

## Calendar

### Thursday, August 10

**2:15 p.m.** Hadron Collider Physics

Summer School Open Lecture -  
Auditorium

Speaker: R. Dixon, Fermilab

Title: Physics with Accelerators - 2

**2:30 p.m.** Theoretical Physics Seminar -

Curia II

Speaker: P. Hernandez, Universidad de  
Valencia

Title: Exploring the Origin of the  $I = \frac{1}{2}$

Rule in Lattice QCD

**3:30 p.m.** DIRECTOR'S COFFEE

BREAK - 2nd Flr X-Over

**3:45 p.m.** Hadron Collider Physics

Summer School Open Lecture -  
Auditorium

Speaker: M. Shapiro, Lawrence Berkeley  
National Laboratory

Title: Simple and Compound Objects - 1

**4:00 p.m.** Accelerator Physics and

Technology Seminar

Curia II (NOTE LOCATION)

Speaker: R. Johnson, Muons, Inc.

Title: Muon Beam Cooling for Colliders,  
Neutrino Factories, and Experiments

### Friday, August 11

**2:15 p.m.** Hadron Collider Physics

Summer School Open Lecture -  
Auditorium

Speaker: M. Shapiro, Lawrence Berkeley  
National Laboratory

Title: Simple and Compound Objects - 2

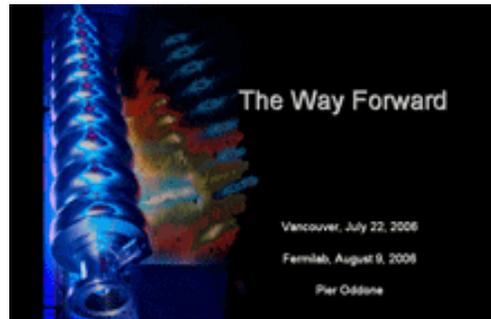
**3:15 p.m.** DIRECTOR'S COFFEE

BREAK - Atrium (NOTE TIME and  
LOCATION)

**3:45 p.m.** Hadron Collider Physics

Summer School Open Lecture -  
Auditorium

## Odone outlines 'The Way Forward' in talk on ILC



Click image to see the slides from Oddone's talk (pdf file).

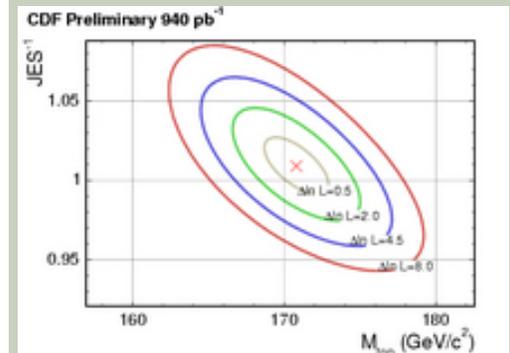
In a talk yesterday, Pier Oddone described the direction of High Energy physics in the world, the nation and at Fermilab. He touched on the importance of reports such as "Rising Above the Gathering Storm" and "EPP2010" for US HEP, and noted that Europe and Japan have followed suit with recent reports on HEP priorities in their regions.

Odone also described the recommendations of the P5 panel for the United States: to keep the ILC and LHC the highest priority while supporting four new projects for FY08, including the Dark Energy Survey; a more advanced Cryogenic Dark Matter Search; the Daya Bay neutrino experiment in China; and the NOvA experiment, which will study neutrinos sent from Fermilab to Minnesota. "We have a large role to play in NOvA," he said.

Odone went on to describe R&D efforts for the ILC at Fermilab, outlining the \$25-million investment the lab has made in the current fiscal year. He emphasized the need for unified, international support, saying, "all regions should stay

## Fermilab Result of the Week

### Weighing a firecracker



The top mass versus the largest uncertainty in its measurement, the jet energy scale (JES). This is the single best top mass measurement providing the largest weight in the world top mass average.

Imagine trying to weigh a lit firecracker with a short fuse. If the firecracker weighed the same as a gold atom, but was much smaller in size and it decayed faster than any other known particle, then you'd be close to imagining the challenge of measuring the top quark mass.

To measure the top quark mass, physicists need to add up the mass and energy of all the pieces produced in its decay. One major complication in this measurement is that the quarks produced in the decay appear in the detector as broad showers of particles called "jets," which only approximate the original quark energy and direction. The lack of certainty in the jet energies contributes the most to the uncertainty in the top quark mass measurement.

To decrease the overall uncertainty, all of the available detector measurements from each top quark decay are combined into a precise equation. The complicated equation relates the quantities measured from the CDF detector to all of the

Speaker: T. Sjöstrand, Lund University  
 Title: Theory of Hadronic Collisions - 1  
 THERE WILL BE NO JOINT  
 EXPERIMENTAL THEORETICAL  
 PHYSICS SEMINAR THIS WEEK

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

#### Weather



T-Storms **81%/65°**

[Extended Forecast](#)

[Weather at Fermilab](#)

#### Current Security Status

[Secou Level 3](#)

#### Wilson Hall Cafe

##### Thursday, August 10

- Southwestern Chicken Tortilla
- Philly Style Cheese Steak
- Garlic Herb Roasted Pork
- Tomato Basil Chicken Parmesan
- Assorted Slice Pizza
- Marinated Grilled Chicken Caesar
- Salads

[Wilson Hall Cafe Menu](#)

#### Chez Leon

##### Thursday, August 10

##### Dinner

- Seafood Salad
- Veal Saltimbocca
- Julienne of Peppers, Onions and Basil
- Hazelnut Cake w/Crème Anglais

##### Wednesday, August 16

##### Lunch

- Chicken Sate' w/Peanut Sauce
- Marinated Oriental Salad
- Coconut Cake

[Chez Leon Menu](#)

Call x4598 to make your reservation.

strong."

[Streaming video](#) of the talk is available  
 online.

--Siri Steiner

## CMS Silicon Detector: Mission Accomplished!



The final set of CMS tracker outer barrel  
 silicon detectors left Lab B for delivery to the  
 CERN laboratory in Geneva, Switzerland.

On August 8, Fermilab shipped the last  
 set of CMS silicon detector components  
 to CERN. According to Project Leader  
 Lenny Spiegel, Fermilab constructed  
 over 2,700 modules, from November  
 2004 to January 2006.

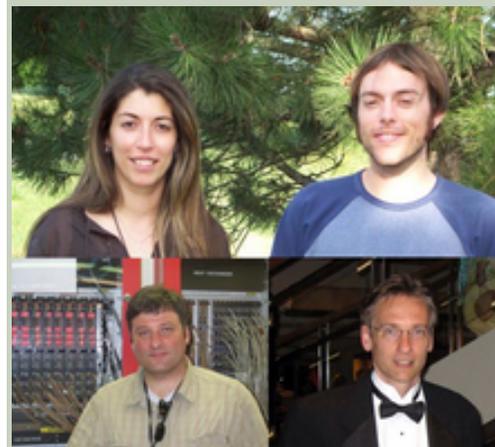
The outer barrel of the CMS tracker  
 system relies on silicon microstrip  
 detectors to detect particle tracks with  
 great precision. A group of U.S. institutes  
 assumed the responsibility to build all the  
 CMS microstrip modules. Half of them  
 were built at Fermilab and the other half  
 at the University of California, Santa  
 Barbara.

At Fermilab, the production relied on the  
 work and expertise of the Silicon  
 Detector Center technical staff,  
 augmented by personnel from other  
 Fermilab groups as well as the University  
 of Rochester. The modules were  
 assembled in groups of six or twelve into  
 rods--thin carbon fiber support  
 structures--and underwent an extensive

possible arrangements of top quark  
 production and decay in order to  
 determine the most probable value of the  
 top quark mass.

Using this approach, CDF has analyzed  
 one inverse femtobarn of data taken from  
 2002 to 2006 to measure the top quark  
 mass to be  $170.9 \pm 2.5$  GeV, achieving  
 a precision of 1.5 percent. This single  
 measurement is the most precise top  
 quark mass measurement to date.  
 Combining the best CDF and DZero  
 measurements in all the top decay  
 channels, the average value for the top  
 mass is  $171.4 \pm 2.1$  GeV. The new CDF  
 measurement contributes about 60  
 percent to this world average.

The value of the top quark mass is  
 important because it helps constrain the  
 mass of a particle predicted by the  
 Standard Model but not yet observed, the  
 Higgs boson. Current top mass  
 measurements are encouraging to  
 physicists looking for the Higgs: the  
 results suggest that first signs of the  
 Higgs are within reach of the four to eight  
 inverse femtobarns of data scheduled to  
 be collected at the Tevatron. Physicists  
 eagerly await new top quark mass  
 measurements from the Tevatron, which  
 are now expected to reach nearly 1-GeV  
 final precision.



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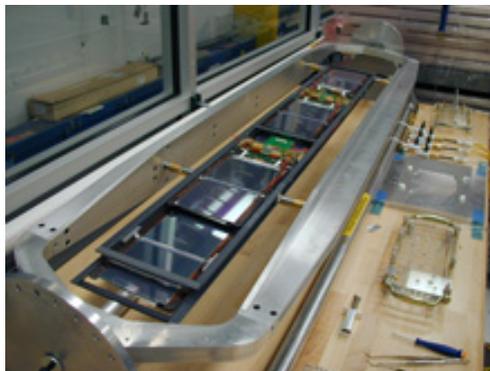
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burn-in process.

"The burn-in is necessary to give experimenters the confidence that the modules will operate successfully at minus ten degrees Celsius," said Spiegel. "It is an essential step in making sure that the modules survive the expected 10-year running period of CMS."

The modules were air-shipped to CERN in large crates holding up to 40 rods. The assembly of the CMS tracker is in progress.

"Our mission is not over," said Deputy Project Leader Hans Jensen. "The rods need to be integrated into the CMS Outer Barrel support structure; the support structure combined with the other major tracking systems; and the entire tracker installed underground at the CMS experiment site. There is still a lot of hard work ahead, including the start-up of operations. But it is nice to see that the work at Fermilab is complete."



A typical CMS tracker outer barrel double-sided rod, mounted on an assembly fixture in the Lab C clean room. Three sets of silicon detectors are attached to the top side and three sets are attached to the bottom side of the carbon fiber support frame.

**In the News**

Clockwise : Florencia Canelli (Fermilab), Brian Mohr, Jay Hauser, Rainer Wallny (UCLA).

**[Result of the Week Archive](#)****Accelerator Update****August 7 - 9**

- Three stores provided 32 hours and 30 minutes of luminosity.
- Water leaks and bad pump motors.

[Read the Current Accelerator Update](#)

[Read the Early Bird Report](#)

[View the Tevatron Luminosity Charts](#)

**Hadron Collider Physics Summer School gets started**

Fermilab Deputy Director Young-Kee Kim talked about using skills honed from working on the Tevatron for the next generation of hadron physics at the LHC.

The nine-day [Hadron Collider Physics Summer School](#) started yesterday. The first public lecture, titled "Physics with Accelerators," was given by AD Head Roger Dixon at 2:30 p.m. Fermilab Deputy Director Young-Kee Kim followed with a lecture titled "Passing the baton: Tevatron-LHC team." A [full HCPS schedule](#) is available online, and you can find a distilled list of this week's [public lectures](#) here. If you can't make it to the lectures, watch them [online](#).

**Announcements**

## **ABC News Online**

**August 9, 2006:**

### **Big Bang machine gears up for atomic smash**

Scientists are close to finishing a machine that is aimed at recreating what they think happened at the beginning of the universe.

One hundred metres under the French-Swiss border, scientists are preparing for their own version of the Big Bang.

Researchers from the the CERN Laboratory in Geneva are working on what is known as the Large Hedron Collider (LHC).

[Read More](#)

### **Note to travelers**

Due to last night's attempted hijacking of an airplane routed from London to the United States, airport security has been heightened. If you plan to travel by air today, please allow extra time for airport security.

[More Information](#)

### **Upcoming Activities**

