

Dear Homestake Collaboration,

Welcome to the October 2010 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 the Collaboration, employment opportunities, and other highlights relevant to our shared goal.

Important Dates

November 12-13: DUSEL FAARM collaboration meeting - Lead (more details on page 5)

November: Safety Readiness Reviews for LUX and Majorana - Lead



Preliminary Design Report Internal Review

On October 18-20, the DUSEL Preliminary Design Report Internal Review chaired by Jay Marx, Director of Ligo Laboratory at Cal Tech took place in Berkeley. Hotel Shattuck Plaza in downtown Berkeley was the venue for plenary and breakout sessions over the three-day review. Approximately 25 reviewers and 75 participants, observers, and contractors attended. Six committees reviewed the full range of P.D. components: Experimental Program, Facilities, Environment, Health and Safety, Cost and Schedule, Project Management and Operations, and Education and Outreach.

The Review Committee provided necessary and helpful input on the various DUSEL presentations, especially pertinent to the NSF Review scheduled for February 2011. Each committee Sub-chair outlined important steps going forward. The DUSEL team was encouraged by the Review team's positive comments as we face the challenge in the days ahead.

DUSEL Preliminary Design - Update

Graphic artist Zina Deretsky (who also provided design input on the new DUSEL logo) created a graphic (Figure 1) of what DUSEL might look like once it is completed. The DUSEL team is still working on the Preliminary Design, so some details are likely to change. However, this illustrates the design concept for the future of the DUSEL project.

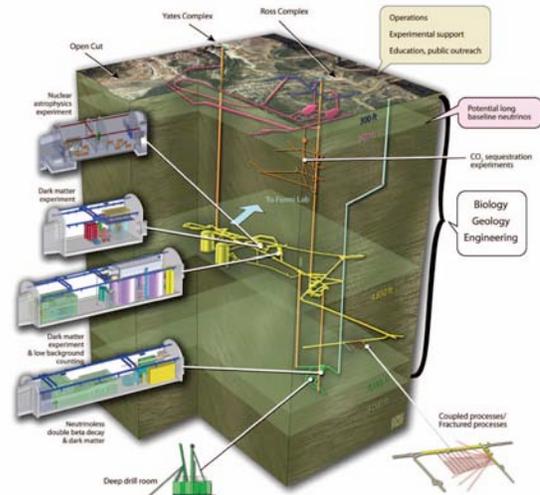


Figure 1: DUSEL Plan

Governor's Roundup

The annual Governor's Buffalo Roundup in Custer State Park in the Black Hills of South Dakota took place shortly after sunup on September 27. A number of DUSEL staff attended including DUSEL PI Kevin Lesko and Co-PI Bill Roggenthen.

Some 1500 free-roaming buffalo from the park are rounded up for annual inoculations and natural culling. Thousands of people are allowed to watch from the hillsides overlooking the ranges just a few hundred feet below.



Figure 2: Mother and baby bison at Governor's Buffalo Roundup in Custer State Park

DuRA News

7400L Science

During a series of teleconferences, the DuRA Executive Committee discussed the scientific and programmatic implications for a delay in the development of the 7400L campus. Jonathan Kotcher of the Joint Oversight Group (JOG) requested an integrated assessment from the physics experiments (mainly dark matter and neutrinoless double beta decay) regarding the scientific demand for and implications of the schedule in developing the 7400L. (The JOG meets approximately monthly, and includes all the various agencies to work out the plans and support mechanisms for the various planned DUSEL experiments.) A document has been submitted that defines the additional shielding and excavation required if detectors originally planned at 7400L are relocated to 4850L.

David Lambert of the NSF Division of Earth Sciences (GEO/EAR) Instrumentation and Facilities Program also requested an integrated assessment from the Biology-Geosciences-Engineering (BGE) experiments (mainly EcoHydrology, fracture processes, and coupled THMCB processes) addressing the potential impacts on these programs. The BGE response was prepared and sent to NSF on October 1 summarizing the necessary access requirements for the deep drilling program.

DuRA members also interacted with NSF National Science Board members during their recent visit to Lead.

High Energy Physics Advisory Panel

Steve Elliott, representing the DuRA Executive committee, submitted a letter to HEPAP on October 10 documenting the potential implications that the Tevatron run extension could potentially have on the DUSEL costs and schedule.



DUSEL IN THE NEWS

A brotherhood of miners - Black Hills Pioneer (October 14)



Sanford Lab Employee Laurie Adkins at her hoist (photo by Kevin Norton)

Black Hills Pioneer reporter Kevin Norton interviewed Sanford Lab employees Kyle Ehnes and Laurie Adkins about their reactions to the rescued Chilean miners. Both employees also worked at the former Homestake mine.

Ehnes: "I've worked for 25 years in a mine, but I can't imagine being stuck down there for 69 days."

Adkins: "From everything we've heard, it seems like they've all gotten along well, other than things you'd expect, some dehydration and weight loss."

Further details at: [Black Hills Pioneer](#)

More DUSEL stories:

The Associated Press: *National Science Board gathers in Spearfish, eyes Homestake mine site* (Dirk Lammers)

Symmetry Magazine: *Diverse group to go deep for science* (Leah Hesla)

www.nsf.gov: National Science Foundation Media Advisory - *National Science Board to meet in South Dakota*

Massachusetts Daily Collegian: *UMass professor scouts out cave for underground lab* (Cameron Ford)

The Volante: *More dollars come to USD to assist in matter research* (Ron Nielsen)

Black Hills Pioneer: *Funding secured to finish HARCC construction* (Jaci Conrad Pearson)

Duselwatch.com: *State commissions \$90K lab economic impact study; Calif. Delegation interested in DUSEL proposal* (Wendy Pitlick)

www.sanfordlab.org/ - Check out "Twitter updates" in lower left hand column

SANFORD UNDERGROUND LABORATORY AT HOMESTAKE

National Science Board Tours Sanford Lab

The NSB held their annual retreat in the Black Hills this year. They held a public meeting at Black Hills State University on the morning of September 24. Media throughout South Dakota reported on the event through The Associated Press story by Dirk Lammers, local television stations, and other media outlets. For more details see: <http://bit.ly/RCJnsb> (Rapid City Journal) or <http://bit.ly/WellDone> (Black Hills Pioneer).

On September 24, the NSB toured the surface and underground at Sanford Lab. One highlight of the tour was the Ross shop on the 4850' Level which has been transformed into a laboratory for the MAJORANA DEMONSTRATOR experiment.



Figure 3: PI Kevin Lesko outlines the DUSEL vision at the recently completed 4850L excavation.



Figure 4: Co-PI William Roggenthen describes the geology of the Davis campus.

Color coding pipes at Sanford Lab

Technicians at Sanford Lab are working to standardize signs and color code pipelines along with other infrastructure to make them compatible with national and international standards. The Lab has adopted standards recognized by the American National Standards Institute (ANSI).

Some of these colors are: Green for Safety, Yellow for Caution, or Red for Stop, Hazard or Danger. In the Hoop Shed - the Quonset structure that houses the Yardney sand filters – pipes have been color coded to indicate their purpose. Brown is for unfiltered water from underground, red for filtered underground water, tan for backwash lines, and green represents compressed air.



Figure 5: Water Treatment Plant Operator Jackson Pahl with newly painted pipes in the Hoop Shed

E-forming lab cleanroom installed

As of October 12, CAI had completed the assembly of a cleanroom on the 4850' Level, near the Ross Shaft, for the Majorana Demonstrator electroforming lab. The 12x40' cleanroom will house up to 10 electroforming acid baths that will produce copper that will be used to manufacture ultra-pure detector

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components for the Majorana experiment on neutrinoless double-beta decay.

Over the next two months, Sanford Lab electricians will complete the wiring for the cleanroom. A fire suppression system will also be installed. The room should be ready for use in December, following a Safety Readiness Review.



Figure 6: Science

Liaison Lab Supervisor Connie Giroux and Science Liaison Director Jaret Heise escort Majorana members to the new cleanroom



Figure 7: Project Engineer for

Underground Construction and Excavation Bryce Pietzyk and Engineering Project Manager Mike Johnson record the dimensions of a robotic arm that will be used to apply shotcrete in the Davis Cavern

Governor Rounds to address Chili Cook-off

The Second Annual Sanford lab Chili Cook-off will take place on Friday, November 5, noon – 3 pm. Governor Mike Rounds will be the special speaker. The cook-off is open to Sanford Lab/DUSEL employees and contractors. Judging will be conducted by secret ballots cast by chili eaters. For more information, contact Lindsay Hauck at Sanford Lab, Yates Admin Bldg.

The meeting will also provide a venue to update Sanford Lab staff about DUSEL's progress. Governor Rounds will discuss his vision for the future of the project.

EDUCATION AND OUTREACH

Education Activities

On September 27-28, Peggy Norris attended the Indian Education Summit in Chamberlain on behalf of the E&O team. This conference brings together educators working on reservations and with American Indian organizations around the state. At the conference, Governor Mike Rounds, Dr. Keith Moore, and Stacy Phelps were honored for their contributions to Indian education in the state. Dr. Moore, a member of the DUSEL Cultural Committee, has recently moved to Washington, DC to head the Bureau of Indian Education. Stacy Phelps leads the GEAR-UP program in South Dakota, working to assure the interest and success of American Indian students in science and engineering careers.

In late September, Sanford Underground Lab/DUSEL had an information table at the annual Conference in Anaheim, CA of the Society for the Advancement of Chicanos and Native Americans in Science. Many undergraduate and graduate students were made aware that there would be an increasing number of student opportunities at the Lead site in the coming years, both with the Sanford Lab and with science collaborations. Julie Dahl attended the conference on behalf of the Education and Outreach team.

Julie Dahl and Peggy Norris participated in annual Space Days, held this year in Pierre, South Dakota on October 7th. Approximately 1950 people attended the exhibit hall, including students during the day and adults in the evening. In addition, Peggy spoke with five different chemistry classes for a total of approximately 100 students.

An information table was also in place for the Black Hills Pow-wow in mid-October, staffed by George Campbell.



Figure 8: Sanford Lab /DUSEL booth at the National Mall

On October 23-24, Sanford Lab/DUSEL had a booth at the first annual USA Science and Engineering Festival on the National Mall in Washington, D.C. Seven-hundred and fifty science and education organizations participated. Public attendance numbers have not been compiled yet, but the weather was good and the numbers were high, with a continuous stream of people coming to the booth. (<http://www.usasciencefestival.org/>)

ENVIRONMENT, HEALTH & SAFETY

Water Safety at Sanford Lab



Figure 9: Pipeline is buried: the new trench will redirect water from underground to the Mill Reservoir. A second new line in the trench will transport Grizzly Gulch water to the reservoir. The new system will provide a more stable, reliable flow of water to the Sanford Lab treatment plant.



Figure 10: Brad Harper (red hard hat) and Steve Wold of RCS Construction work on the new line.

Meeting at LBNL

On September 29-October 1, an Experiment Safety Workshop was held at LBNL in Berkeley. Both Laboratory Science Liaison and EHS representatives attended. Information was provided as to how elements of the user program were implemented and how responsibility was assigned. Agreement was reached among other laboratories that there should be an effort to standardize user interfaces by having similar forms and terminology.



Halloween Safety

- Buy or make a safe Halloween costume
- Know the neighborhood where you will trick-or-treat, and accompany younger children when they go out
- Keep pets, especially cats, indoors

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

NEW STAFF



Steve Acheson has recently joined the Sanford Underground Laboratory at Homestake to serve as Systems Engineering Lead. He left Rockwell Collins in Cedar Rapids, Iowa where he had been a systems engineer for 11 years. He has worked as a Systems Engineer on projects that include landing systems for aircraft carriers, avionics for CH-47 Helicopters, Cabin Entertainment Systems, Internet and TV access on aircraft, and a ground based commercial airline maintenance system like OnStar in GM vehicles.

Acheson is a graduate of SDSM&T (2001) in Electrical Engineering.

He has been married to his wife Natalie for eight and a half years. They have two children: a boy Zaryk who is one and a half and a girl Ezri who is five.

UPCOMING EVENTS AND ANNOUNCEMENTS

Upcoming DuRA Events

Presentations are scheduled for the following upcoming meetings by DuRA members. Some highlights will be presented by speakers in future monthly reports:

ISRM International Symposium 2010 and 6th Asian Rock Mechanics Symposium October 23-27, 2010, New Delhi <http://www.arms2010.org/>

Standard Model Benchmarks at the Tevatron and the LHC Workshop, November 19-20, 2010. Fermilab, Batavia, IL. <http://www.physics.purdue.edu/particle/cteq/>

2010 AGU Fall Meeting, December 13-17, 2010, San Francisco - Sessions H52, NH13 <http://www.agu.org/meetings/fm10/>

Please send information regarding DuRA to Steve Elliott (elliotts@lanl.gov) concerning presentations from DuRA members, as well as any other related events or ideas.

The next Assay and Acquisition of Radiopure Material (AARM) collaboration meeting will be held at Sanford Lab on Friday-Saturday: November 12-13. Homestake Tours and informal meetings will take place on Thursday afternoon before the meeting.

Over the last year the AARM has been designing a common use low background counting facility (FAARM) for DUSEL to be up and running in 2018. The focus of this collaboration meeting is to plan early implementation of screening, assay, material stockpiling, etc. for the period leading up to DUSEL and how to make a smooth transition to the DUSEL assay facilities. The group is asking each current and future experimenter, in particular all ISE groups to send an official representative to the meeting. This will provide an opportunity to form a unified plan for early screening and seek resources to make it

happen. This will involve multiple sites and existing assay installations as well as building up strength in this field. The facility plans themselves will also be reviewed and critical comments will be welcome.



JOBS

Assistant, Associate or Professor position at SDSMT, Dept. of Physics. Anticipated tenure track faculty position in experimental nuclear/particle physics, focusing on research areas related to neutrino physics, proton decay and related experiments requiring deep underground shielding and low background counting. Review: January 14, 2011. Start date: August 2011. Apply on-line at <http://sdmines.sdsmt.edu/sdsmt/employment>

Non-tenure track Research Faculty Position in Dept. of Physics, Univ. of South Dakota. Candidate will participate in 2010 DUSEL Research Center (CUBED) activities and conduct research at DUSEL. Apply at: <https://yourfuture.sdbor.edu> or submit materials directly to Chair of Physics Search Committee, Dept. of Earth Sciences and Physics, University of South Dakota, 414 East Clark, Vermillion, SD 57069 or via email to physics@usd.edu.

Two Faculty Positions, UC Berkeley Physics Dept. in Experimental Particle and/or Nuclear Physics and Theoretical Condensed Matter and/or Materials Physics. Start date: July 2011. For more info: <http://www.physics.berkeley.edu>. Click on "Faculty Job Listing" links in the right side bar.

Particle Physicist position, Lawrence Berkeley National Lab, Job No. 24879. Work half-time with Particle Data Group and half-time in particle physics or cosmology research. Application deadline December 1, 2010. For more info: <http://www.lbl.gov/LBL-Programs/physics/>

Conventional Facilities Engineer IV, Lead, South Dakota. Apply at Particle Physics Division, Fermilab. Job Code: 100137. LBNE seeks engineer to oversee all aspects of LBNE-specific conventional facilities at DUSEL and nearby properties. For more info: https://Fermi.hodesiq.com/job_detail.asp?JOBID=209176&user+id=

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Assistant Professor faculty position at University of Wisconsin-Madison in experimental neutrino physics. Start date: August 2011. Submission deadline December 31, 2010 to: <http://www.physics.wisc.edu/apply/fac-search-2010/>

Postdoctoral Position In Particle Detector Development, Dept. of Physics, UC Santa Barbara. Lead detector R&D program, building ultra-high-resolution particle detectors for future neutrino and dark matter detectors. Assist with work on KATRIN neutrino experiment and at UCSB Nanofabrication Facility. Contact: Professor Ben Monreal atbmonreal@physics.ucsb.edu or <http://www.nanotech.ucsb.edu/>

Newsletter Editor: Melissa Barclay

Contributors: Kevin Lesko, Willi Chinowsky, Bill Harlan (Sanford Lab); Steve Elliott, Derek Elsworth, Joe Wang (DuRA News); Peggy Norris (Education and Outreach).

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BERKELEY OFFICE

UC Berkeley
DUSEL Project Office
2440 Bancroft Way, Suite 303
MC 1295
Berkeley, CA 94720-1295
Fax: 510-642-2258

HOMESTAKE DUSEL CONTACT INFORMATION

University of California at Berkeley

Kevin T. Lesko: 510-642-0147

KTLesko@berkeley.edu

Melissa Barclay: 510-642-2244

mbarclay@berkeley.edu

<http://www.dusel.org/>

South Dakota Science and Technology Authority

Ron Wheeler, Executive Director

Mandy Knight, 605-722-8650, x222

MKnight@sanfordlab.org

<http://www.sanfordlab.org/>

South Dakota School of Mines and Technology

William Roggenthen: 605-394-2460

William.Roggenthen@sdsmt.edu