

signal to background

Dry run for the money; memories of the top quark discovery; the rise of θ_{13} in neutrino oscillations; *symmetry* gets slashdotted; PANIC: the trouble is in the name; new particle physics posters for schools; letters.



A dry run for money

Graduate students acclimate to sparse levels of comfort, but present and former Fermilab doctoral students Matt Leslie (Oxford University, CDF), James Monk (Manchester University, DZero), and Simon Waschke (Glasgow University, formerly CDF) are reaching for extremes: Taking a 1987 Renault purchased for £100 (US\$180) and driving it 3000 miles from Dover, England, to Banjul, Gambia, on the west

coast of Africa. The three-week journey, beginning December 26, includes a two-day dash by convoy through the Sahara Desert.

The Plymouth-Banjul Challenge 2006, also known as "The Ultimate Banger Challenge," is raising funds for charities in Gambia, one of many African nations decimated by AIDS. The '05 Challenge raised more than £142,000 (about \$255,000). Leslie admits gravitating

toward the adventure aspect, but his Team Gila Monster hopes to raise £3000 for SOS Children's Villages. This Austrian-based charity offers permanent homes and stable environments for children who have lost their parents.

"It is a very sobering subject," he says, "but I've since learned a lot more than I used to know about the problems in Africa, and my priorities have changed a little. SOS Children are helping more than 45,000 children

orphaned by the African AIDS epidemic, and they need all the support they can get. AIDS rates are approaching 40% in some areas of Africa, which means there are villages with no adults left. When you hear this kind of information, it suddenly becomes very hard to think of a more deserving cause."

Go to www.gmonsters.com for more information on Team Gila Monster, the Plymouth-Banjul Challenge 2006, and how to support the SOS Children's Villages.

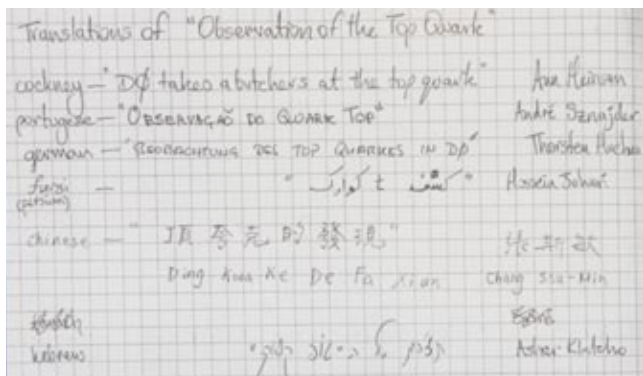
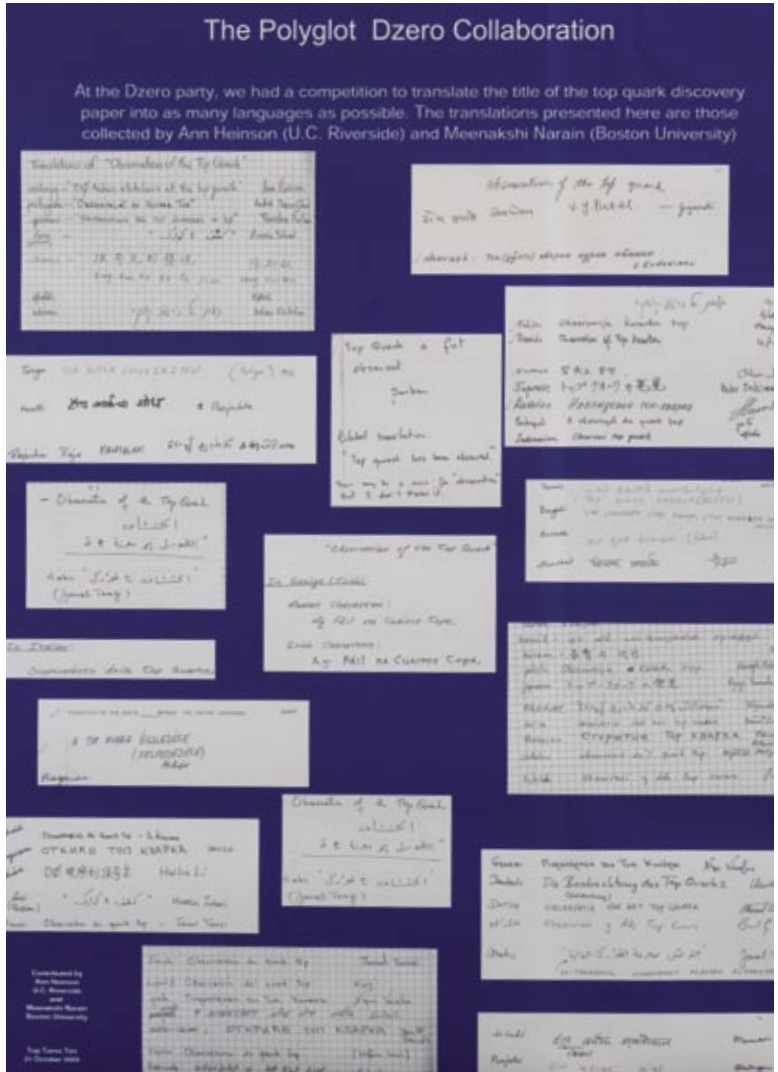
Mike Perricone

Top turns 10, in a manner of speaking

After the discovery of a new elementary particle 10 years ago by Fermilab's CDF and DZero detector collaborations, a group from DZero threw a party. Between bottles of bubbly celebrating the top quark's detection, a contest of brains was in full-swing. The challenge: translate the title of the discovery paper, "Observation of the top quark," into as many languages spoken within the collaboration as possible. The prize: a bottle of wine.

Many of those hand-written translations, which had been saved by DZero physicist Meenakshi Narain, were on display at Fermilab in October as scientists honored the 10th anniversary of the top quark discovery. Hundreds of Tevatron collaborators, past and present, gathered with national and international scientists for the Top Turns Ten celebration. In addition to a day of speeches and reflections, visitors inspected an array of posters highlighting the discovery's technical aspects, its meaning, and the parties that ensued.

Next to a poster of DZero collaborators drinking beer and toasting champagne appeared



Photos: Reidar Hahn, Fermilab

the translations, about 40, in languages from Korean to Berber. "The whole party was into it, walking up to each other and saying 'Hey, I speak this language, what do you speak?'" said Narain, a DZero postdoc at the time of the discovery. "It was a great way to learn about people's backgrounds." With 36 translations, Narain won. But just behind

her was University of California, Riverside, physicist Ann Heinson, an assistant research physicist at the time. One of Heinson's translations: "DZero takes a butchers at the top quark." The tongue: Cockney. "I figured I might as well add my own language," she said.

Kendra Snyder

Neutrinos: a gateway to new physics

Nature provides three kinds of neutrinos. In the last ten years, physicists have gathered increasingly strong evidence for neutrino oscillations, the transformation of one kind of neutrino into another one.

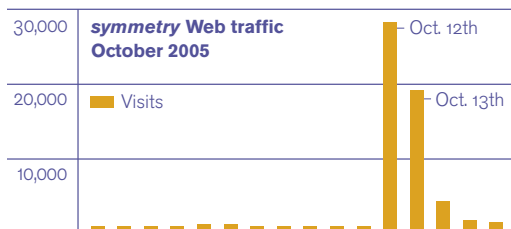
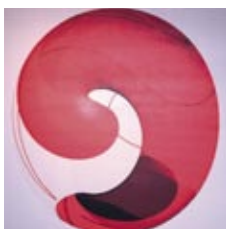
Studying these oscillations in more detail, scientists hope to learn more about the neutrinos' masses and the role of these ghost-like particles in the evolution of the universe.

A crucial quantity related to the mathematical description of these oscillations is the mixing angle θ_{13} (pronounced theta-one-three). Its value is the gateway to understanding whether neutrinos exhibit CP violation, which explains why matter and antimatter behave in slightly different ways.

Theoretical models predict that the value of θ_{13} is nonzero, but current experiments have had no success at pinpointing the actual value. Scientists have proposed new experiments to determine θ_{13} and to explore CP violation.

In the last five years, the number of papers with θ_{13} in the title has grown rapidly (see chart). There are 81 papers with such a title in the SPIRES database, and two of these papers already have over 50 citations, proof that θ_{13} has become a hot topic in neutrino research.

Heath O'Connell, Fermilab



Slashdotted

When the 10th issue of *symmetry* magazine came out on October 12, the magazine's Web server crashed unexpectedly. Looking at the Web traffic statistics, the reason became obvious: *symmetry* had been "slashdotted."

Well-known to tech-savvy Web users, slashdot.org highlights sites of interest around the Web, leading tens of thousands of devoted readers to check out its recommendations. Bombarded like this, Web servers regularly crash: the "/.phenomenon." And so, when the front page of slashdot featured a link to *symmetry*'s gallery of particle physics art from the issue, the server couldn't initially handle the resulting demand; it was set to only accept 175 simultaneous connections, usually more than enough. Within minutes, the Web server was reconfigured and ready to handle the flow of readers from slashdot. And flow they did.

The chart shows the number of visitors per day through the start of October. It peaks at nearly 30,000 on October 12, with another 20,000 visitors on the following day. Traffic has dropped off since the story left slashdot's front page, but residual traffic is still higher than earlier in the month.

If there is any good reason for a Web server to crash, it is because of sudden great interest. For the *symmetry* team, it was a welcome way to celebrate one year of publishing the magazine.

David Harris

PANIC trouble

When physicists organized the first Particles and Nuclei International Conference in 1963, nobody thought that the acronym PANIC could cause trouble in getting the word out about the meeting. That was before the now-common use of email. Sending out information about the 17th PANIC conference, held in Santa Fe in October 2005, organizers discovered that email messages with a subject line containing the word PANIC often did not reach their destination. Welcome to the world of spam filters.

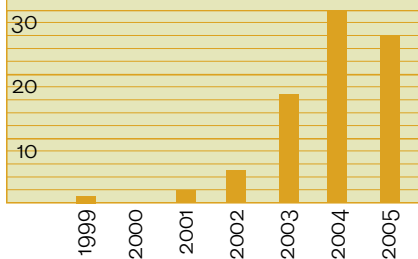
Of course, organizers quickly learned to avoid the problem. More than 500 physicists and 80 students accepted the invitation and attended the meeting, bringing together nuclear and particle physicists from over 20 countries. From neutrino physics to the strong force to high-energy collisions, speakers summarized research results from around the world. The students were the judges for the best talk, voting for Boris Kayser, Fermilab, and his talk on "Status and New Opportunities in Neutrino Physics." Angela Olinto, University of Chicago, and Mark Trodden, University of Syracuse, were runners-up.

The next PANIC conference will take place in Eilat, Israel, in 2008. The first PANIC conference in Israel took place in 1967—long before the introduction of spam filters. Conference organizers, please take note.

Kurt Riesselmann

The number of papers with θ_{13} in the title

*data for 2005 are not yet complete



Particle physics goes to school

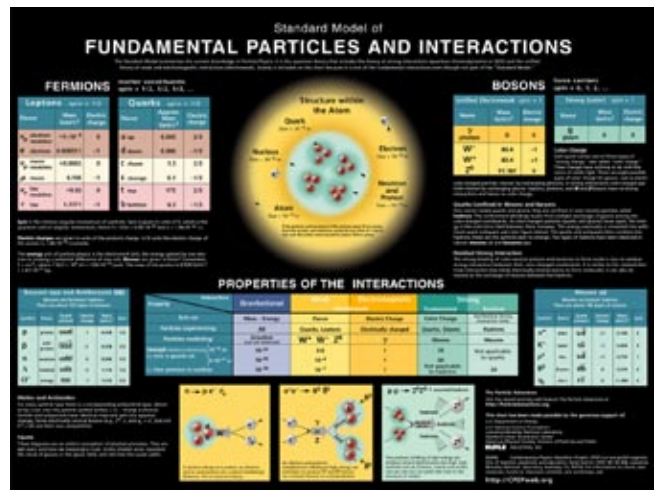
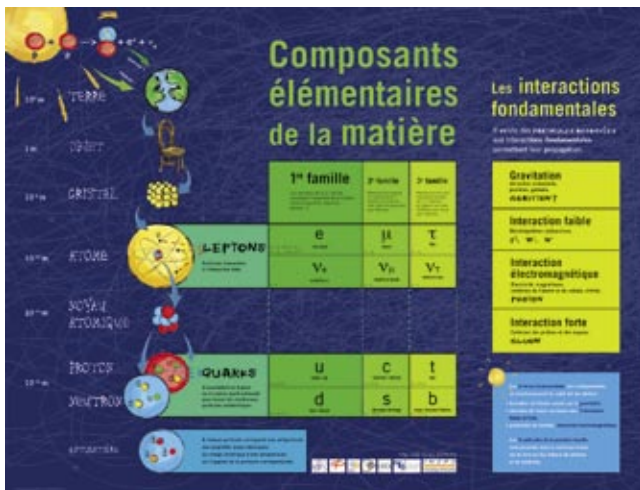
Students around the world are familiar with the periodic table of elements, a chart that outlines how protons, neutrons, and electrons form more than 100 different types of atoms. But do students know that quarks, gluons, and other fundamental building blocks of matter also have a table of their own? In honor of the World Year of Physics, a group of French physicists and teachers set out to provide all high school classes in France with a new poster representing the elementary components of matter. A team of graphic design students from *École Estienne* in Paris created the poster, and 20,000 copies were

sent to 3600 French high schools on October 10. The schools also received copies of an eight-page leaflet and a CD that provide teachers and students with additional information.

The French initiative followed the groundbreaking work of the Contemporary Physics Education Project, a US-based non-profit organization that has created educational material for more than ten years (www.cpepweb.org). CPEP is well-known for its series of posters that explain the fundamental nature of matter and energy, and it has distributed more than 200,000 posters and other educational products around the world.

Featuring fewer details and a new design, the French poster is a simplified version of CPEP's Chart of Fundamental Particles and Interactions. CPEP's award-winning Web feature "The Particle Adventure" (www.particleadventure.org) provided the basis for the content on the French CD. Other nations are welcome to reprint or adapt the new poster free of charge (available in French and English at <http://sfp.in2p3.fr/affiche>). Canada has already distributed 6000 posters among its high schools, and several other countries have shown interest. For information, contact Guy Wormser, LAL Orsay, at wormser@lal.in2p3.fr.

Kurt Riesselmann



Letters

Career advice

In response to the letter headed "Careers in particle physics," by Tomo Lazovich (*symmetry*, October 2005).

In the recent book of the letters of Richard P. Feynman, there are many letters asking him for advice such as Mr. Lazovich seeks on pursuing a career in physics. Feynman's responses are valuable for any career in any field. Anyone who has not yet read this book, *Perfectly Reasonable Deviations From the Beaten Track*, edited by his daughter Michelle Feynman, will find this close association with a great Renaissance mind most rewarding.

Suzanne H. Cutts
Providence, Rhode Island

Letters can be submitted via letters@symmetrymagazine.org