Dear Homestake Collaboration,

Welcome to the July 2011 monthly newsletter for Homestake DUSEL and South Dakota's Sanford Laboratory. We gladly receive your input on news, links to news articles, upcoming workshops, conference notices, scientific updates, information concerning DUSEL, employment opportunities, and other highlights relevant to our shared goal.

Important Dates

TBD (Fall): Annual DuRA meeting – Fermilab, Batavia, Illinois – See p. 9 for more details

PAC meeting: Fall 2011

A note from Principal Investigator, Kevin Lesko

The past month has marked very notable progress in creating the US Underground Research Facility, and three very significant milestones were reached in four weeks.

1) On June 22, DOE's Office of Science Independent Assessment of Options for Underground Physics Experiments report was released. See: http://science.energy.gov/hep/hepap/meetings/previous-meetings/hepap-agenda-june-2011/

The Marx/Reichanadter Committee found the science compelling and very significant advantages in creating a single facility to house the DOE's physics projects Long Baseline Neutrinos (LBNE), Dark Matter, and Neutrinoless Double Beta Decay, viz

> *"Given the scale of investment needed to carry out these experiments and the long timescales and likelihood of follow-on experiments in each of these areas of research, the committee recognizes there are major advantages to developing a common underground site for these experiments."*

2) On July 12, the National Research Council released its Report Assessing DUSEL. See: http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=13204

The report expressed exceptional support for DUSEL's science and the importance of creating a US facility for supporting the research communities,

> *"Three underground experiments to address fundamental questions regarding the nature of dark matter and neutrinos would be of paramount and comparable scientific importance:*
> *• The direct detection dark matter experiment;*
> *• The long baseline neutrino oscillation experiment; and*
> *• The neutrinoless double-beta decay experiment.*
>
> *Each of the three experiments addresses at least one crucial unanswered question upon whose answer the tenets of our understanding of the universe depend.*
>
> *The three major physics experiments provide an exceptional opportunity to address scientific questions of paramount importance, to have a significant positive impact upon the stewardship of the particle physics and nuclear physics research communities, and to have the United States assume a visible role in the expanding field of underground science. The U.S. particle physics program is especially well positioned to build a world-leading long-baseline neutrino experiment due to the availability of the combination of an intense neutrino beam from Fermilab and a suitably long-baseline from the neutrino source to an appropriate underground site such as the proposed DUSEL. In light of the leading roles played by U.S. scientists in the study of dark matter and double-beta decay, together with the need to build two or more large experiments of each of these two to assume leadership roles in the development of one direct detection dark matter experiment of ton- to multi-ton scale and one neutrinoless double-beta decay experiment on the scale of a ton.*

While installation of U.S. -developed experiments in an appropriate foreign facility or facilities would significantly benefit scientific progress and the research communities, there would be substantial advantages to the communities if these two experiments could be installed within the United States at the same site as the long-baseline neutrino experiment."

3) On July 19-21, the DUSEL Project's Preliminary Design was reviewed by a NSF review team, led by Ed Temple (Argonne National Lab) and Ken Stanfield (FNAL, retired). The comprehensive review team found the design exceeding expectations for robustness and maturity for a Preliminary Design and met all NSF requirements for a Preliminary Design. In particular the Project's Preliminary Design cost and schedule estimates were singled out for commendation for completeness and accuracy. The review committee affirmed that the reduced-scope facility options presented by the DUSEL project team to the Marx/Reichanadter committee were credible and reasonable. This review establishes that the DUSEL estimates represent a sound baseline for the facility construction.

Those three milestones present the critical elements necessary for responsibly making a decision that would impact the physics for the foreseeable future in many critical ways. The arguments and justifications necessary for making this decision are now in place and strongly support the Sanford Facility as the solution:

a) The proposed physics is judged to be of the highest significance--of paramount importance for our understanding of the physical universe;

b) There are significant economic and organizational benefits realized in the creation of a single facility–in optimizing the design; sharing significant infrastructure among experiments; coordinating and sharing the construction and facility operations; and phasing the development of the facility as required by the science;

c) A single facility maximizes the scientific synergisms achieved through co-locating significant scientific efforts, and imparting the greatest beneficial impacts on the scientific communities including those outside physics;

d) A domestic facility would position the high energy and nuclear physics communities for world-leadership in underground physics for decades to come; and

e) The Homestake site and the DUSEL Preliminary Design offer a low-risk solution to achieving these goals–a solution with well established costs and schedules; with appropriate and well-characterized rock for creating the facilities including massive cavities; and with a competent project team in place.

The Sanford Underground Research Facility at Homestake (SURF) offers the most effective path to engaging both the DOE and the NSF in underground science. A DOE-led facility hosting these three physics experiments presents multiple avenues to re-energize the NSF's involvement. The three proposed experiments already involve many NSF-supported groups. In addition, SURF creates the best paths for re-introducing the biology, geology and engineering communities as well providing excellent opportunities for other compelling physics experiments such as the DIANA nuclear astrophysics facility.

The basic conclusion is compelling; we look forward to the DOE announcing their decision in the near future to proceed with SURF and continuing to work with you, the future uses of SURF.

The DUSEL Project published a summary in the American Physical Society's monthly newsletter on the "Backpage". This summary is a good reference for the major physics goals and the steps to establishing a DOE-led facility. See: http://aps.org/publications/apsnews/201107/backpage.cfm

PDR Review in Lead, South Dakota

During the week of July 18, the NSF-appointed review team met in Lead, South Dakota with DUSEL staff and contractors as well as a number of observers for a review of the 800-page Preliminary Design Report (PDR). The PDR presents a detailed study on the construction of an underground laboratory that represents many hours of solid work on the part of DUSEL staff and contractors, and Sanford Lab personnel.

On Monday, the reviewers and others took an underground tour of Sanford Lab. Surface temperatures climbed well into the 90s and the weather continued to be warm for the entire week.

Figure 1: Monday's underground tour, NSF Program Director Jonathan Kotcher in the foreground

The two and a half day review started early on Tuesday morning with plenary sessions, followed by breakout sessions covering a variety of PDR topics including Facilities, EH&S, and Cost, Schedule & Management.

Figure 2: DUSEL Project Director Mike Headley with laptop, Richard Fragaszy of NSF, UC Berkeley Vice Chancellor for Research Graham Fleming, and DUSEL Principal Investigator Kevin Lesko

"Outstanding," declared Panel Chairman Ed Temple as they delivered their final assessment of the PDR. "You are to be congratulated."

Figure 3: Ed Temple of Argonne National Laboratory congratulates DUSEL's Kevin Lesko

Temple's remarks were followed by comments from review observer Joe Dehmer (NSF Physics Division Director) who called the Report an "astonishing accomplishment". The review panel then gave the PDR team a standing ovation.

Figure 4: DUSEL meeting attendees gather outside Sanford Lab

Neutrinos and Double-beta Decay in Ge-76: Part I

The MAJORANA DEMONSTRATOR is one of the early science programs at Sanford Underground Lab; it is scheduled to begin installation at the Davis campus in mid-2012. Nobel Prize winner Ray Davis' solar neutrino detector at Homestake was the first experiment to indicate that neutrinos might be more complicated than previously assumed.

The "Standard Model" of particle physics predicts and describes with astounding precision decades of observations made with particle accelerators and other experiments. However, the Standard Model is known to be incomplete, as it does not incorporate gravity and is heedless of the dark matter that accounts for most of the mass in the universe. Physicists strive to observe new phenomena in order to extend the Standard Model to reflect a deeper and more complete understanding of nature.

Neutrino experiments have provided direct input on how the Standard Model must be amended. In the Standard Model there are three distinct and separate neutrino types, or flavors, and they have no mass. Experiments detecting neutrinos from the sun, neutrinos created by cosmic rays hitting the Earth's atmosphere, and neutrinos created in nuclear reactors and particle accelerators, have together demonstrated that neutrinos do have mass, and that they change between the three different flavors as they travel.

There are still some things scientists do not know, such as the absolute mass scale of the neutrino, and whether or not neutrinos are their own anti-particles. If neutrinos are discovered to be their own anti-particles–or Majorana ("my-or-ah-nah") particles–

the consequences would be far reaching. Majorana neutrinos could help explain why only matter remains in the universe today, when matter and anti-matter should have been created in equal parts in the big bang.

There is only one practical way to determine if neutrinos are Majorana particles: by searching for neutrinoless double-beta decay. Ordinary beta decay is a process by which a neutron in the atomic nucleus changes to a proton accompanied by the emission of an electron and an anti-neutrino. In double-beta decay, this happens twice in a single nucleus, and two electrons and two anti-neutrinos are emitted simultaneously. This type of decay is so rare that it was not directly observed until 1986. Even more rare, and not observed, neutrinoless double-beta decay results in the emission of two electrons, but no neutrinos. In neutrinoless double-beta decay, the two neutrinos can be thought of as annihilating one another. If this process occurs, neutrinos must be Majorana particles, and the measured decay rate would help determine the mass of the neutrino.

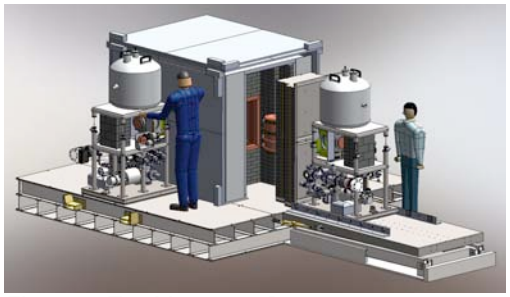


Figure 5: THE MAJORANA DEMONSTRATOR

Neutrinoless double-beta decay might be observable in about a dozen different isotopes, and a worldwide race is underway to be the first to observe it in one of them. The MAJORANA DEMONSTRATOR experiment at Sanford Lab is a search for neutrinoless double-beta decay in the isotope ^{76}Ge, using germanium gamma-ray spectrometers as both the source of the decay and the detectors. It will be an array of 70 Ge diodes with a total mass of 40 kilograms, most of which will be enriched in ^{76}Ge. The detectors must be operated in a very clean environment with negligible background from other radioactive decays that occur naturally in the environment. Locating the experiment at Sanford Lab's 4850 Level will ensure that the experiment is adequately shielded from cosmic rays. The detectors will be shielded from radiation from the rock by layers of ultra-pure copper, now being electroformed in a clean room facility at the 4850 L, the copper surrounded by layers of lead and plastic. The electroforming process removes radioactive impurities from the parts that will be closest to the detectors, and doing it deep underground ensures that cosmic rays will not induce unstable radioisotopes in the copper.

As the name implies, one of the goals of the MAJORANA DEMONSTRATOR experiment is to demonstrate the feasibility of constructing a much larger and more sensitive experiment that could be housed at SURF. More details to follow in the August issue.

Rock Mechanics Symposium

On June 26-29, 2011 the 45th U.S. Rock Mechanics/ Geomechanics Symposium sponsored by the American Rock Mechanics Association (ARMA) was held in San Francisco. An entire afternoon session of the meeting was devoted to "Deep Underground Rock Mechanics," chaired by William Roggenthen and Joe Wang. Work at the Sanford Lab was well represented. Papers presented, covering a broad range of topics, included: "Preliminary Design of the 4850 Level Excavations at DUSEL–Geological Engineering Evaluation of Rock Mass Conditions", "Preliminary Design Conceptual-Level Geotechnical Evaluation of Rock Mass Conditions for the 7400 Level Campus at DUSEL", "Physics-Geoscience-Engineering Interactions in Deep Underground Laboratories", and "Developing a Rock Mass Tilt and Seismic Observatory at DUSEL".

DUSEL IN THE NEWS

APS Physics, The Back Page: *The Sanford Underground Research Facility at Homestake–an Opportunity for the United States to Lead Profound Physics Experiments,* by Kevin T. Lesko
http://aps.org/publications/apsnews/201107/backpage.cfm

National-Academies.org: *Physics Experiments Proposed for Underground Laboratory in South Dakota Would Address Scientific Questions of*

'Paramount Importance,' New Report Says (July 13, Newsroom)

ScienceInsider (online): *Proposed US Underground Lab of 'Paramount Importance'* (July 12, Adrian Cho) http://news.sciencemag.org

Nature: *Committee champions underground science* (Eric Hand, July 11) – blogs.nature.com/news

Symmetrymagazine.org: *Iowa State physicist to test next-generation neutrino detector for major experiment* (July 19)

Native Sun news: *Rosebud Sioux member works below surface* (July 14, Talli Nauman)

Fermilab Today*: Options for the Homestake site* (June 28, Archive) http://www.fnal.gov/pub/today

Black Hills Pioneer: *Well done! NSF panel gives lab team standing ovation* (July 22); *NSF to review DUSEL plans in Lead* (July 18); *DOE Lab funding not approved yet* (July 16); *Dark imagery* (July 6); *DOE's DUSEL review committee releases report* (June 24); with Wendy Pitlick */ Neutrino Days feeds scientific interest* (Jason Gross, July 11)

DUSELwatch.com: *Lab 2012 operating budget contingent on DOE funding; DOE's DUSEL review committee releases report; DUSEL changes scope* (Wendy Pitlick)

Rapid City Journal: *Let mysteries of universe unfold* (July 17); *Funding good news for Sanford Lab* (Kevin Woster, July 15); *Fun meets science at Sanford Lab* (July 8); *Nail-biting descent underground* (Kevin Woster, June 26)

KEVN Fox news: *Co-principal investigator talks lab funding (*July 1)

News Center 1, Kyle Horan: *Neutrino Days, July 9*

Figure 6: Deputy Ops Director Will McElroy (center, facing cameras) explains the Six Winze water pumping system to reporters

On June 17, staff at Sanford Lab conducted an underground tour for local media outlets. Visitors included journalists from The Rapid City Journal, Black Hills Pioneer, KOTA TV, KELO/KCLO TV, KNBN TV, KEVN TV, and South Dakota Public Broadcasting. Some of these stories are listed above. For more details see: www.sanfordlab.org.

Report Available: The National Research Council report *An Assessment of the Deep Underground Science and Engineering Laboratory* can be ordered at: http://t.co/i3PAfPz

SANFORD UNDERGROUND LABORATORY NEWS

Dewatering Levels

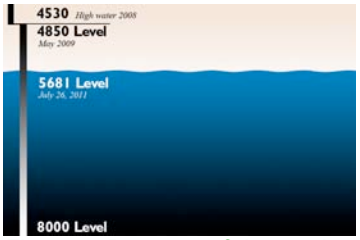
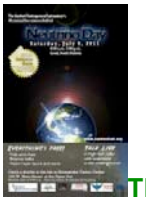


Figure 7: Progress of dewatering at Sanford Lab

The Figure 7 graphic indicates the dewatering progress made in the past three years at Sanford Lab. In July, the water level dropped to 5681 feet. The high water mark was reached in August 2008 at 4350 feet underground.



The fourth annual Neutrino Day science festival took place on Saturday, July 9 in the Yates Education Building at Sanford Lab, hosting 578 visitors. More than 60 volunteers helped with the event.

One of the highlights of the day was South Dakota Governor Dennis Daugaard's live broadcast from the 4850 Level on South Dakota Public Radio's "Innovation" program. (The show can be found online at: http:/bit.ly/Innovation4850L.)

Mini-lectures covered a wide range of topics from BHSU Fine-and-Applied-Arts Professor Steve

Babbitt on photography underground, and DUSEL Co-Principal Investigator Bill Roggenthen on how to build large caverns in a mile-deep underground space. Education and Outreach Deputy Director Peggy Norris talked about supernovae, and Physics Professor Dan Akerib of Case Western Reserve and the LUX Collaboration described the worldwide search for dark matter.

Figure 8: Deputy E&O Director Peggy Norris explains solar fusion (using marshmallows)

A live, high-def videoconference took place between the Yates Education Building classroom and the MAJORANA DEMONSTRATOR lab at the 4850 Level. MAJORANA scientists David Steele (LANL), Mitzi Boswell (LANL), and Mary Kidd (LANL) and Vincente Giuseppe (USD) facilitated discussions. Chemist Cabot-Ann Christofferson (SDSMT) and Physicist John Orrell (Pacific Northwest National Lab) spoke about electroforming and neutrinoless double-beta decay.

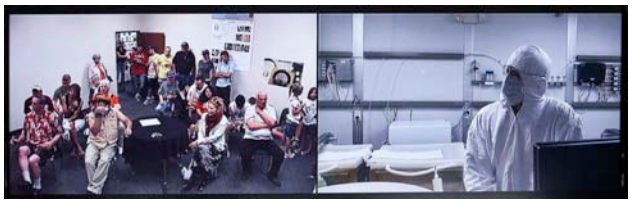


Figure 9: Physicist John Orrell at 4850 Level in videoconference with Yates Building classroom

In addition to the scientific talks, kid-friendly activities included science demonstrations and hoist-room tours. Other weekend events involved a South Dakota Public Broadcasting Science Café on July 7, followed by a Science Café Social Hour at The Roundhouse in Lead. The July 7 gathering was sponsored by the Lead Chamber of Commerce. (Some more details on Neutrino Day can be found on p. 7.)

4850 Level Progress

Figure 10: Infrastructure Tech Kevin Ehnes operates the loader as new shaft guides are installed at the Yates Shaft to provide better access to the 4850 Level

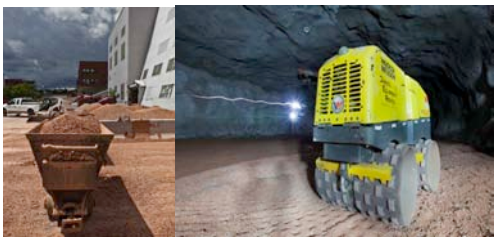


Figure 11: Left: Engineered fill ready to be lowered to the 4850 Level; Right: Trench roller used to compact the fill in preparation for pouring concrete floors in the Transition Cavern

Figure 12: Shotcreted walls and ceiling in Transition Cavern with engineered fill on the floor

EDUCATION AND OUTREACH

Early Education Activities

The Education and Outreach Department has continued to be very busy with summer activities for educators and students. Activities in July included:

For K-12 Educators: A summer teacher workshop--*Unearthing the Connections between Earth and Physical Science*--organized by the Education Department in partnership with BHSU, USD, Mt. Marty College, and the South Dakota Department of Education, brought 33 earth and physical-science teachers to the campus of Mt. Marty College in Yankton on June 19-24. The teachers spent the week with lectures, activities and tours, including a visit to the US Geological Survey's Earth Resources Observation and Science Center (EROS) in Sioux

Falls, and heard talks on the geosciences experiments at Sanford Underground Lab. Highlights of the workshop were a study of river processes and a visit to nearby Gavin's Point Dam on the day that the Missouri River was raised to 155,000 cubic feet per second. It was an awesome demonstration of the power of nature and the importance of the Missouri River to South Dakota. The workshop was funded primarily by South Dakota EPSCoR through their NSF RII grant. Peggy Norris and Julie Dahl organized the workshop.

On July 11-15, the BHSU Quarknet Center staff, led by Kara Keeter, held a workshop. Bob Peterson (Education Department, Fermilab) led the five participants in building additional cosmic ray muon detectors (CRMDs) for South Dakota schools. The teachers together with the Davis-Bahcall Scholars spent an afternoon at Sanford Lab calibrating three sets of CRMDs together with the Davis-Bahcall Scholars. On the final afternoon, they toured the 4850 Level. Two of the teachers, Rose Emanuel (Lead-Deadwood) and Luann Lindskov (Timber Lake) followed the meeting with a trip to Fermilab for Quarknet Boot Camp. A third South Dakota Quarknet teacher missed the event because he had the opportunity to go to CERN this month with Quarknet.

Figure 13: 2011 Davis-Bahcall Scholars and educators attending the 2011 Quarknet workshop pose with Kara Keeter (BHSU, back row, center) and Bob Peterson (Fermilab)

For K-12 Students: Twenty-two members from the GEAR-UP honors program senior class met with Julie Dahl, Jim Whitlock, and Connie Giroux at SDSMT on June 29 for a mini-workshop in which they filtered and tested mine discharge water. The group followed up with a tour of the Waste Water Treatment Plant (WWTP) on July 1. Jim Whitlock, Ken Norens, and Dwayne Ennis provided an impressive tour, demonstrating what they do on a daily basis and also building a working model of the sand filters, which included the backwash procedure. Connie Giroux, Julie Dahl, and Peggy Norris escorted the groups. The students learned about the theoretical and practical sides of waste water treatment.

For the General Public: The Education Department supported the Communications Department in organizing Neutrino Day. Education had primary responsibility for hands-on activities and joint responsibility for the lecture series. The volunteers listed below made this another successful event:

- Lecturers: Steve Babbitt (BHSU), Bill Roggenthen (SDSMT), Peggy Norris (Sanford Lab), Dan Akerib (Case Western Reserve)
- Activity facilitators:
  - From Spearfish High School: Steve Gabriel
  - From Custer Middle School: Michelle Roberts
  - From Sanford Lab: Summer Interns Brennan Ireland, Adam Caldwell and Sophia Elia, Peggy Norris
  - From BHSU: Faculty members Kara Keeter and Mike Zehfus, postdoc Brianna Mount, researcher Jared Thompson and several students

For Undergraduates: A workshop of the Center for Theoretical Underground Physics and Related Areas (CETUP) workshop took place at the Lead Middle School from June 20-July 8, and Sanford Lab and BHSU science interns took part in a student seminar on July 7. CETUP scientists gave informal talks on their areas of research and students gave short introductions to their summer projects. For more information on CETUP, see: http://www.dsu.edu/research/cetup/general.html

Figure 14: CETUP participants who visited Sanford Lab on July 5. Left to right: Zurab Berezhian (Univ. of L'Aquila and Gran Sasso Lab, Italy); Jaret Heise (Sanford Lab); Barbara Szczerbinska (Dakota State Univ.); Yuri Kamyshkov (Univ. of Tennessee); Azar Mustafayev (Univ. of Minnesota); Zurab Tavartkiladze (Ilia State Univ., Republic of Georgia)

Figure 15: Davis-Bahcall Scholars Virginia Bergman, Kenny Umenthum, Joel Krause, Dan Pfeifle, Deirdre Beck, Jessica Johnson, Ethan Pauley (hidden), Nate Harding, Amanda Finley and Willie Hinker learn about electroforming from Eric Hoppe (PNNL) at the MJD Temporary Clean Room

The Davis-Bahcall Scholars have been very active, arriving at Princeton University the week of July 25 after spending a week at Sanford Lab and a week on the road. During Sanford Lab week--July 11-15--the group took part in a series of foundational lectures and activities and listened to guest lectures by Dan Akerib (Case Western, LUX), Jaret Heise (Sanford Lab), Jason Van Beek (SDSMT), Eric Hoppe (Pacific Northwest National Lab, MJD) and Cynthia Anderson (BHSU). They toured LUX and the WWTP. The capstone experience was to plan and execute a scientific trip underground to set up large muon detectors at the 4850 Level for use in both education and science. The students collaborated in small teams to test electronics, calculate expected rates, plan packaging and transportation underground, set up data acquisition and write up a work plan. Once the detectors were set up in the Pb storage room at the 4850 Level and turned on, the students discovered that the counting rates from background radiation were swamping the expected cosmic ray muon rate of 5-10 counts per day. This was confirmed by moving the detectors on top of a pallet of Pb, which decreased the counts but didn't eliminate them. It is clear that more shielding will be necessary for a functioning experiment.

On July 16, the students headed northeast in two vans driven by Steve Gabriel and Peggy Norris. After a couple of hours canoeing at a local Girl Scout camp, the first science stop was the Soudan Mine. Access to the underground was restricted due to the recent shaft fire, so students learned about the experiments from education staff on the surface, then headed northwest to the site of the NoVA detector at Ash River, where Alec Haibig (Univ. Minnesota, Duluth) and Bill Miller (Univ. Minnesota) explained the MINOS and NoVA experiments and gave a tour of the huge, empty hall waiting to receive a detector, giving a detailed introduction on what it takes to plan and execute a large physics experiment.

Figure 16: (Left) The Davis-Bahcall Large Area Muon Detector Stack (DB-LAMDS) are cabled up by students Amanda Finley, Dan Pfeifle and Willie Hinker; (Right) Fermilab donated the three large scintillator detectors; data will be uploaded to the Quarknet e-lab site for use by schools around the country

The vans then headed down the path of the neutrino beam from Fermilab. Next stop was the University of Wisconsin, arriving on the worst day of the record-breaking heat wave. In spite of the heat, the group had a fruitful day, first touring the Physical Science Laboratory, where instrumentation for many large physics experiments are designed and built, then talking to scientists and graduate students of the ICECube collaboration (where the group was served ICECube blue neutrino ice cream) and finally visiting the Geophysics Visualization Laboratory, where Professor Harold Tobin showed off the 3D capabilities of its system for geological mapping and seismic work. The group thanks Professor Herb Wang for helping coordinate the visit to University of Wisconsin.

Thursday and Friday saw the group at Fermilab, where its Education Department provided an excellent program, coordinated by docent Felicia Svoboda. They toured the LINAC, the Remote Control Room for the Large Hadron Collider (LHC) Compact Muon Solenoid (CMS) experiment at CERN, the Tevatron CDF detector, the Silicon Detector (SciDec) laboratory where a camera for a dark energy survey is being built, MINERVA and the MINOS near detectors, and a prototype detector for the NoVA experiment. The group appreciated seeing the actual NoVA equipment and prototype after seeing animations of the assembly process at the NoVA site. The group also learned about Superconducting RF technology for accelerator applications from the RF engineer. The 2011 Davis-Bahcall Scholars Program is funded by 3M Corporation and NSF EPSCoR RII funds.

ENVIRONMENT, HEALTH & SAFETY

Summer Storm Safety

- Seek shelter during a thunderstorm. The safest place is indoors.
- Unplug electrical appliances such as TVs and computers.
- Avoid water. If you are in a boat, head toward land.
- Do not stand on a hilltop, an open field, or near tall trees.
- Keep pets inside for their protection.

Safety pages on Sanford Lab website: www.sanfordlab.org - Use the left hand menu to open individual pages

UPCOMING EVENTS AND ANNOUNCEMENTS

Workshops

12th International Conference on Topics in Astroparticle and Underground Physics, **Münchner** Künstlerhaus (Munich House of Artists), Munich, Germany, September 5-9, 2011. Topics covered by the conference: Cosmology and particle physics, Dark matter and its detection, Neutrino physics and astrophysics, Gravitational waves, High-energy astrophysics and cosmic rays.
For more info: http://taup2011.mpp.mpg.de/

Third International Workshop on Baryon and Lepton Number Violation (BLV-2011), Gatlinburg (Edgewater Hotel), Great Smoky Mountains, Tennessee, September 22-24, 2011. The Workshop purpose is to discuss state-of-the-art of B, L, and B-L violation search, stimulate experimental and theoretical developments in this area, and attract new and young researchers to this field. Other topics will include: proton decay, n-nbar transformations, Majorana neutrinos and their role in physics beyond the standard model and in Cosmology.
For more info: http://www.phys.utk.edu/blv2011/

DuRA Events

Presentations of interest to DuRA members are posted in the following meetings:

Message from Steve Elliott and Rick Gaitskell: Due to a conflict with the ICFA meeting at CERN requiring the presence of a number of key people who would otherwise attend the DuRA annual meeting, DuRA has decided to change the meeting dates. The dates will be announced soon. We hope that this unfortunate development does not inconvenience anyone.

Meeting of the Division of Particles and Fields of the APS, Brown University, Providence, RI, August 9-13, 2011. Of particular interest are scheduled informational Forums on Underground-based Physics and on Project X. See: http://www.hep.brown.edu/~DPF2011/

12th International Congress on Rock Mechanics, with workshop WS-5 on Networks of underground research laboratories for international disciplinary innovations, Beijing, China, Oct. 17-21, 2011. http://www.isrm2011.com/page.asp?id=100

AGU Fall Meeting, San Francisco, December 5-9, 2011. http://www.agu.org/meetings/

Please send information regarding upcoming meetings of interest or presentations from DuRA members, as well as other related events to Steve Elliott (elliotts@lanl.gov) or Duane Moser (Duane.Moser@dri.edu).

JOBS

Scientist-2 Position with Weak Interactions Team in Physics Division, P-23, Los Alamos National Lab. Work mostly on MAJORANA, also focus on low-energy neutrino physics/particle astrophysics. Job #: 221444. For more info, contact: Eric Brown (en_brown@lanl.gov) or Steve Elliott (elliotts@lanl.gov).

Postdoctoral Fellow with PhD in Microbiology or Geology to work on NSF PIRE-funded project with focus on microbial community structure and diversity, biogeography, and genomics, Tengchong Geothermal Field, Yunnan Province. Send CV and research statement to: Dr Hailiang Dong, Dept of Geology, Miami University, Oxford, OH 45056, or dongh@muohio.edu.

Newsletter Editor: Melissa Barclay
Contributors: Kevin Lesko; Bill Harlan (Sanford Lab); David Steele (MAJORANA); William Roggenthen (Rock Mechanics Meeting); Steve Elliott, Rick Gaitskell, Joe Wang (DuRA News); Peggy Norris, Ben Sayler (Education and Outreach).

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