

Calendar

Fri., April 6

3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

4:00 p.m. Joint Experimental-Theoretical Physics Seminar - 1 West

Speaker: W. Fisher, Fermilab
Title: Higgs Searches at DZero

Mon., April 9

2:30 p.m. Particle Astrophysics Seminar - Curia II
Speaker: D. Horan, Argonne National Laboratory
Title: VERITAS: Current Status and Future Plans

3:00 p.m. Special Joint Experimental-Theoretical Physics Seminar - 1 West
Speaker: R. Cowan, Massachusetts Institute of Technology

Title: Evidence for D0-D0bar Mixing at Babar

3:30 DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over

4:00 All Experimenters' Meeting
Special Topics: Improvements to Pbar Mining in the Recycler; SciBooNE Detector Move to Enclosure Curia II

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

Weather



Mostly cloudy 35°/19°

[Extended Forecast](#)

[Weather at Fermilab](#)

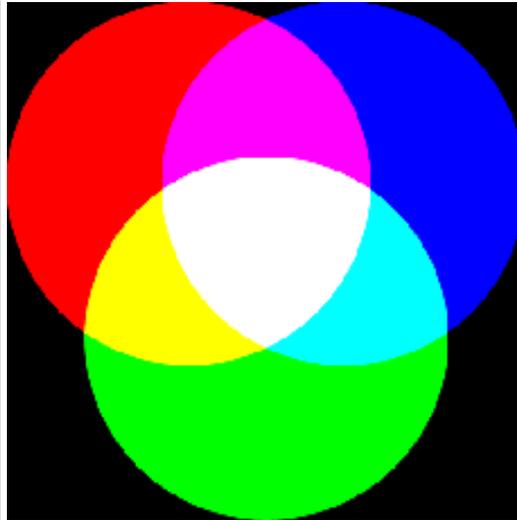
Current Security Status

[Secon Level 3](#)

Wilson Hall Cafe

What's in a Name?

Color charge



When the three additive primary colors are summed together, they produce white; similarly, the three particle color charges sum to a neutral charge.

Quarks, those elusive particles that make up all of everyday matter, are so tiny that not even the strongest microscopes can see them. Yet physicists label them with three different colors: red, green and blue. How can these tiny particles have colors if we can't even see them?

A particle's color label is not connected with its looks, but with its effects. The term stems from the discovery that quarks are held together with a force similar in principle to an electric force, called the strong force. But unlike the electric force, which becomes stronger as two objects become closer, a color force field remains strong as particles move away from each other. While the electric force can have a positive or negative charge, particles interacting through the strong force can have one of three different charges. Just as two opposite electric forces cancel each other's charge, the three color charges -- named after the three additive primary colors -- cancel each other out.

"There are three basic colors with which you can make any other color," said Harald Fritzsch, a professor at the University of Munich. In the early 1970's, Fritzsch and other physicists laid the foundation for the theory of quantum chromodynamics, which recognizes

ILC Newsline

Hot out of the oven, Saclay team improves cavity baking



At Saclay, cavities are baked with an infrared heating source.

Before accelerating electrons and positrons, cavities need to undergo a number of treatments, such as chemical and electropolishing, the last one being baking. The standard baking procedure heats the cavity at 120°C for two days with an ultra high vacuum (UHV) requirement. These very restrictive conditions are unfortunately not appropriate for the treatment of 16,000 cavities that the ILC requires. At Saclay, France, the DAPNIA laboratory has been working on RF cavities for about 15 years, within the TESLA collaboration. Their cavity baking facility recently reached a milestone, showing that the baking time could be reduced to three hours and the UHV conditions may not be necessary, which would be more compatible for mass production of cavities.

This work ensues from the discovery, at Saclay, of the necessity for baking cavities under vacuum to suppress the high field Q-drop (quality factor drop) (see figure 1) and thus improve cavity accelerating gradients. Saclay scientists presented this result at the European Particle Accelerator Conference (EPAC) conference in 1998. Since that time, engineers have used baking to suppress the original Q-drop in all types of cavities, such as TESLA, Ichiro, "Low-Loss" and Re-Entrant shapes.

Friday, April 6

- Beef Pepper Pot
- Buffalo Chicken Wings
- Cajun Breaded Catfish
- Sweet & Sour Pork over Rice
- Assorted Sliced Pizza
- Honey Mustard Ham & Swiss Panini
- Carved Turkey

[Wilson Hall Cafe Menu](#)

Chez Leon**Wednesday, April 11****Lunch**

- Veal Cannelloni
- Caesar Salad
- Tiramisu

Thursday, April 12**Dinner**

- Vol au Vents w/ Mushroom Duxelle
- Asian BBQ Lamb Chops
- Rice Pilaf
- Spinach w/Pine Nuts & Lemon Zest
- Lemon Napoleon

[Chez Leon Menu](#)

Call x4598 to make your reservation.

Archives**Fermilab Today****Result of the Week****Safety Tip of the Week****ILC NewsLine****Info**

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that particles have color charge. Neutral particles that make up matter, such as protons and neutrons, are composed of three quarks, each with a different color charge, and summed together they are color-neutral, or white. Televisions and computer screens use combinations of red, green and blue lights to create the picture on your screen.

"It's partly whimsical," said Fermilab theorist Andreas Kronfeld. "Fritzsch worked with Murray Gell-Mann, who also invented the word 'quark'. He liked to put a little whimsy in it."

--Christine Buckley

Milestones**1967: First users' meeting**

Robert Rathburn Wilson (left) with Ned Goldwasser at a model of the planned 200 GeV accelerator in the National Accelerator Laboratory's Oak Brook office in 1967.

Forty years ago this weekend, Fermilab was only a concept. On April 7, 1967, more than 400 scientists descended on Argonne National Laboratory to discuss the potential for Illinois to acquire the 200 GeV accelerators and a new national laboratory. Today, Fermilab (originally named the National Accelerator Laboratory) is the world's leading research institution in particle physics.

Discussions from the 1967 meeting, which was sponsored by the Universities Research Association, laid foundations for what would later become the first Users' Group. Ned Goldwasser, the lab's first deputy director, recalls the momentous occasion: "We were certainly very enthusiastic [judging] by the audience of physicists who were interested in building and using the laboratory."

In an address on the first day of the 1967 meeting, Illinois Governor Otto Kerner assured everyone that Illinois would be the selected site, and helped to pave the way for acquiring

Read more

-- Perrine Royole-Degieux

Readers Write**Dear FT:**

I read the "Goose Haven" article on [Monday](#) and have a solution. You have heard of the Viper Alarm System for cars: well, here is the unquestionable replacement....

-- Dan Johnson, Accelerator Division

In the News**Scientific American****April 5, 2007:****Bursting magnets may delay CERN collider project**

GENEVA (Reuters) - U.S.-supplied magnets have burst in the world's largest particle collider and experiments aimed at unlocking secrets of the universe may be delayed, scientists said on Thursday.

Fermilab, which built the 13-metre (43-foot) magnets, said it was dumbfounded it had missed "something extraordinarily simple" in the design.

The European Organisation for Nuclear Research, known as CERN, the world's leading centre for particle research, said it was still analyzing the incident which occurred on March 27 at its sprawling underground complex along the Swiss-French border.

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property for the future lab. That day also marked the formal announcement of Robert Rathburn Wilson as the director of the NAL.

Wilson and Goldwasser also used this first meeting to establish the framework for Fermilab's user-friendly principles. "One of the important things that happened was that Wilson took the opportunity to explain that the lab was really a national lab," Goldwasser said. "Until that time, although laboratories had "national" in their name, the labs were really regional. Wilson and I wanted the users to be people who not only visited the lab, but who were involved in the design."

--*Rhianna Wisniewski*

Prairie burns today

Roads and Grounds has scheduled a possible prairie burn for today from 11:30 a.m. to Noon in the northwest quadrant of the Main Ring. If that burn is successful, another would take place later this afternoon south of D road, outside the Main Ring, east of the new bike path near the path heading to DZero. Check the site map [here](#).

VHDL for Hardware Designers

VHDL is a feature-rich hardware description language, well suited to the synthesis and verification of complex system-on-a-chip ASICs and FPGAs. This course is a hardware-oriented VHDL primer for the digital design or verification engineer. Through real-world lecture, insights and lab examples, you will learn to write synthesis-friendly, simulator-efficient code for progressively more complex logic blocks. You will acquire confidence in utilizing the more powerful aspects of the language, while gaining mastery over its intricacies. The course focuses 70% on RTL code for synthesis, and 30% on testbench code for simulation.

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Classifieds

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