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

Hamburg, December 2001

Next meeting
at CERN Nov 2-3

The InterAction Collaboration: 2001-

INTERACTIONS

"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?

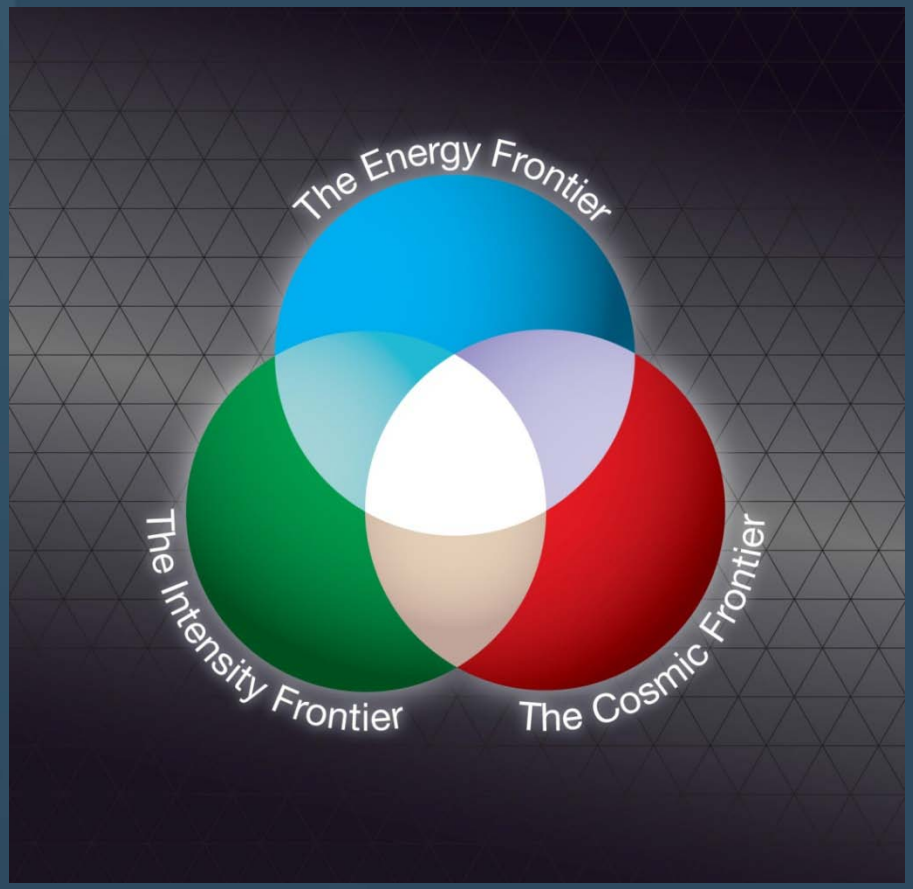
Goal

- 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

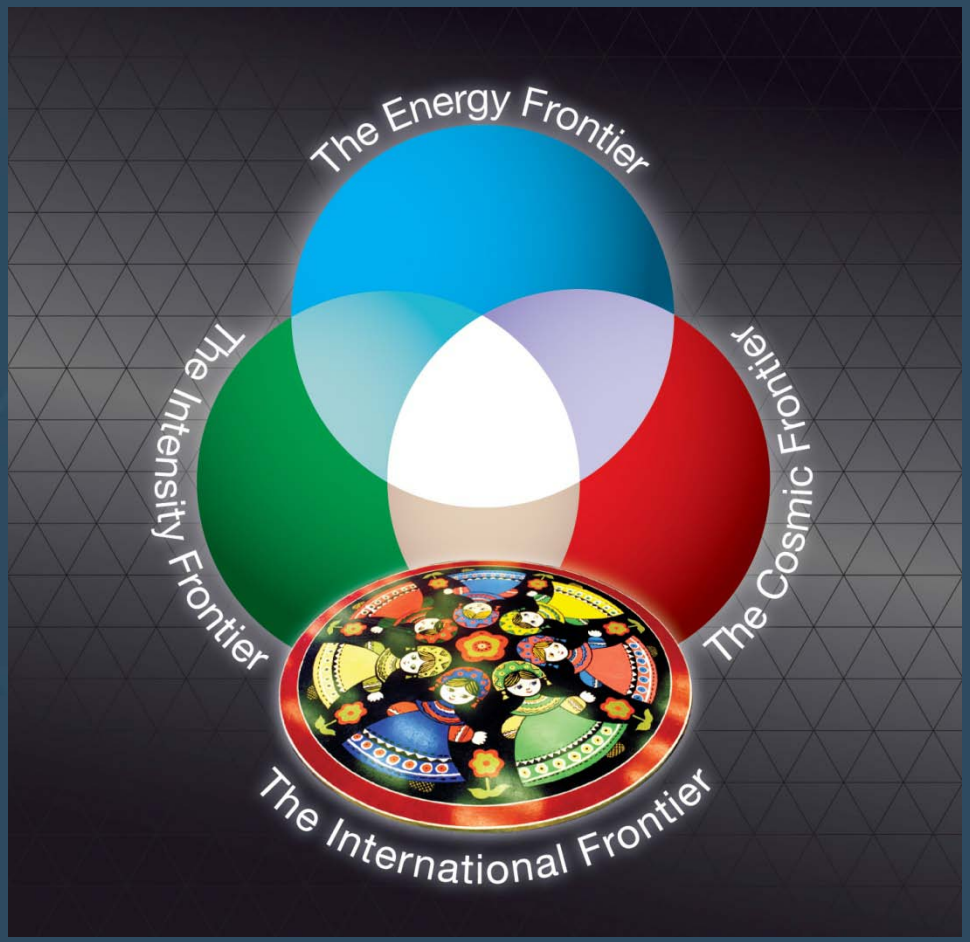
Messages: A new emphasis on applications

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

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

Lingua Fisica: CDF and DZero

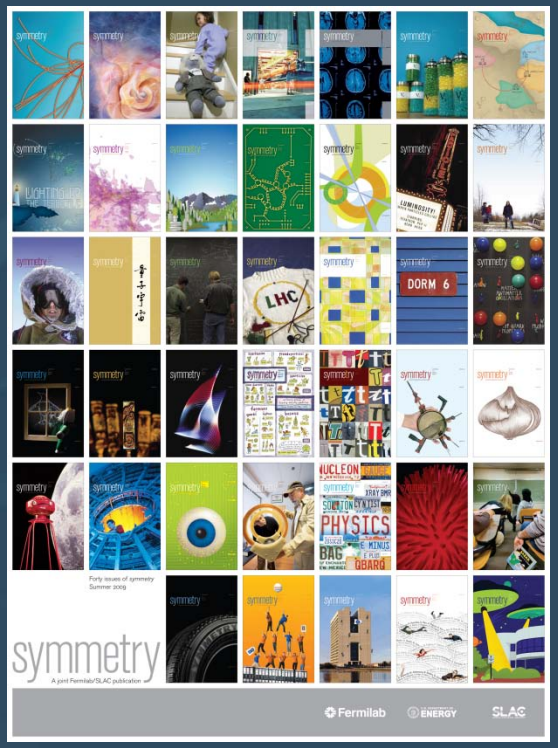
CDF

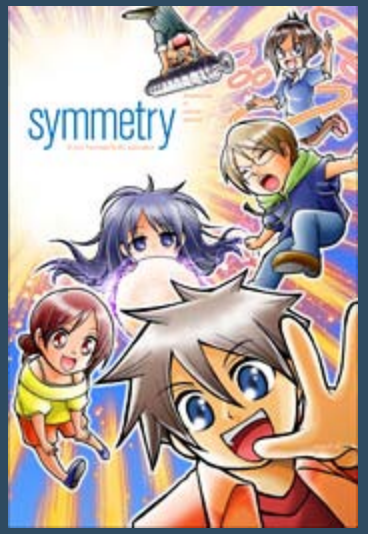
Assyrian
Belorussian
Bengali
Cantonese
Catalan
Croatian
Czech
Danish
Dutch
English
Finnish
Flemish
French
Gaelic
German
Georgian
Greek
Hebrew
Hindi
Hungarian
Italian
Japanese
Korean
Leccese
Luxembourgish
Mandarin
Marathi
Persian
Polish
Portuguese
Romanian
Russian
Serbian
Slovak
Spanish
Swedish
Tagalog
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

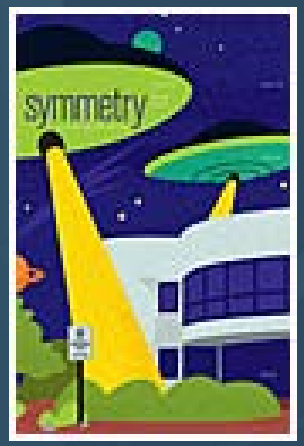
Celebrating 40 issues of *symmetry*

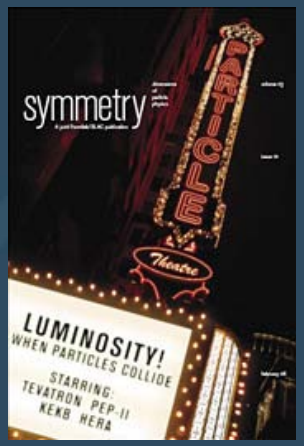


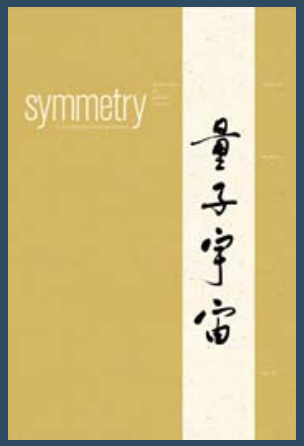


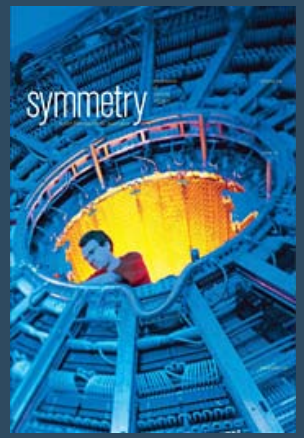
Now 41…

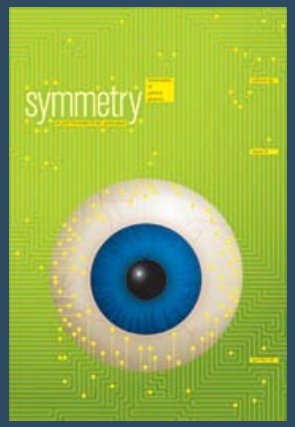
Joint SLAC-Fermilab publication



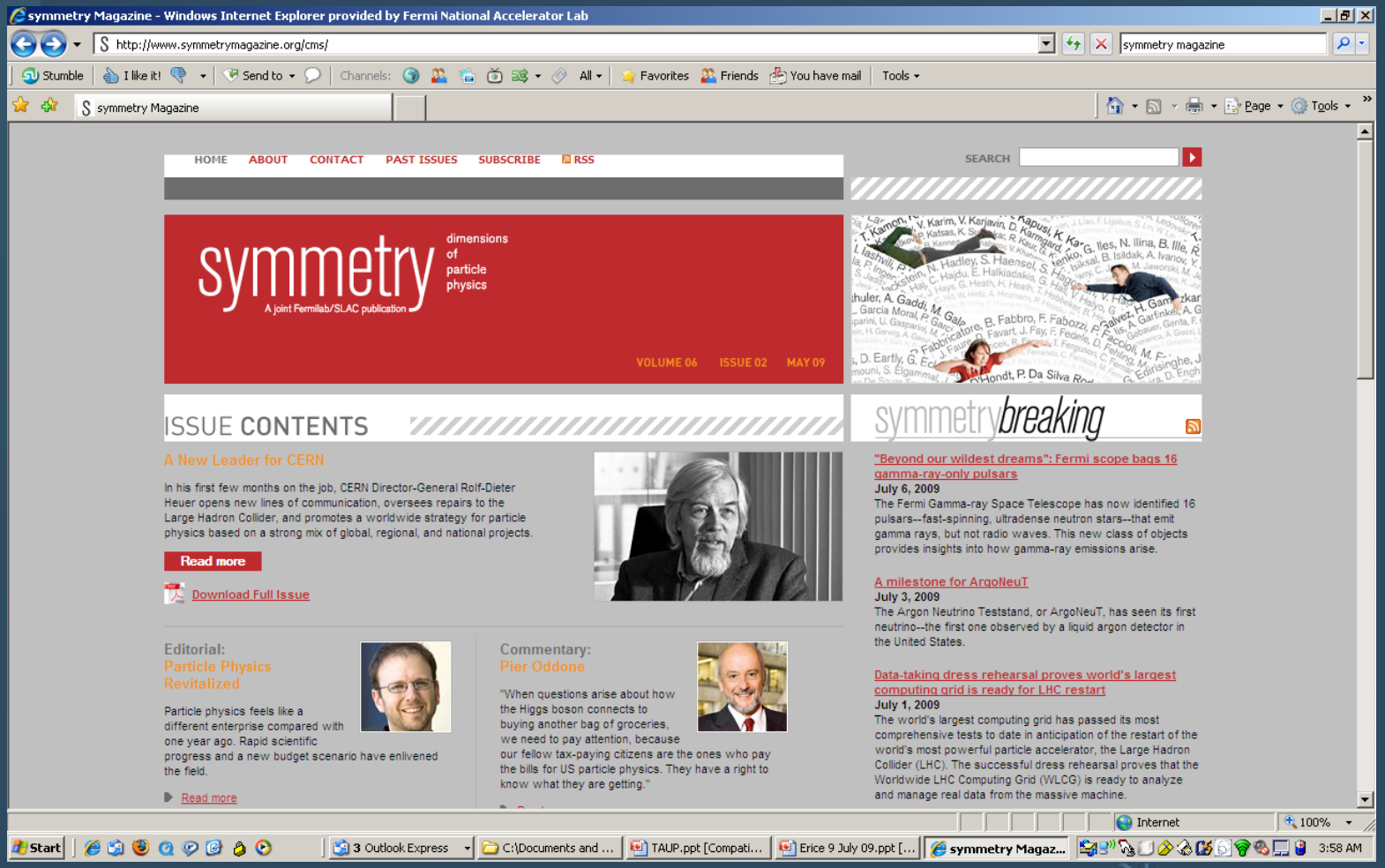








symmetry breaking



symmetry 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

Jointly funded by DOE and NSF

University profiles in Fermilab Today

Fermilab Today Thursday, Oct. 22, 2009

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Calendar

Have a safe day!

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

3:30 p.m.
DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY
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

Friday, Oct. 23

University Profile

Indiana University South Bend

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.

NAME:
Indiana University South Bend

HOME TOWN:
South Bend, Indiana

MASCOT:
The Titans

Indiana University South Bend's mascot, The Titans

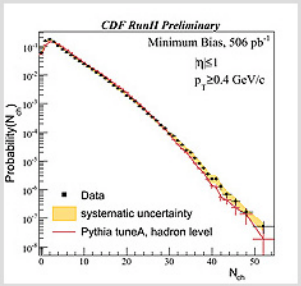
SCHOOL COLORS:
Cream and Crimson

PARTICLE PHYSICS COLLABORATIONS:
COUPP, PICASSO

EXPERIMENTS AT FERMILAB:
COUPP

Fermilab Result of the Week

Sorting out the soft mess

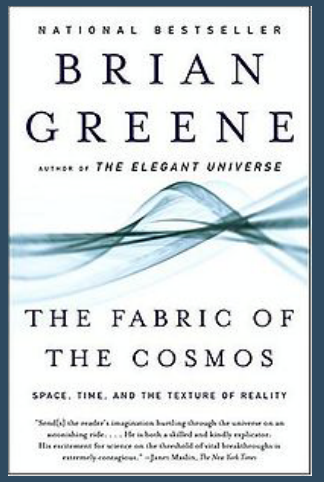


The multiplicity distribution in minimally biased data compared to the prediction of simulation.

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.

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

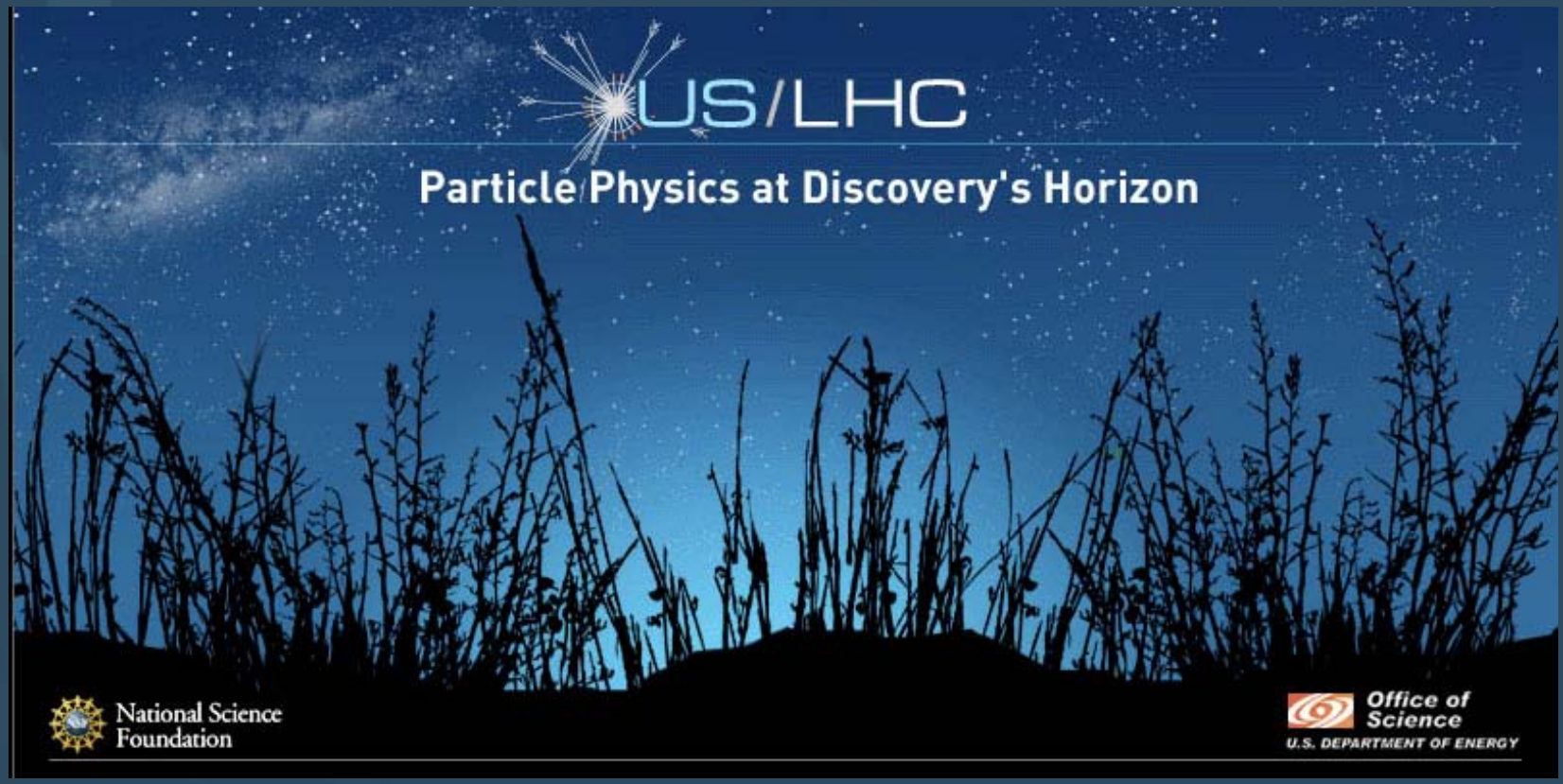
NOVA: Fabric of the Cosmos



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).

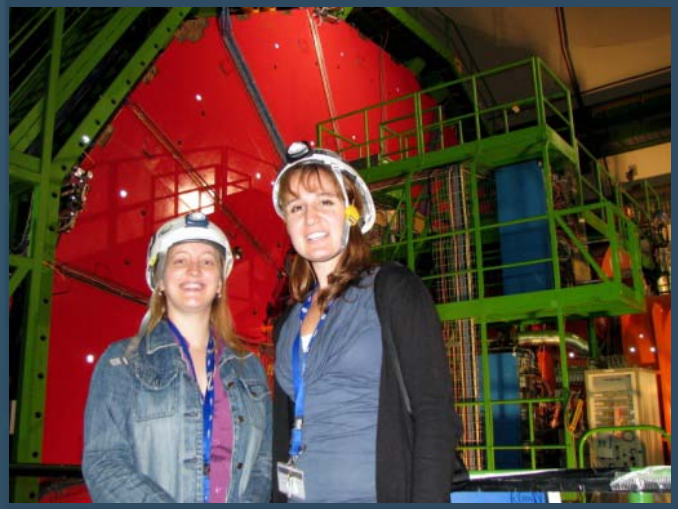
Funding from NSF, OHEP

US LHC communication



US LHC Web site, funded by OHEP

US/LHC Communication

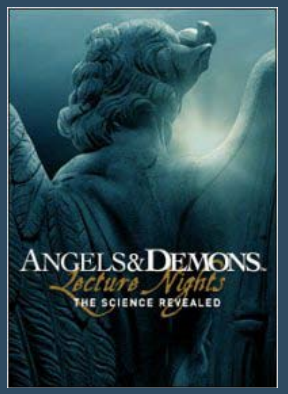


At CMS

At ATLAS

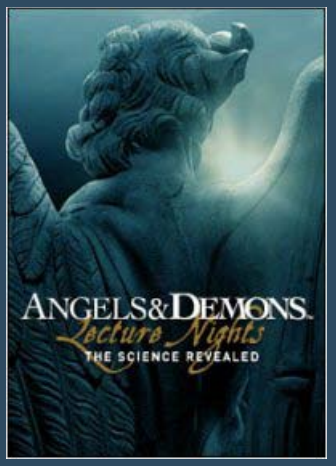
- Katie Yurkewicz, permanent full time US LHC communicator in CERN Press Office
- Daisy Youhas, intern
- Jointly funded by OHEP and NSF
- A true collaboration of funding agencies, universities, laboratories

A Golden Opportunity



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

Public lecture nights



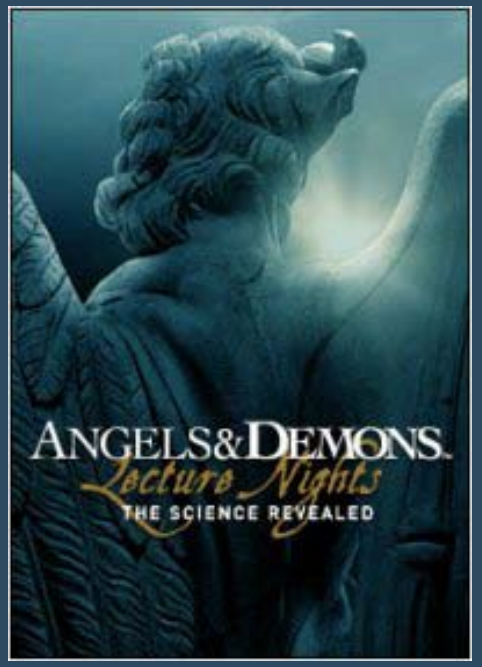
- Excellent example of collaboration
- Universities get the spotlight
- Opportunity to reach thousands (And we did!)

Resources for lecturers

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

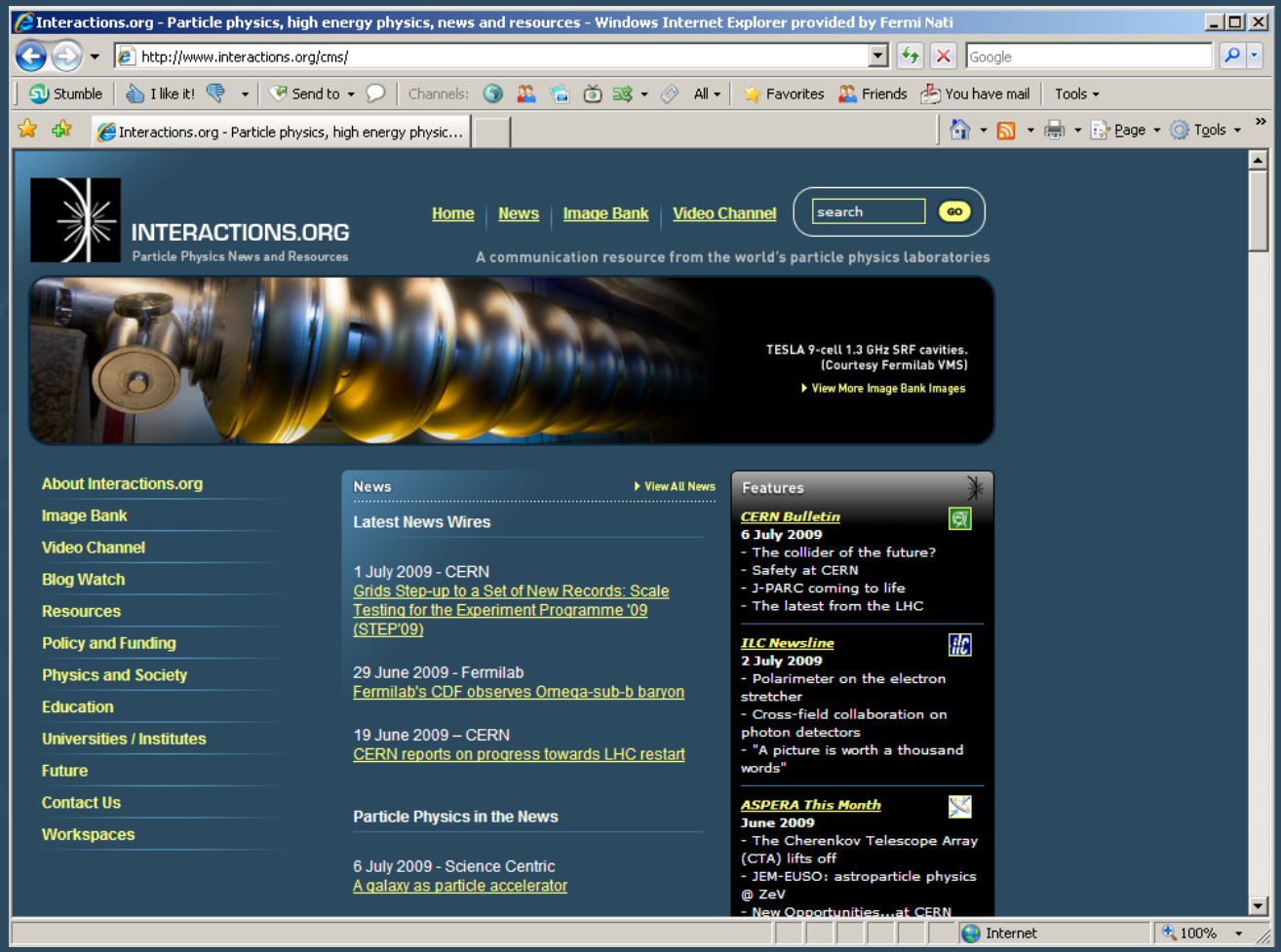
(Password protected)

The lectures



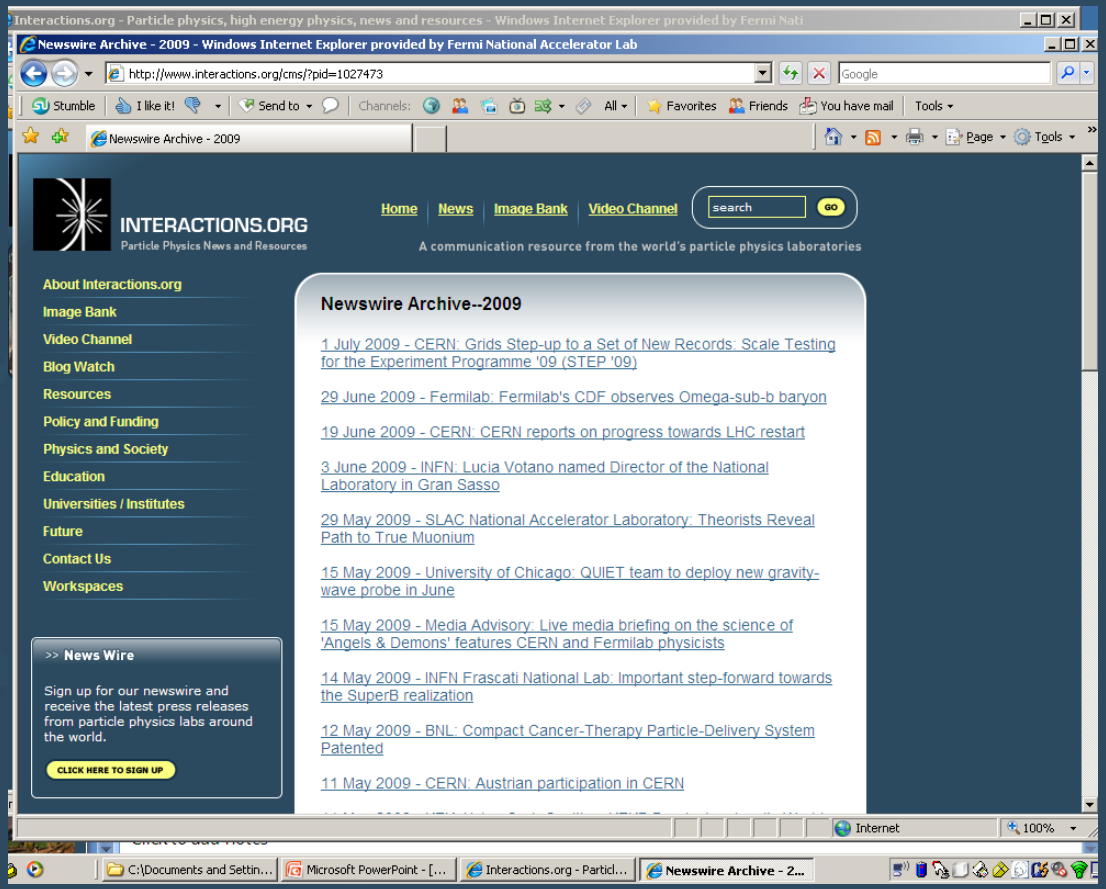
- Total lectures: 61
  - United States – 44
  - Canada - 8
  - France – 4
  - Germany – 2
  - Spain – 1
  - Switzerland - 2
- Total reported attendance: 4,628
- New lecture series now in the works

Tools for particle physics communication



INTERACTIONS.ORG
Particle Physics News and Resources

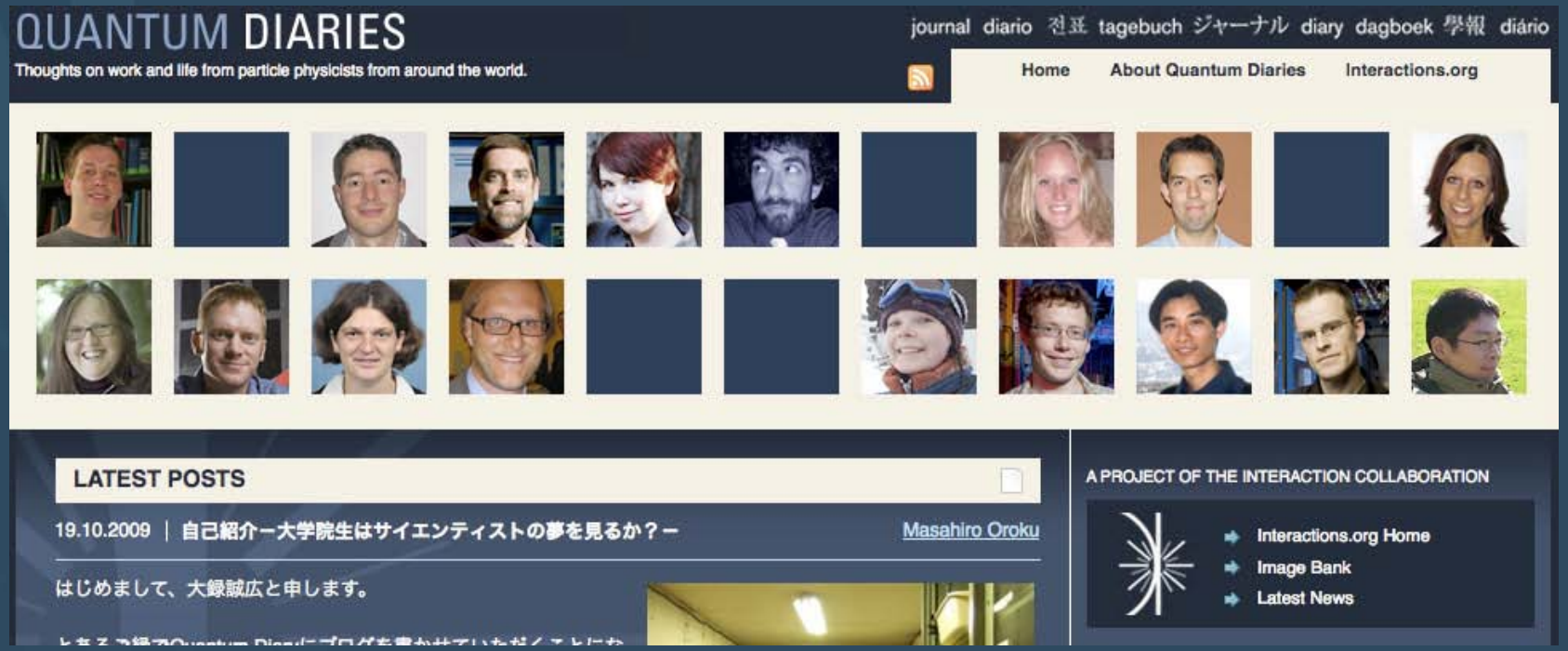
InterActions Newswire: ~2350 subscribers



Protocol for press releases

INTERACTIONS.ORG
Particle Physics News and Resources

Quantum Diaries redux



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

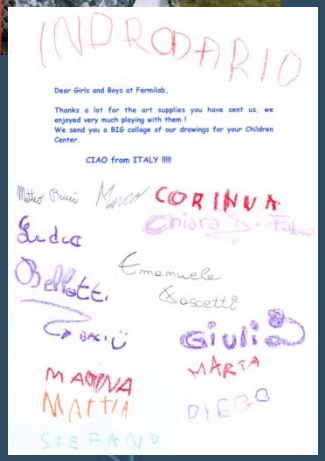
Gran Sasso National Laboratory

Earthquake, l'Aquila

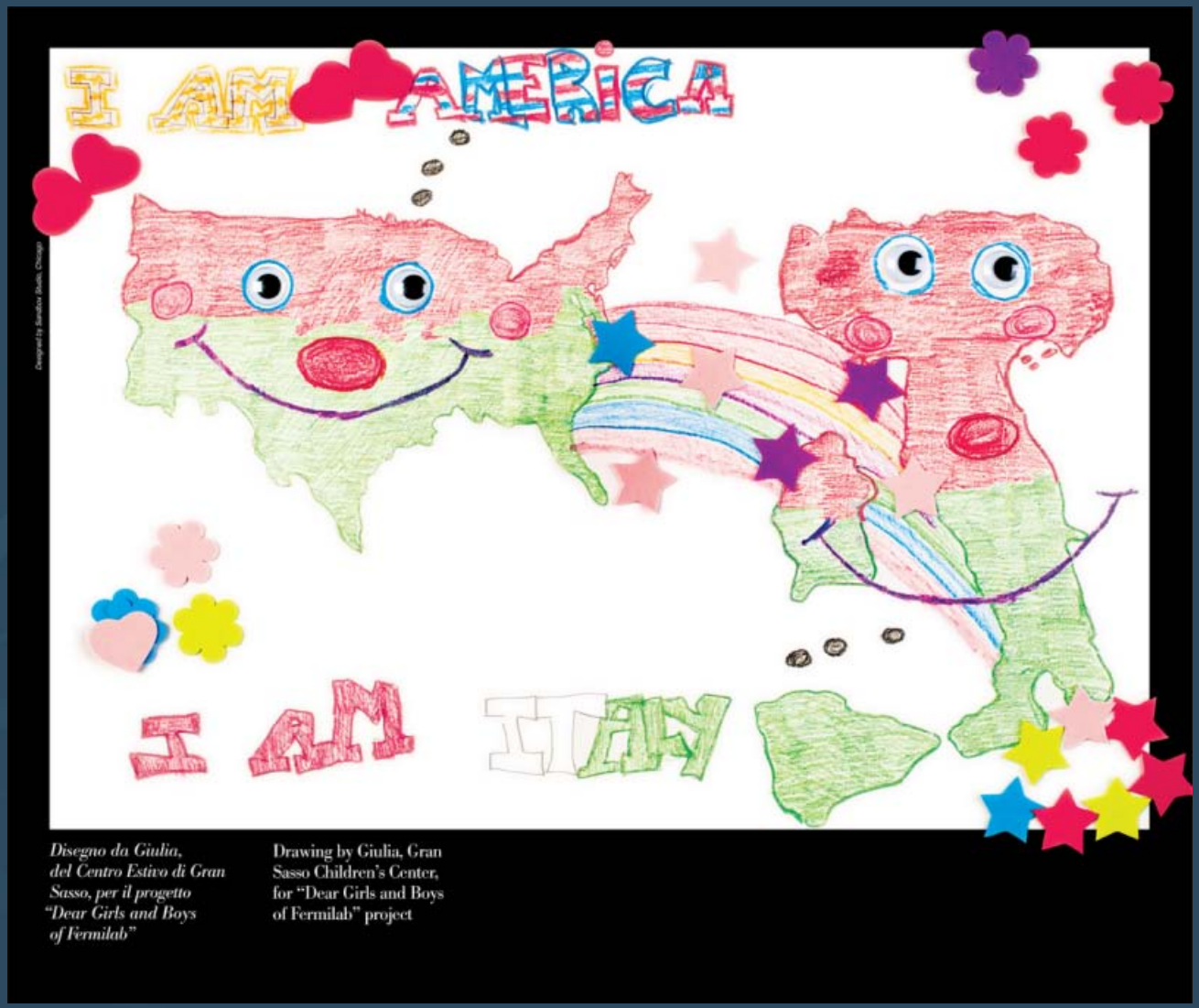
A special project.

Dear Boys and Girls of Gran Sasso…

Dear Girls and Boys of Fermilab….



Art from the heart…..



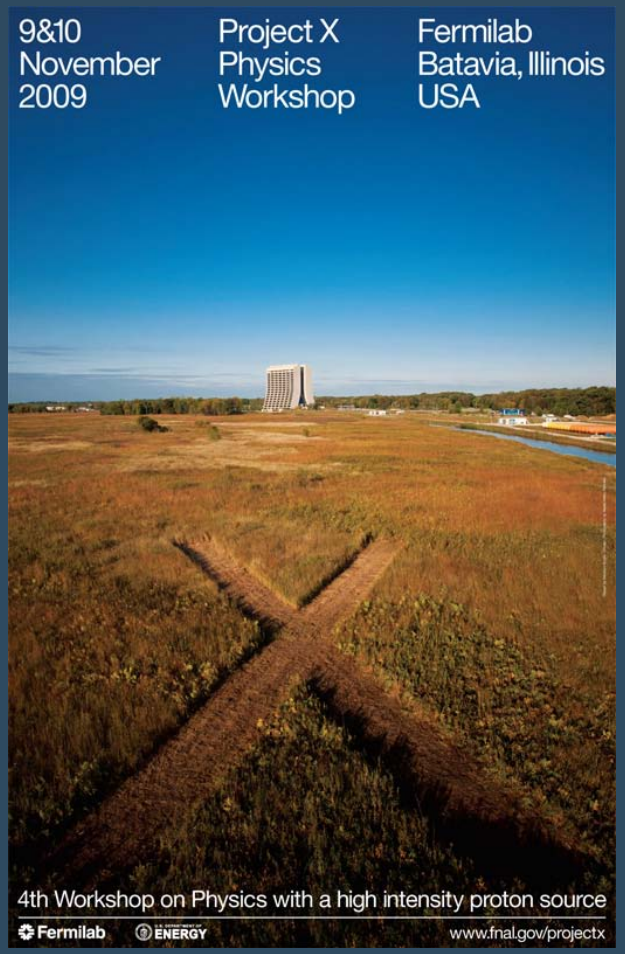
Disegno da Giulia, del Centro Estivo di Gran Sasso, per il progetto "Dear Girls and Boys of Fermilab"

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 premiers Fermilab rap

Joe and Rocky debate dark matter



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