

Beyond the Standard Model

Particle Physics Communication

Judy Jackson
Fermilab, InterAction Collaboration

23 October 2009



Strategic communication

- Goal
- Audiences
- Messages
- Tactics

....As opposed to the “let’s do a brochure”
model of communication

Sometimes distinguished from education and
outreach

In particle physics, it's a collaboration

- Funding agencies
- Laboratories
- Universities
- InterAction collaboration



InterAction: A new model for scientific communication



Next meeting
at CERN Nov 2-3

Hamburg, December 2001

The InterAction Collaboration: 2001-



“To support the international science of particle physics and to set visible footprints for peaceful collaboration across all borders.”

Collaboration members

- Brookhaven
- Berkeley Lab
- CERN
- DESY
- Dubna
- Frascati
- Fermilab
- Gran Sasso
- IHEP Beijing
- ILC GDE
- INFN
- IN2P3
- IPMU
- IRFU
- KEK
- NIKHEF
- SLAC
- STFC
- TRIUMF

The Quantum Universe tradition

- Communicators and physicists on the same team from the beginning
 - Quantum Universe 2004
 - Exploring the Quantum Universe 2005
 - Deep Science 2007
 - P5 report 2008
 - “Accelerators for America’s Future” 2009
 - Members of experiment collaborations
 -a way of life?



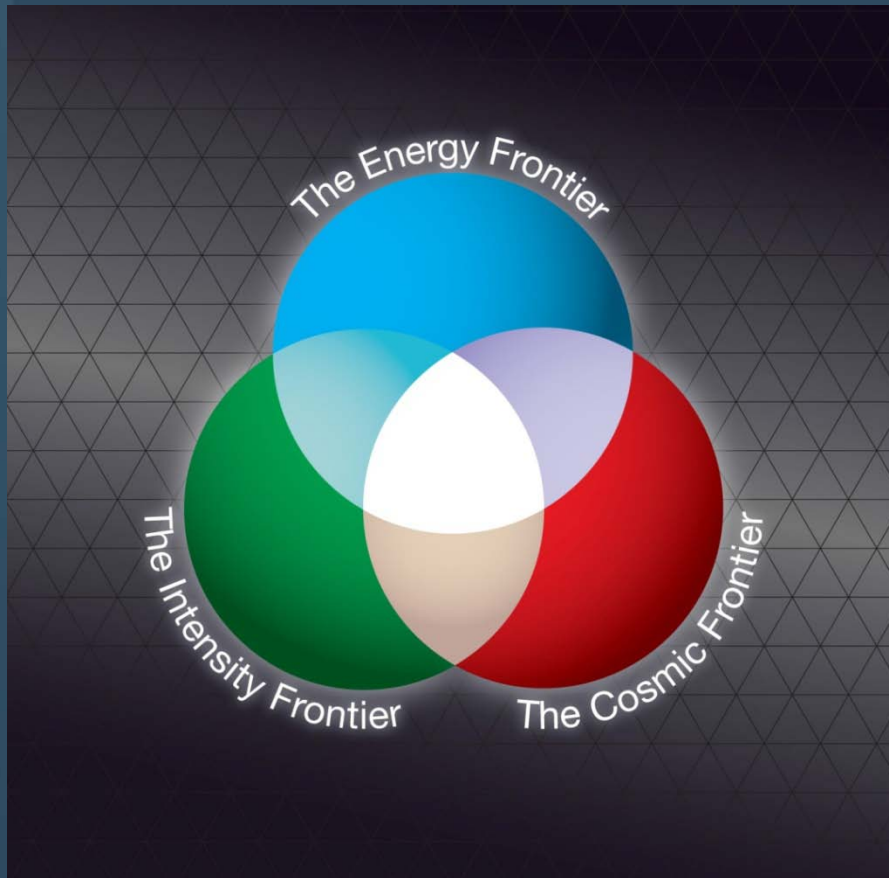
Goal

- A strong and healthy US research program at the frontiers of 21st-century particle physics

Audiences

- Policy makers and opinion leaders
- The scientific community
- The national and international particle physics community
- Our neighbors
- The science-attentive public
- Students and teachers at all levels
- The media
- Industry

Messages

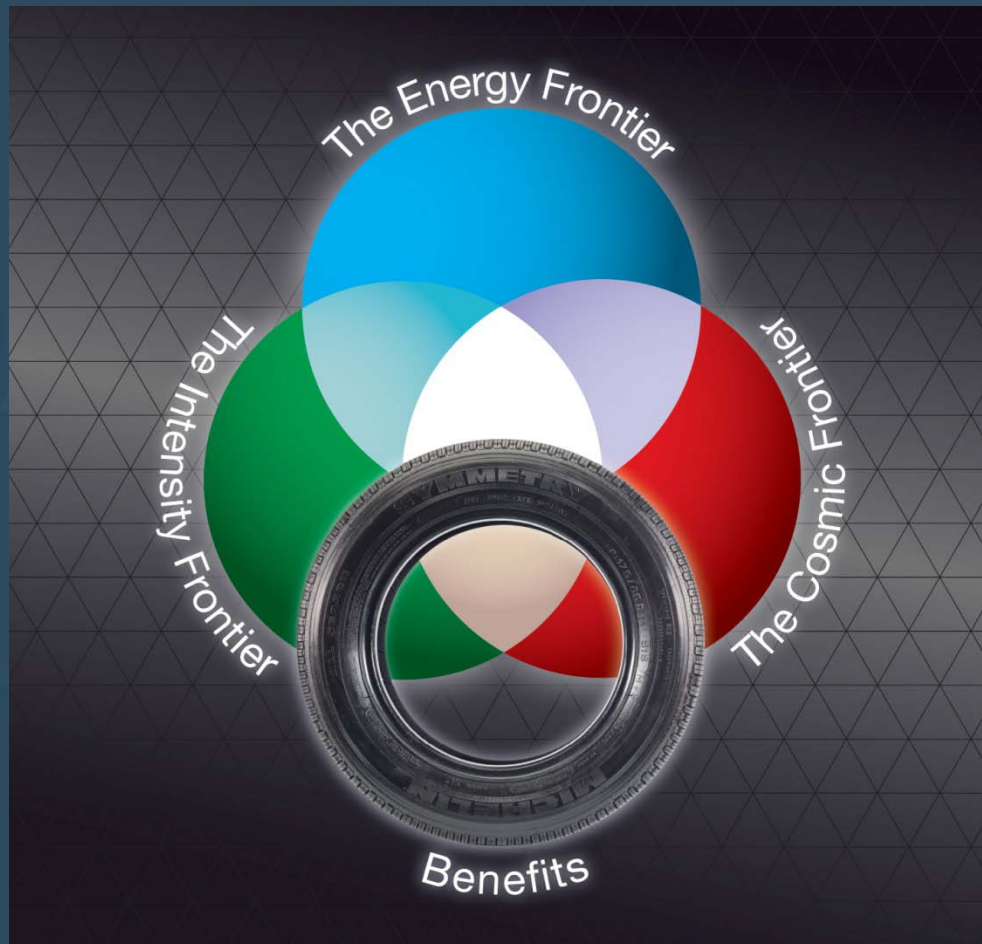


Three frontiers
of particle physics

Key questions—
excitement,
scientific opportunity

Critical focusing
tool

Messages: A new emphasis on applications

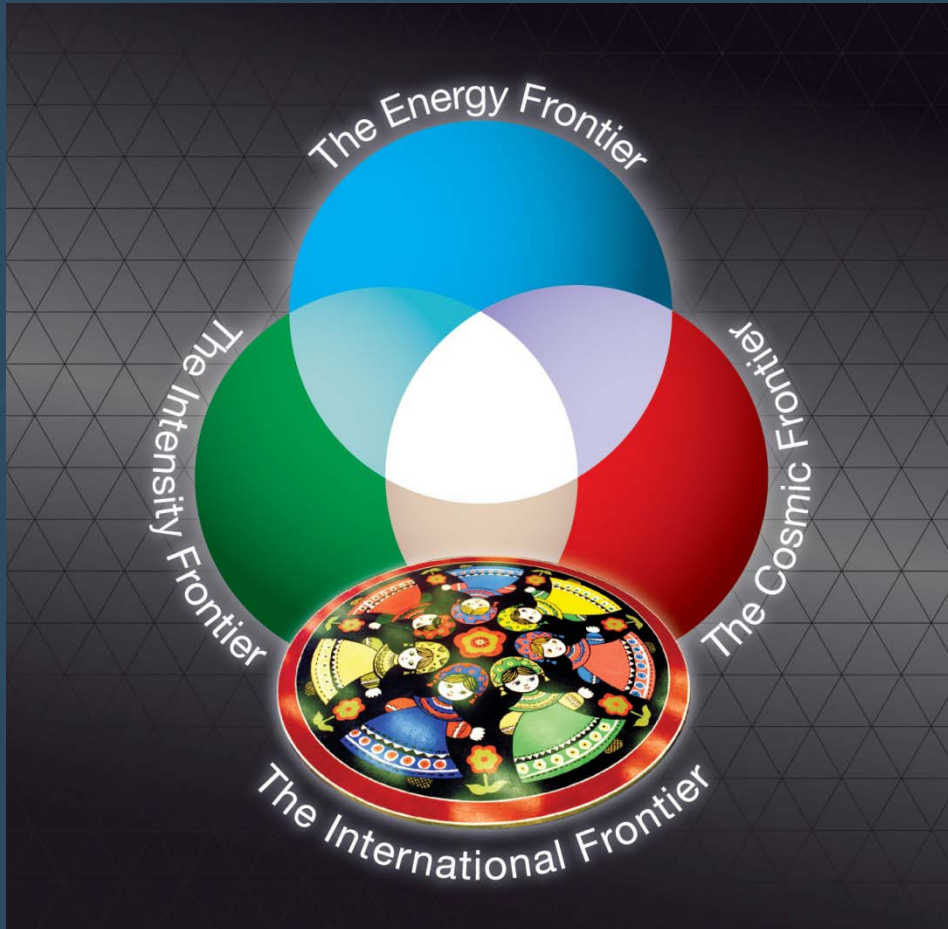


Where the rubber—
literally—
meets the road

New Web sites,
new symmetry
feature

(electron beams
polymerize rubber
in every radial tire)

Messages: International collaboration



A thoroughly international science

First Fermilab experiment, E-36A, 1971



Fermilab cafeteria

Experiment E-36A
proton-proton scattering
Fermilab, JINR,
Rochester, Rockefeller
February 1971

Lingua Fisica: CDF and DZero

CDF

Assyrian
Belorussian
Bengali
Cantonese
Catalan
Croatian
Czech
Danish
Dutch
English
Finnish
Flemish
French
Gaelic
German
Georgian
Greek
Hebrew
Hindi
Hungarian

Italian
Japanese
Korean
Leccese
Luxembourgish
Mandarin
Marathi
Persian
Polish
Portuguese
Romanian
Russian
Serbian
Slovak
Spanish
Swedish
Tagalog
Taiwanese
Turkish
Urdu

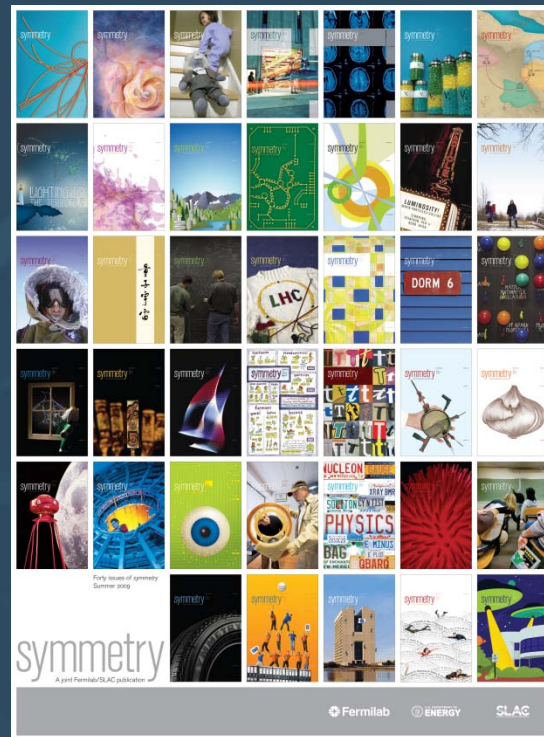
DZero

Afrikaans
Arabic
Armenian
Assyrian
Bangla
Bengali
Cantonese
Croatian
Chinese
Czech
Danish
Dutch
English
French
Georgian
German
Greek
Gujarati
Hebrew
Hindi

Hungarian
Indonesian
Italian
Japanese
Kannada
Korean
Latvian
Limburgs
Malayalam
Mandarin
Marathi
Megrelian
Polish
Portuguese
Punjabi
Russian
Romanian
Serbian
Spanish
Swedish

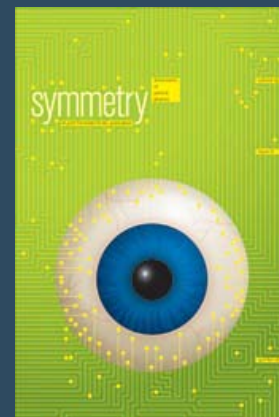
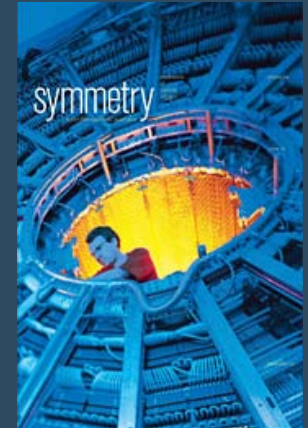
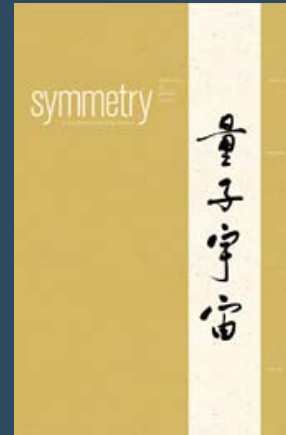
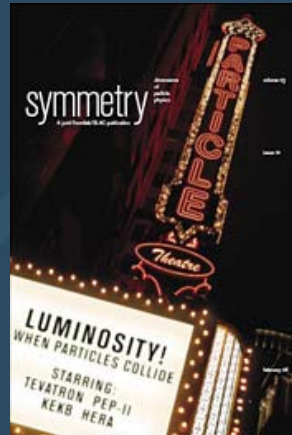
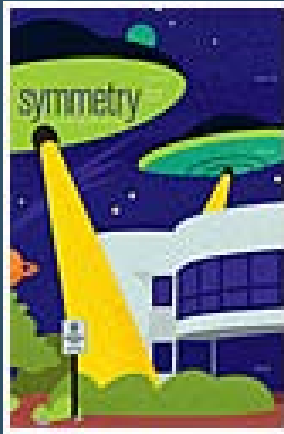
Tamil
The Queen's English
Tulugu
Turkish
Ukrainian
Urdu
Vietnamese
Welsh
Wolof

Celebrating 40 issues of *symmetry*



Now 41...

Joint SLAC-Fermilab publication



symmetry breaking

symmetry Magazine - Windows Internet Explorer provided by Fermi National Accelerator Lab

http://www.symmetrymagazine.org/cms/

symmetry Magazine

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SEARCH

symmetry dimensions of particle physics
A joint Fermilab/SLAC publication

VOLUME 06 ISSUE 02 MAY 09

ISSUE CONTENTS

A New Leader for CERN

In his first few months on the job, CERN Director-General Rolf-Dieter Heuer opens new lines of communication, oversees repairs to the Large Hadron Collider, and promotes a worldwide strategy for particle physics based on a strong mix of global, regional, and national projects.

[Read more](#)

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Editorial: Particle Physics Revitalized

Particle physics feels like a different enterprise compared with one year ago. Rapid scientific progress and a new budget scenario have enlivened the field.

[Read more](#)

Commentary: Pier Oddone

"When questions arise about how the Higgs boson connects to buying another bag of groceries, we need to pay attention, because our fellow tax-paying citizens are the ones who pay the bills for US particle physics. They have a right to know what they are getting."

"Beyond our wildest dreams": Fermi scope bags 16 gamma-ray-only pulsars
July 6, 2009
The Fermi Gamma-ray Space Telescope has now identified 16 pulsars--fast-spinning, ultradense neutron stars--that emit gamma rays, but not radio waves. This new class of objects provides insights into how gamma-ray emissions arise.

A milestone for ArgoNeUT
July 3, 2009
The Argon Neutrino Teststand, or ArgoNeUT, has seen its first neutrino--the first one observed by a liquid argon detector in the United States.

Data-taking dress rehearsal proves world's largest computing grid is ready for LHC restart
July 1, 2009
The world's largest computing grid has passed its most comprehensive tests to date in anticipation of the restart of the world's most powerful particle accelerator, the Large Hadron Collider (LHC). The successful dress rehearsal proves that the Worldwide LHC Computing Grid (WLCG) is ready to analyze and manage real data from the massive machine.

Start Outlook Express C:\Documents and ... TAUP.ppt [Compati... Eric 9 July 09.ppt [... symmetry Magaz... 3:58 AM

symmetry statistics

- Distribute ~20,000 print copies/month (quite stable, not trying to grow much, target audiences)
- Web site, including symmetry breaking, gets ~150K unique visits/month (peaks to 200K)
- 1,500 Facebook friends
- 750 followers on twitter (lots of retweeting going on)
- ~15% of Web traffic generated by Facebook and twitter

Dear *symmetry*

- **From an FRA lobbyist, July 30, 2009:** I was at my old committee – the Senate Energy Committee – the other day and the intern covering the front office was reading – you guessed it – the latest issue of *symmetry*! Awesome!
-
- **From an Office of Science communicator, July 30, 2009:** We've got the latest *Symmetry* on display in our lobby (thanks for sending them to us), and I've become a *symmetry* fan on Facebook. It's everywhere.

Dear *symmetry*

From the President of the National Society of Hispanic Physicists, July 9, 2009:

I wanted to thank you for the great editorial and article on diversity in physics. I appreciate the references to the work of the National Society of Black Physicists and to the National Society of Hispanic Physicists. The two organizations are always ready to work with others on promoting diversity in physics. If you have any thoughts on how we might work together, please do not hesitate to ask.

David Ernst

President, National Society of Hispanic Physicists

Co-Chair, National Society of Black Physicists, Division of Nuclear and Particle Physics

Fellow, National Society of Black Physicists

Dear *symmetry*

- **From a student, July 24, 2009:**
Thanks for bringing the world such a great magazine. I think the quality of your work is outstanding, with articles clearly and carefully edited so that even a (relative) novice to science such as myself can access them, and learn a great deal in the process. It'll be some years before I attain formal qualifications, but a big percentage of my interest in particle physics, and how the theory connects with real-world issues, comes from the inspiration provided by *symmetry* magazine.

International Science Grid This Week

iSGTW INTERNATIONAL SCIENCE GRID
THIS WEEK



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Issue 146: *iSGTW* 14 October 2009

Supercomputing code helps develop new solar cells

■ □ □ □

If scientists could use simulations to zoom in on the atomic level of solar cells, the insight they gain could launch solar power into the next energy orbital.

Unfortunately, those simulations would require an exorbitant amount of computational power.

"Typically we need to simulate tens of thousands of atoms," said Lin-Wang Wang, a scientist at Lawrence Berkeley National Laboratory. "For the conventional code, if the number of atoms increases by a factor of ten, the computational load increases by a factor of a thousand."



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iSGTW 14 October 2009

- [Feature - Supercomputing code helps develop new solar cells](#)
- [Feature - New distributed computing test bed receives funding](#)
- [Feature - Putting Linux on the grid](#)
- [Link of the Week - Check out iSGTW's new Facebook page](#)
- [Image of the Week - BEN goes multi-touch](#)

iSGTW Blog Watch



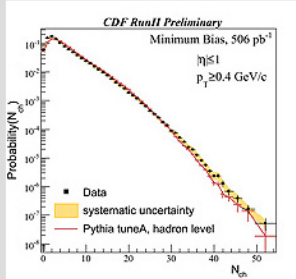
Jointly funded by DOE and NSF

University profiles in Fermilab Today

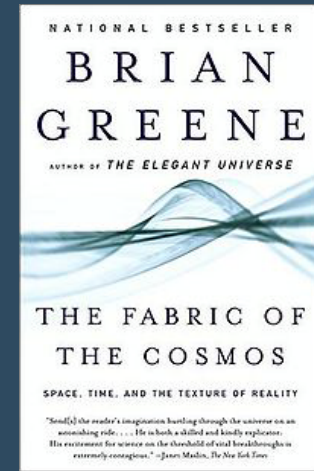
 **Fermilab Today**
Thursday, Oct. 22, 2009

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Calendar	University Profile	Fermilab Result of the Week
<p>Have a safe day!</p> <p>Thursday, Oct. 22 2 p.m. Computing Techniques Seminar - FCC2A/2B Speaker: Andy Terrel, University of Chicago Title: Mathematical Interfaces of Automated Scientific Computing 2:30 p.m. Theoretical Physics Seminar - Curia II Speaker: Uli Baur, SUNY Buffalo Title: Measuring the Higgs Boson Self-Coupling at High Energy e+e- Colliders</p> <p>3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY</p> <p>4 p.m. Extreme Beam: Physics at the Intensity Frontier Lecture Series - Curia II Speaker: Kenneth Long, Imperial College London Title: The Neutrino Factory: Sensitivity for the Next Decade</p> <p>Friday, Oct. 23</p>	<p>Indiana University South Bend</p>  <p>Front row, from left: Joshua Behnke, Phil Mark, applied math; Andrea Vollrath, local science teacher. Rear row, from left: Andrea Palenchar, physics major; Edward Behnke, engineer and physics bachelor of science; Ilan Levine, professor. Not pictured: Brendan Sweeney, physics major.</p> <p>NAME: Indiana University South Bend</p> <p>HOME TOWN: South Bend, Indiana</p> <p>MASCOT: The Titans</p> <p>SCHOOL COLORS: Cream and Crimson</p> <p>PARTICLE PHYSICS COLLABORATIONS: COUPP, PICASSO</p> <p>EXPERIMENTS AT FERMILAB: COUPP</p>  <p style="font-size: small;">Indiana University South Bend's mascot, The Titans</p>	<p>Sorting out the soft mess</p>  <p>The multiplicity distribution in minimally biased data compared to the prediction of simulation.</p> <p>In a proton-antiproton collider, like the Tevatron, the properties of hard head-on collisions of two partons – quarks and gluons that make up the protons – can be calculated using the theory of Quantum Chromo Dynamics (QCD). On the other hand, the majority of the collisions at the Tevatron are softer and produce less energetic particles. In these cases, scientists cannot perform QCD calculations because they are too complex.</p> <p>A model of these soft events requires a complex cocktail of many different physical effects that cannot be described independently. In the most recent models, the best results come from a single proton-antiproton collision that contains</p>

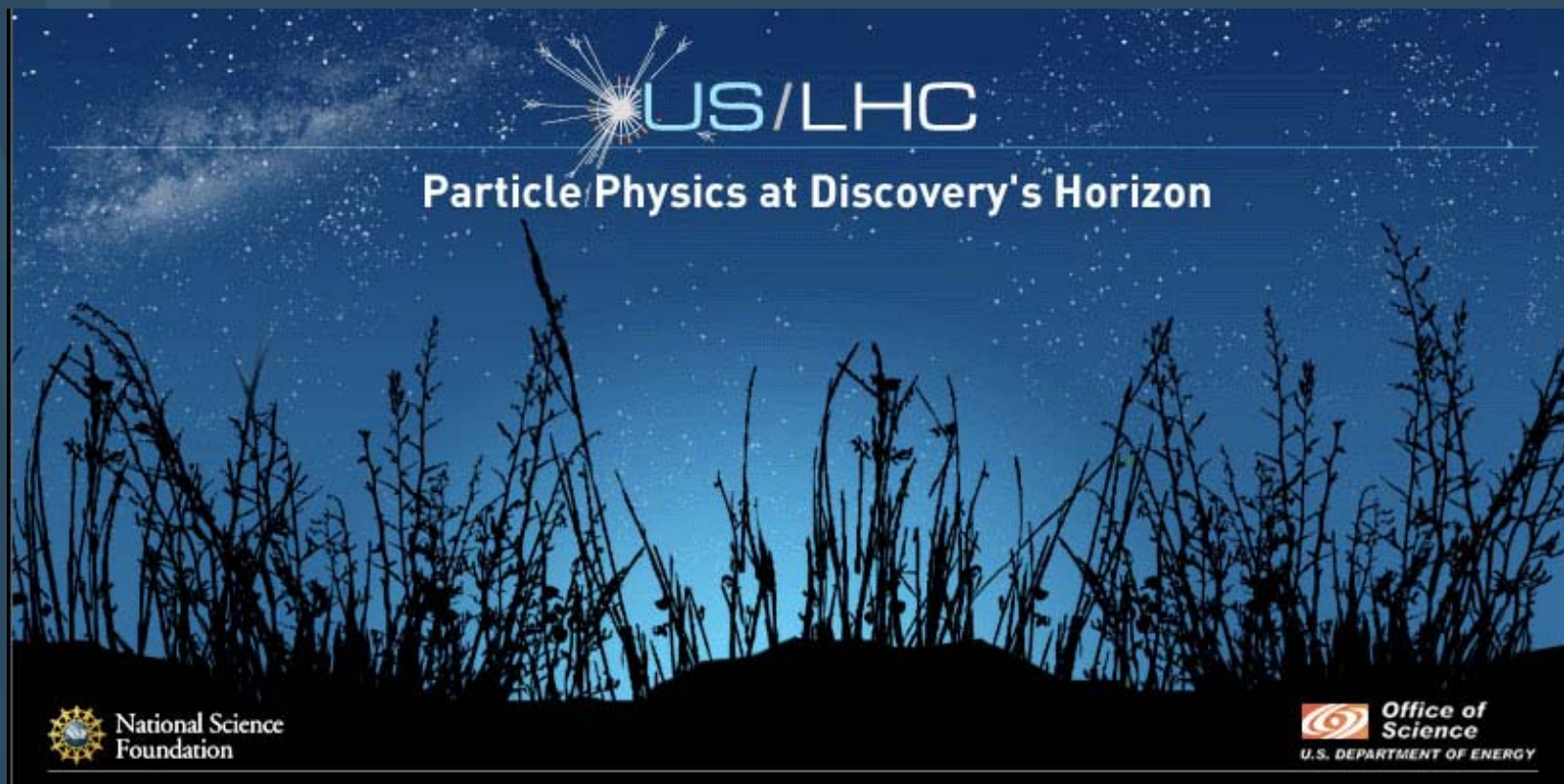
NOVA: Fabric of the Cosmos



Fabric of the Cosmos (Coming in 2010)
In this four-hour miniseries, the team that demystified string theory in *The Elegant Universe*—NOVA and physicist Brian Greene—takes on space and time. This time around, in addition to playful animation and startling effects, they will use real experiments to show that the physical world is far more fantastic than our senses alone can appreciate. Viewers will gain new understanding of the extraordinary nature of the universe, from the incredibly small (quantum mechanics) to the awesomely large (cosmology).

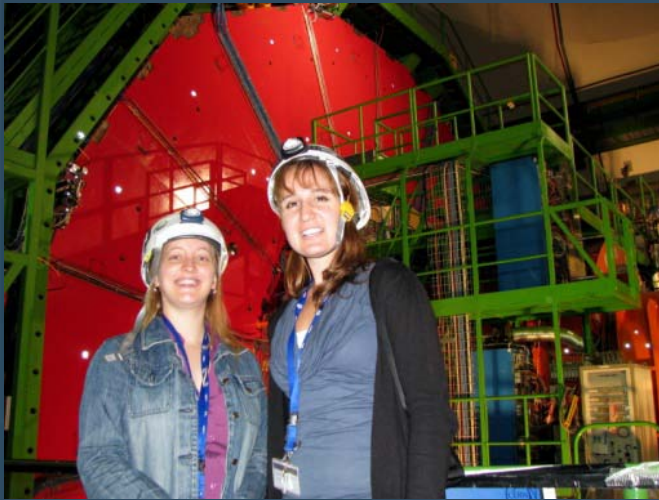
Funding from NSF, OHEP

US LHC communication



US LHC Web site, funded by OHEP

US/LHC Communication



At CMS

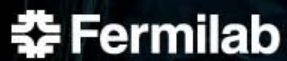


At ATLAS

- Katie Yurkewicz, permanent full time US LHC communicator in CERN Press Office
- Daisy Youhas, intern
- Jointly funded by OHEP and NSF
- A true collaboration of funding agencies, universities, laboratories

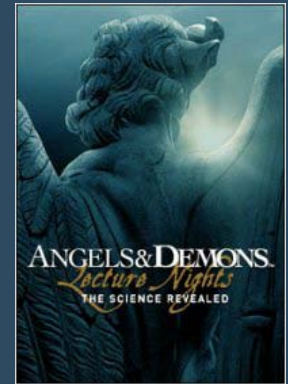
A large, dark stone statue of an angel and a demon. The angel is on the left, with its wings spread and its head turned towards the demon. The demon is on the right, with its head covered in a hood and its body in a long, flowing robe. The background is a dark, blue-tinted cityscape at night, with lights visible in the distance.

ANGELS & DEMONS™
Lecture Night
THE SCIENCE REVEALED



A Golden Opportunity

- Antimatter
- CERN
- Religion
- Murder
- Sex
- Tom Hanks and Ron Howard
- Publicity blitz from Sony Pictures



Public lecture nights

- Excellent example of collaboration
- Universities get the spotlight
- Opportunity to reach thousands
(And we did!)



Resources for lecturers

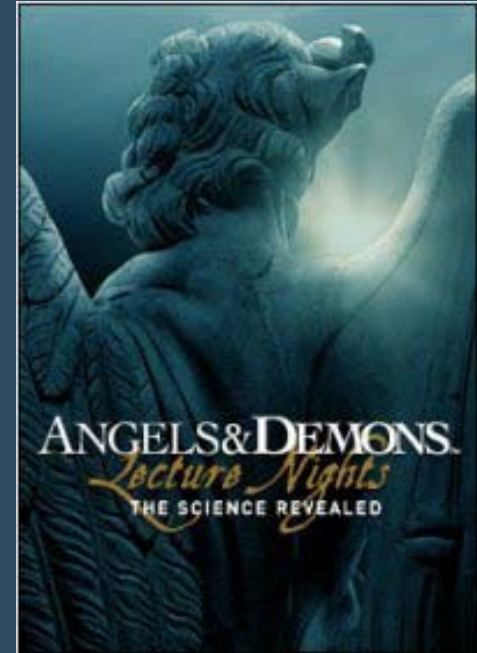
- Web site
- Template poster
- Template talk
- Images and videos
- General tips

(Password protected)



The lectures

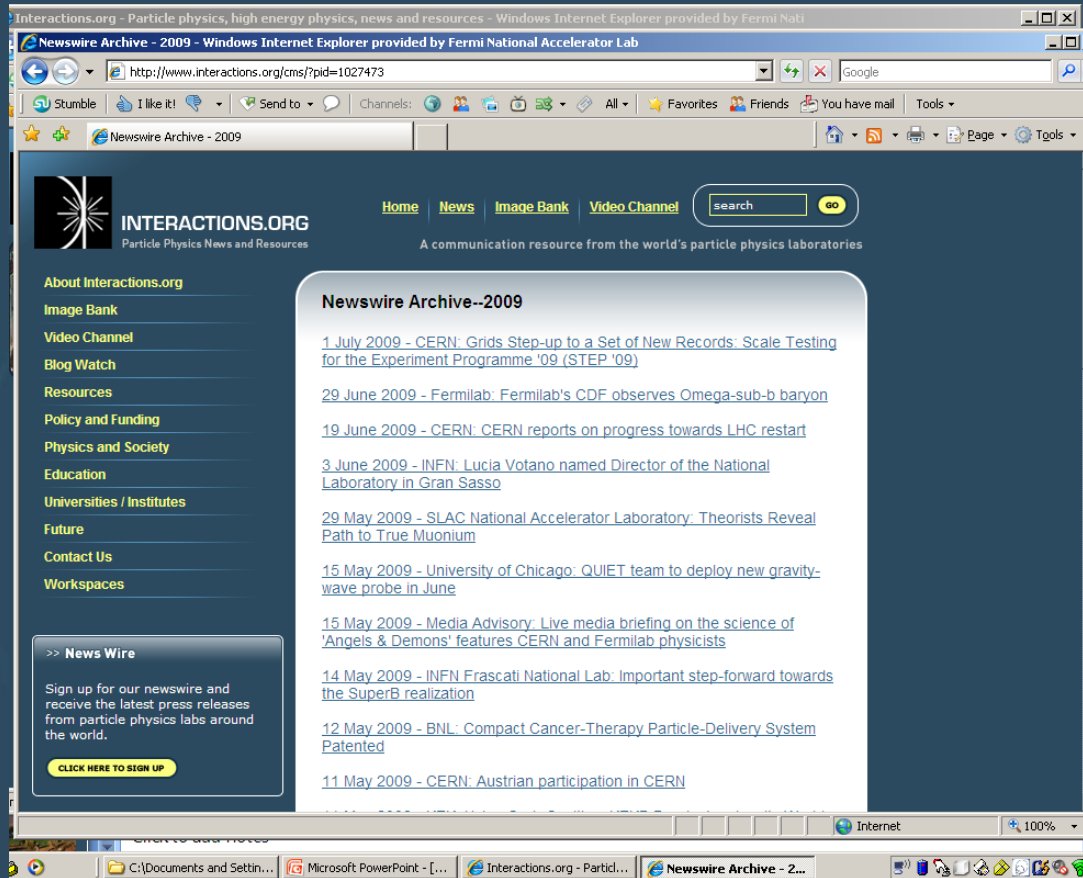
- Total lectures: 61
 - United States – 44
 - Canada - 8
 - France – 4
 - Germany – 2
 - Spain – 1
 - Switzerland - 2
- Total reported attendance: 4,628
- New lecture series now in the works



Tools for particle physics communication

The screenshot shows a Windows Internet Explorer browser window displaying the Interactions.org website. The browser's address bar shows the URL <http://www.interactions.org/cms/>. The website header features the Interactions.org logo, navigation links for Home, News, Image Bank, and Video Channel, and a search bar. Below the header is a large image of a TESLA 9-cell 1.3 GHz SRF cavity, with a caption: "TESLA 9-cell 1.3 GHz SRF cavities. (Courtesy Fermilab VMS) View More Image Bank Images". The main content area is divided into three columns. The left column contains a sidebar with links to various sections: About Interactions.org, Image Bank, Video Channel, Blog Watch, Resources, Policy and Funding, Physics and Society, Education, Universities / Institutes, Future, Contact Us, and Workspaces. The middle column is titled "News" and lists "Latest News Wires" with three entries: "1 July 2009 - CERN Grids Step-up to a Set of New Records: Scale Testing for the Experiment Programme '09 (STEP'09)", "29 June 2009 - Fermilab Fermilab's CDF observes Omega-sub-b baryon", and "19 June 2009 - CERN CERN reports on progress towards LHC restart". Below these is a section titled "Particle Physics in the News" with an entry: "6 July 2009 - Science Centric A galaxy as particle accelerator". The right column is titled "Features" and lists three featured articles: "CERN Bulletin 6 July 2009" (The collider of the future?, Safety at CERN, J-PARC coming to life, The latest from the LHC), "ILC Newslines 2 July 2009" (Polarimeter on the electron stretcher, Cross-field collaboration on photon detectors, "A picture is worth a thousand words"), and "ASPERA This Month June 2009" (The Cherenkov Telescope Array (CTA) lifts off, JEM-EUSO: astroparticle physics @ ZeV, New Opportunities...at CERN).

InterActions Newswire: ~2350 subscribers



The screenshot shows a web browser window displaying the 'Newswire Archive - 2009' page on Interactions.org. The page features a navigation menu with links for Home, News, Image Bank, and Video Channel, along with a search bar. A sidebar on the left contains various categories like 'About Interactions.org', 'Image Bank', 'Video Channel', 'Blog Watch', 'Resources', 'Policy and Funding', 'Physics and Society', 'Education', 'Universities / Institutes', 'Future', 'Contact Us', and 'Workspaces'. The main content area is titled 'Newswire Archive--2009' and lists several news items with their dates and headlines, such as '1 July 2009 - CERN: Grids Step-up to a Set of New Records: Scale Testing for the Experiment Programme '09 (STEP '09)' and '29 June 2009 - Fermilab: Fermilab's CDF observes Omega-sub-b baryon'. A 'News Wire' sign-up box is visible in the bottom left of the main content area.

Protocol for
press releases

Quantum Diaries redux

The screenshot shows the Quantum Diaries website. At the top, the title "QUANTUM DIARIES" is displayed in a large, bold, sans-serif font. Below it, the tagline "Thoughts on work and life from particle physicists from around the world." is written in a smaller font. To the right of the title, there is a navigation menu with links for "Home", "About Quantum Diaries", and "Interactions.org". Above these links, the word "diario" is written in multiple languages: "journal", "diario", "전표", "tagebuch", "ジャーナル", "diary", "dagboek", "學報", "diário". Below the navigation menu, there is a grid of 20 small portrait photographs of various people, arranged in two rows of ten. Below the grid, there is a section titled "LATEST POSTS" with a date "19.10.2009" and a title in Japanese: "自己紹介ー大学院生はサイエンティストの夢を見るか?ー". The author's name "Masahiro Oroku" is listed to the right of the title. Below the title, there is a short paragraph of text in Japanese: "はじめまして、大録誠広と申します。". To the right of the text, there is a small image of a person's face. Below the "LATEST POSTS" section, there is a footer area with the text "A PROJECT OF THE INTERACTION COLLABORATION" and a logo consisting of a stylized starburst or sunburst shape. To the right of the logo, there are three links: "Interactions.org Home", "Image Bank", and "Latest News".

Currently gets ~900 unique visits/day, growing

InterAction 2009 initiative: peer review

- To strengthen communication at laboratories and in global particle physics.
- Use combined InterAction communication experience and expertise to analyze and improve communication at member organizations.
- Global team of InterAction members and others.
- Lehman review format
 - Findings, comments, recommendations
 - Closeout report to management

Pilot review at TRIUMF 3-4 February



- TRIUMF requested the first peer review
- Charge by TRIUMF Director Nigel Lockyer
- Reviewers
 - Neil Calder, ITER (chair)
 - Roberta Antolini, Gran Sasso
 - Peter Calamai, science journalist
 - James Gillies, CERN
 - Judy Jackson, Fermilab
 - Youhei Morita, KEK

TRIUMF Peer Review



Tim Meyer
TRIUMF Communication Director

- Reviewed
 - Publications
 - Community Relations
 - Electronic communication
 - Media relations
 - Internal communication
 - Education and Outreach
 - Organization structure, management, resources
- Next up: STFC, CERN, PPPL

Gran Sasso National Laboratory



Earthquake, l'Aquila



HEPAP 23 October 2009

A special project.



Dear Boys and Girls of Gran Sasso...



LET'S MAKE A DIFFERENCE TOGETHER
FERMILAB

Dear Boys and Girls of Gran Sasso,

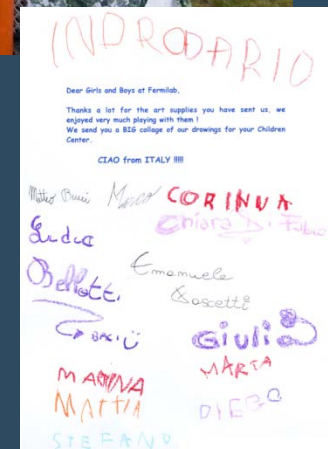
Are you members of The Children's Center at Fermilab? Our rooms and books are at Fermilab, but we're for all around the world. We have:

- Visit our Club's office - Fun!
- Our Club's projects - Busy!
- Club activities - Busy!
- Play in the playground - Fun!
- Help teams - Let's make the best one - Fun!
- Draw pictures - Busy!
- Read books - Fun!
- Do the games - Fun!
- Play in the garden - Fun!
- Play outside - Busy!
- Do the morning - Fun!
- Play in the garden - Busy!
- Play with the toys - Fun!

We are sending you some of our favorite art supplies so you can make projects of your own and send pictures we have made for you. We hope you have fun at your new school!

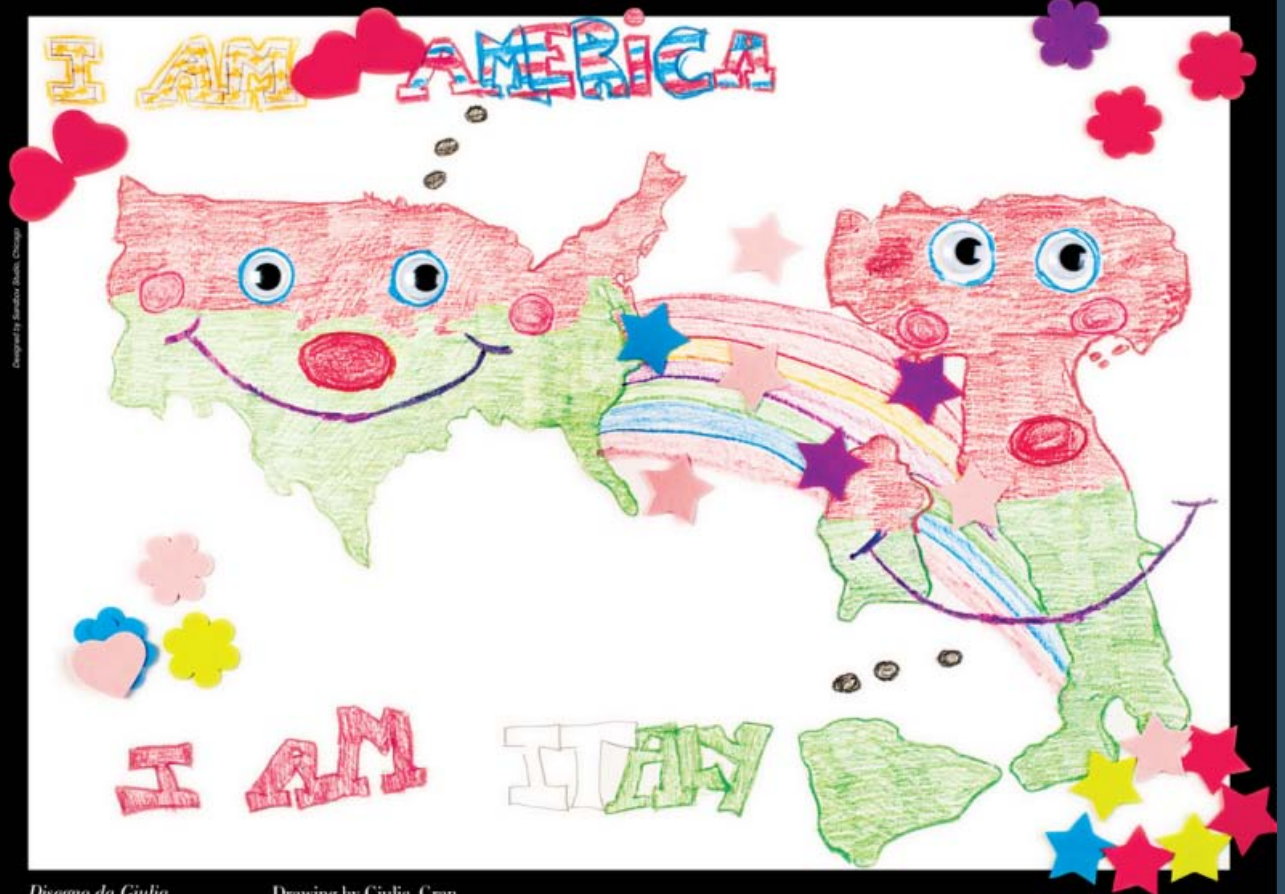
Love,
 The Children at The Children's Center at Fermilab.

Dear Girls and Boys of Fermilab....



Art from the heart.....





Copyright by Simona Jassi, Chicago

*Disegno da Giulia,
del Centro Estivo di Gran
Sasso, per il progetto
"Dear Girls and Boys
of Fermilab"*

Drawing by Giulia, Gran
Sasso Children's Center,
for "Dear Girls and Boys
of Fermilab" project

BSM: rap music, dark matter duel, mow the prairie...



Funky 49 premieres Fermilab rap



Joe and Rocky debate dark matter

9&10
November
2009

Project X
Physics
Workshop

Fermilab
Batavia, Illinois
USA

4th Workshop on Physics with a high intensity proton source

Fermilab ENERGY www.fnal.gov/projectx

We're from Fermilab and we're here to help.

