available](#)

[Submit an announcement](#)