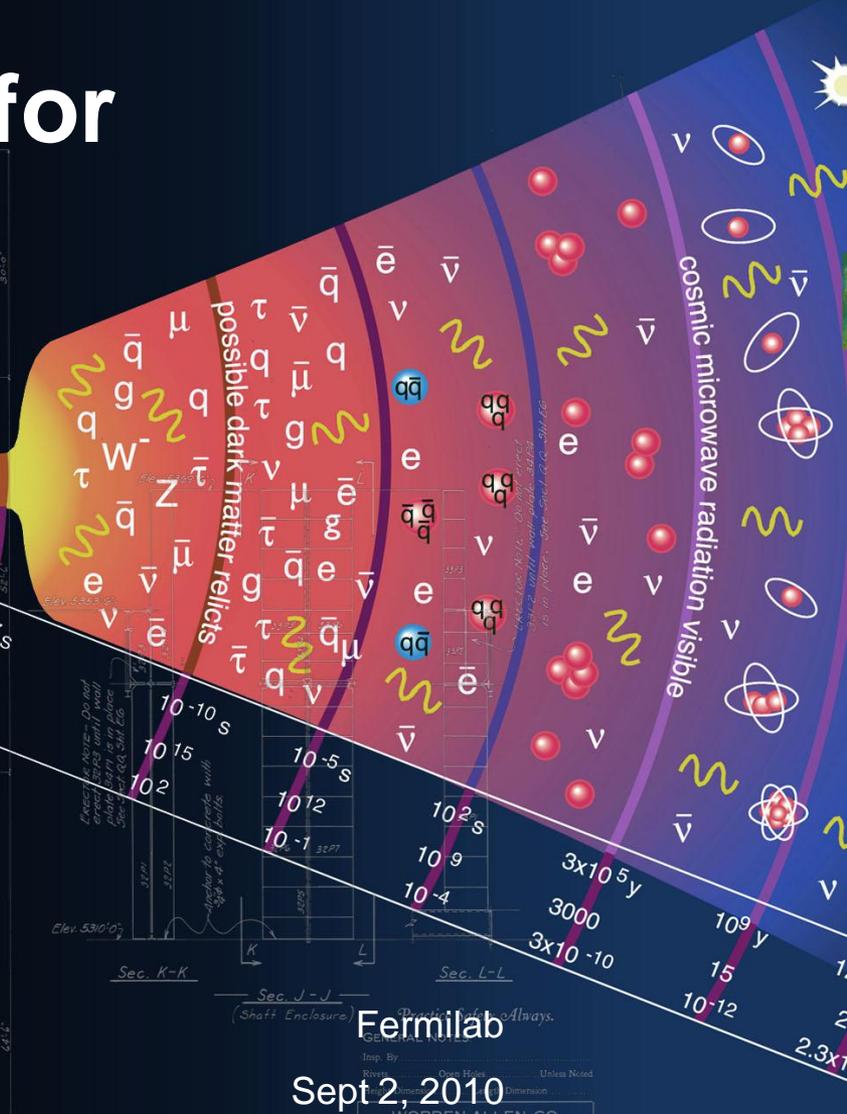


First Annual DuRA Meeting

The Sanford Center for Science Education: Update

Peggy Norris
Deputy Director
Ben Saylor
Director

BIG BANG



Fermilab
Sept 2, 2010

Figure Courtesy
PDG and LBNL

Key Take-home messages

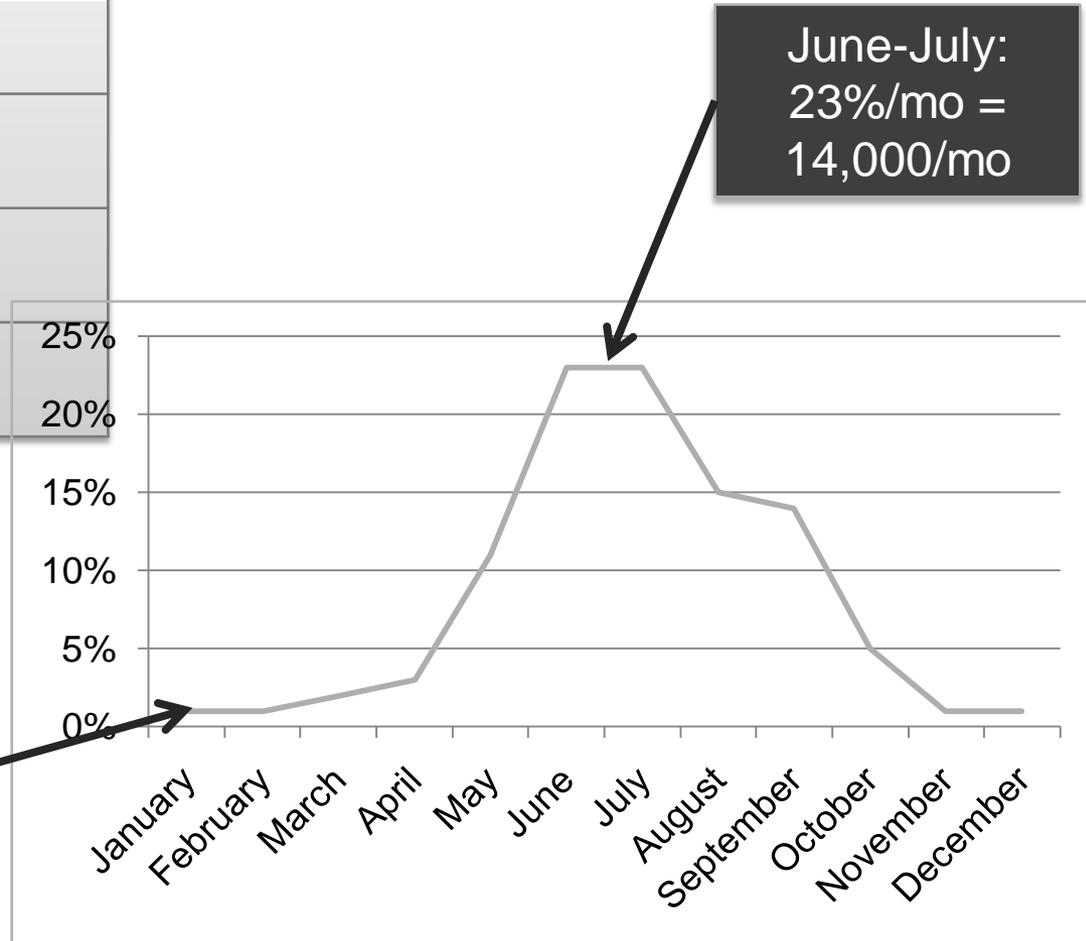
1. SCSE planning is healthy and has been proceeding on a parallel track to that of the S-4 collaborations in the sciences
2. Early educational programming – designed to build capacity and partnerships and to test prototypes - has been rippling out from the state to regional, national and international impact, thanks in a large part to our dedicated community of scientists and engineers

1. Planning

- An initial round of educational and institutional expertise was engaged to produce preliminary market analysis, content and institutional development reports
- A conceptual design of the SCSE surface facility was completed by DUSEL subcontractors
- A program strategy document is being drafted with roadmaps for program & exhibit development
- Discussions are in progress to define parameters for taking visitors underground
- Funding has been secured for the next round of planning
 - An in-depth tourist survey has been taking place this summer
 - Surveys and focus groups will take place this fall and spring with educators, scientists and other DUSEL/SCSE stakeholders

Attendance Projections

Projected	
Total attendance	64,500
School Group Attendance (20%)	12,900
Local Attendance (2% penetration)	4,534
Tourist Attendance	47,085



The Audience for the SCSE

Science aficionados
Teachers as researchers
Undergraduate & Secondary
students as researchers

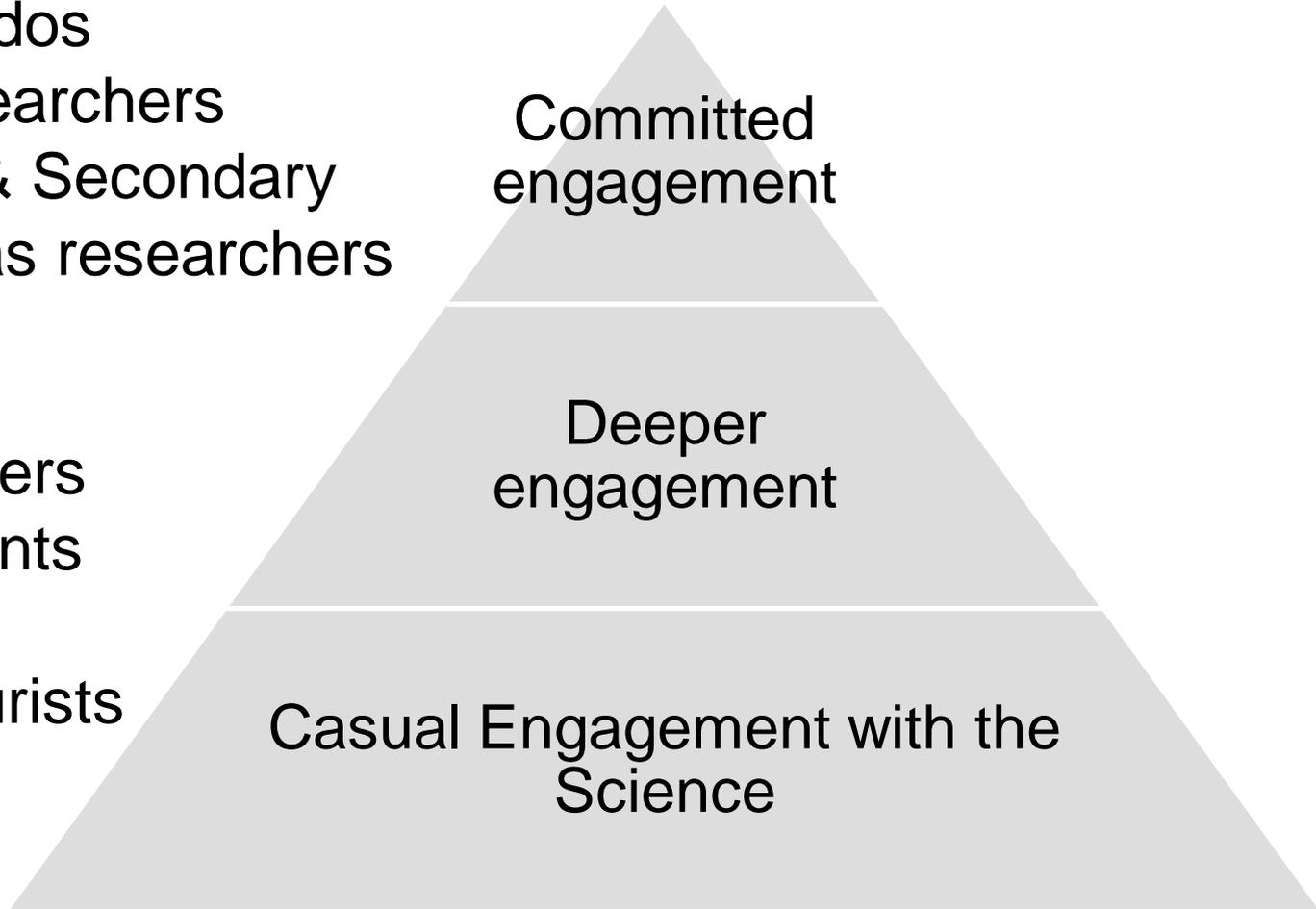
Committed
engagement

Lifelong learners
Secondary teachers
Secondary students

Deeper
engagement

Casual visitors/tourists
Primary teachers
Younger students

Casual Engagement with the
Science

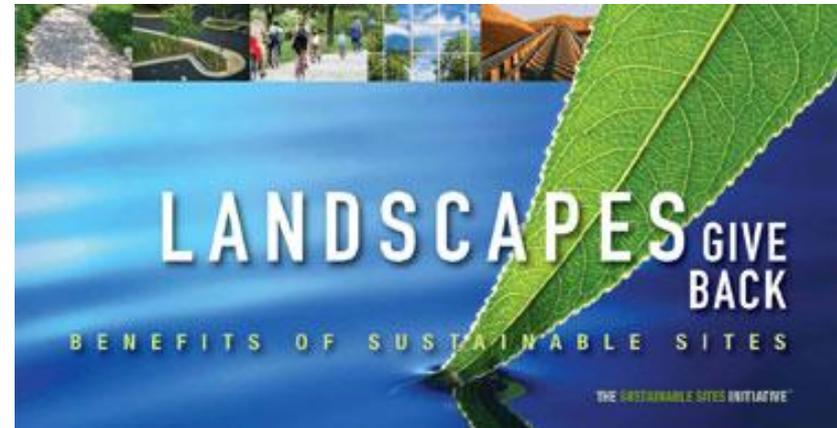


Program Strategy - Educators

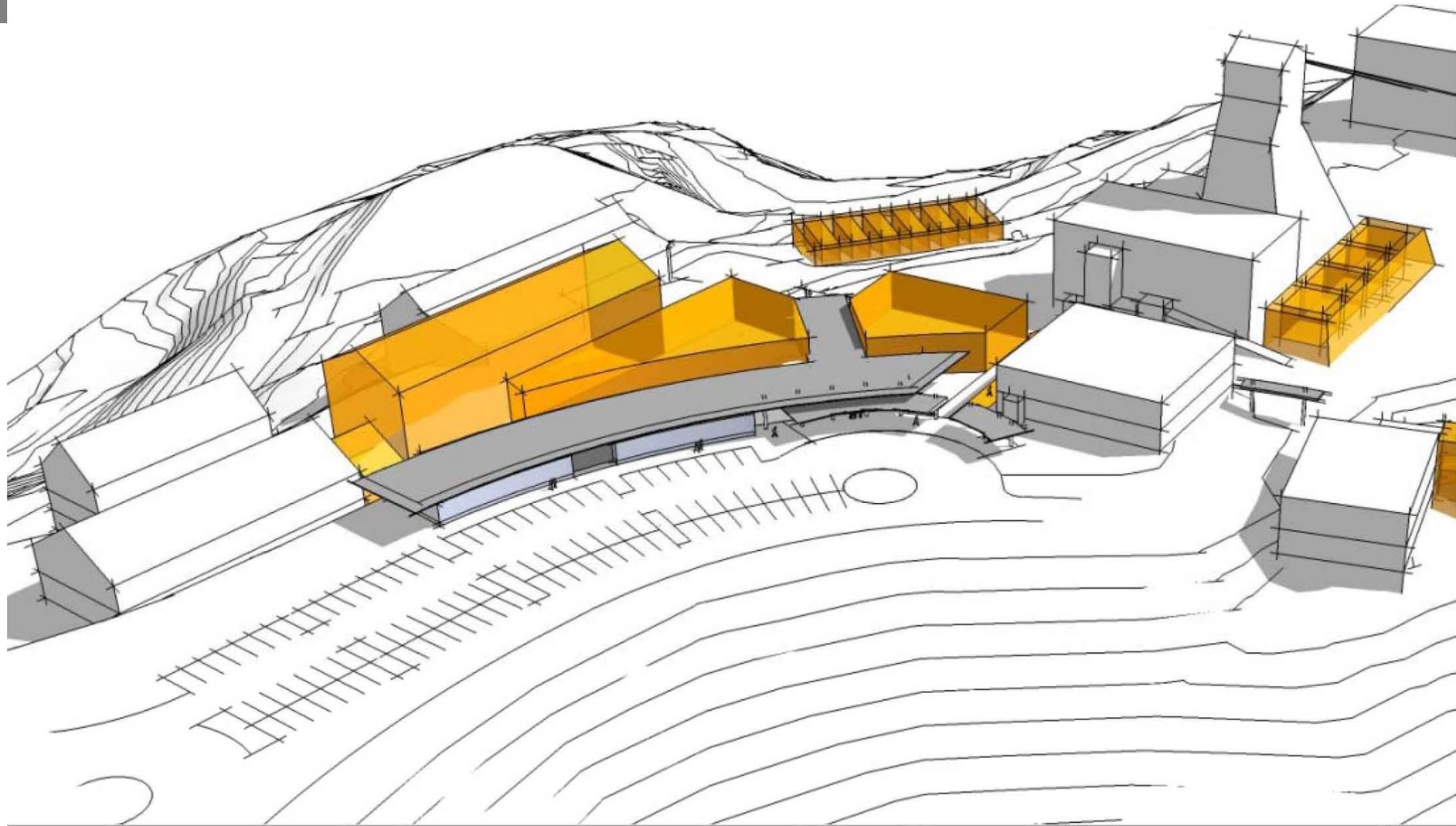
Level of Engagement	Impact	Delivery
Casual	National/ international	Websites, webcasts, vDUSEL
Deeper	Regional/national	Onsite and offsite (regional plus at national professional meetings) workshops combined with classroom materials and borrowed or donated equipment to take back to classroom; onsite workshops may include underground experience
Committed	National	Research experiences

Sustainability

- **Sustainable Site Initiative**
 - Chosen as part of Pilot Program
 - Accommodates regional and site specific differences
- **Sustainable Best Practices**
 - Site Analysis
 - Cool Exterior Materials
 - Low Flow Fixtures
 - Native Vegetation
 - Bio-based Stormwater Management Strategies
 - Construction Waste Management Strategies
 - Recycled Content and Regional Materials
 - Low Emitting Finish Materials
- **LEED Goals**
 - Possible goal for LEED Certification for new Sanford Center building



Sanford Center Concept Design – View from South

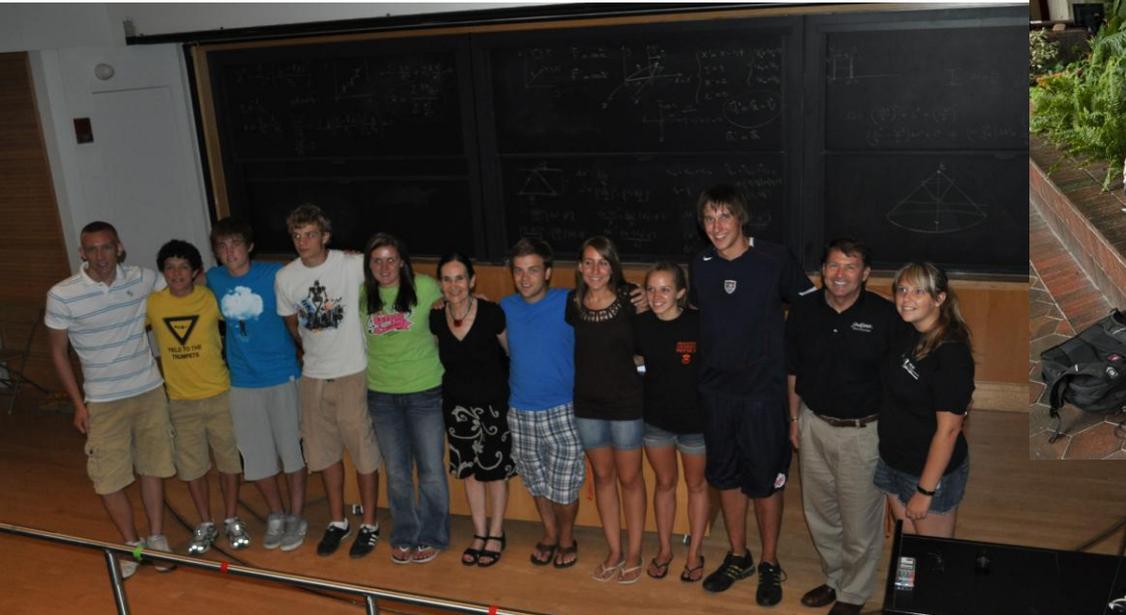


2. Early programming

- Early programming is designed to
 - Build partnerships
 - test prototypes for future programming and/or exhibits at the SCSE
 - build capacity for the future SCSE
- Because of the large percentage of American Indians in SD and their historical under-representation in STEM careers, we have paid special attention to seeking input and establishing partnerships with science and education leaders within tribal communities
- The impact of early programming within the state of SD has been large
- Early programming has been primarily focused in-state due to funding opportunities, but is gaining momentum on a national scale.
- Early programming is dependent on the willingness and enthusiasm of our community of scientists and engineers to lend their content knowledge and to interact with our audiences. THANK YOU!!

Building partnerships : South Dakota Science Scholars

Two programs give top-achieving science students from across the state a chance to participate in programs at Sanford Lab and its partners.



The 2010 Davis-Bahcall Scholars finish a five week program at Sanford Lab, CERN, Gran Sasso and Princeton by posing with Governor Mike Rounds and Prof. Netta Bahcall.



The 2010 Homestake-Fermilab Scholars pose in the atrium at Fermilab.

Partnering with American Indian education: GEAR-UP workshops and tours

In 2010, we worked with American Indian high school freshmen (water treatment), juniors (chemistry) and seniors (nuclear forensics) in the summer GEAR-UP program – a residential program at SDSMT preparing students to succeed STEM disciplines in college - reaching 230 students.



Juniors mix polymer



*Freshmen pose at the
Open Cut*

Prototyping: a Conceptual Modern Physics course in Sioux Falls high schools

Learning Outcomes for an Algebra 1 based course (being piloted at 2 schools Fall 2010):

- Know there's an underlying structure of the universe and understand the measurement scales involved.
- Use models as a tool to understanding. Investigate the evolution of models.
- Apply experimental tools and techniques.
- What is scientific evidence
- Importance of the topics to society
- Students are able to analyze information and formulate questions based on what they have learned.

Building capacity: High-def videoconferencing using Internet 2

Following DUSEL's splash at last spring's Internet 2 conference, plans are in the works to videocast DUSEL microbiology experiments to biology classrooms in Georgia, Texas and South Dakota.

Internet 2 Makes 'Splash' At Ware County High, Waycross Journal-Herald, May 10, 2010



Students from South Georgia will soon be able to add DUSEL science lectures to their curriculum.

In summary, we can't do it without you!

Augustana:
Drew Alton

BHSU:
*Cynthia Anderson
Julie Dahl
Kara Keeter*

Brown:
*Rick Gaitskell
David Malling*

Case Western:
*Dan Akerib
Mike Dragowsky
Tom Schutt*

USD:
*Tina Keller
Dongming Mei*

SDSMT:
*Xinhua Bai
Tom Durkin
Mark Harnhardt
Ziggy Hladysk
Tessa Jones
Bill Roggenthen
Larry Stetler
Jason Van Beek*

UC Davis:
*Nick Walsh
Michael Woods*

Wisconsin:
Herb Wang

Thank you!
SUMMER
2010

CSM:
Uwe Greife

Princeton:
*Neta Bahcall
Frank Calaprice
Joe Casalaina
Christiano Galbiati
Ed Groth
Helen Ju
Peter Meyers*

DSU:
Barbara Sczcerbinska

LANL:
Steve Elliot

LNGS:
Aldo Ianni

SDSU:
Judy Vondruska

DUSEL/SDSTA:
*Connie Giroux
Bill Harlan
Jaret Heise
Mandy Knight
Warren Matthews
John Scheetz
Tom Trancynger
Jim Whitlock*

Fermilab:
*Marge Bardeen
Brendan Casey
Susan Dahl
Dave Harding
Donna Kubik
Tom Kroc
Bob Peterson
Kurt Reisselmann
Dave Schmitz
Felicia Svoboda
Jim Volk
Joseph Walding*

But we need still more...

- If your collaboration hasn't named a E&O liaison, please do so
- If you want to partner with us on broader impact programs for upcoming proposals, please talk to us about your interests
- Upcoming opportunities
 - We need young faces from groups on the East Coast to help at the USA Science Festival on the Mall in Washington Oct 23-24: both physics and BGE
 - Let us know when you will be out in Lead if you are interested in outreach; I have requests for classroom visits, talks, et al.

How to reach us

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