

Meetings and Minutes

Minutes of the February 25, 2006 UEC Meeting

Present: Alton, Casey, Chertok (video), Diehl, Finley, Gollin (video), Kopp (video), Merritt, Nguyen, Quinn, Trischuk (video)

Apologies: Bertram, Hughes

From the GSA: Cuenca Almenar, Degenhardt, Welty-Rieger

The Chair called the meeting to order at 9:00 am.

CHAIR'S REPORT

Chair Kopp reported on a followup with ES&H regarding the new safety regulations. Several hundred users have been registered since the beginning of this initiative. The process of having ITNAs done for all these people has not yet begun; the machinery of notifications using the database is still under construction.

The Committee then heard reports from the DC Trip and Users Meeting subcommittees.

DC TRIP (Quinn, Chertok, Diehl, Finley, Hughes, Merritt, Nguyen)

Breese Quinn, subcommittee Chair, reported that currently (one and a half weeks away from trip), SLUO and UEC have 78 confirmed appointments with Congressional offices. There will also be a special joint meeting with Science committee staff. The meetings with URA, OMB, DOE, and NSF have been scheduled as well. The informational materials for distribution to the Congressional offices were reviewed.

USERS MEETING (Casey, Trischuk, Bertram, Alton, Nguyen, Kopp)

Brendan Casey, subcommittee Chair, reported on speakers who have been enlisted:

- Robin Staffin - News from DOE
- Norm Augustine (National Academy of Sciences) - public lecture on the Gathering Storm report
- Michel Della Negra - CMS/LHC readiness
- Hiro Aihara - The next decade in Japan
- Jon Kotcher - News from NSF and DUSEL

The subcommittee is still seeking additional speakers. The budget for the Users Meeting is still to be determined. Catering is being arranged for the reception, which this year will be a combined UEC-GSA event. Festa Italiana will take place this year, after the public lecture.

In planning the physics talk schedule, the committee will try to get talks which focus on particular subjects, plus extras, rather than very broad talks.

DISCUSSION WITH DIRECTOR ODDONE

How do you imagine the relationship between Fermilab and URA will evolve if the contract bid from the joint URA/U-Chicago management effort is successful?

Adding the University of Chicago in partnership brings the advantage of a university fully committed to the success of Fermilab, and its associated strong connections in the state of Illinois. A contract transition, whether to the proposed URA-UofC partnership or another contractor, should be seamless for users (as for almost all employees).

We will hear from Ioanis Kourbanis on shutdown activities, but do you have any update from your perspective about what is projected, given the TeV quench, zebra mussel weather, etc? If the shutdown goes longer for TeV, can the neutrino program come back up sooner?

The shutdown started early because of damage from a quench. This was the result of a concatenation of several factors - this has been typical of quenches that lead to damage to the Tevatron. We are analyzing several factors that may have played a role in the recent damaging quenches. Some of the associated factors could be the unusually long run (15 months), the movement of some accelerator physicists from the Tevatron to LHC and ILC, or simply the age of some of the components. We will continue to work on the reliability issues to make sure we have a successful Tevatron run.

Would you extend the shutdown in order to do more extensive maintenance? No, we would be very reluctant to extend the shutdown and would prefer to get techs from other areas to augment the technical force during the shutdown. If the shutdown were extended, it would become difficult to meet this year's luminosity goal. But pulling in more techs causes risks in other areas; for example, this might delay the schedule to get a spare horn for the neutrino program finished. Achieving the luminosity goals for this fiscal year will be difficult even if we maintain the shutdown schedule; we have to average 90 inverse picobarns per month after the shutdown in order to meet the goals.

What might be expected to transpire next week at the HEPAP meeting next week in DC?

The next HEPAP meeting will hear a number of reports which have been bottled up, waiting for HEPAP to resume its meetings. There will be reports from NUSAG, P5, and DETF, so this will be an important meeting. Unfortunately Director Oddone (and also SLAC Director Dorfan) will be on a previously scheduled visit to India, exploring possible Indian contributions to the ILC.

Any last minute advice for us when we head to Washington on the 8th of March? What will be the focus of the R&D Caucus held with Brian Greene?

The Director repeated his urging, as at the previous UEC meeting, that the attendees in Washington should focus on showing their enthusiasm for the field. He stated that the presentation by Brian Greene for members of Congress is also intended to showcase the excitement to be found in HEP.

What was learned/concluded at the recent review of Advanced Accelerator R&D conducted at Fermilab?

Fermilab presented its work on LHC magnets, ILC, photonjector, and some work on the muon collider. There were presentations by other groups, including universities. The Director was asked whether university participation in ILC accelerator R&D could find a home here, and if not, where should it find a home. He pointed out that the ILC is not considered 'advanced accelerator R&D' in these terms. The Director noted that AARD went up by \$5M in the FY07 budget request, while the ILC went up by \$30M. He said that the money available for ILC R&D presently is largely administered by the Global Design Effort, and that anyone, including university groups, can make proposals to the GDE R&D board. He also noted the asymmetry between the administration of resources for the ILC in the US (where the GDE has a big influence on the distribution of funds) and those of other countries.

Any news from the ICFA meeting (held last week at CERN)?

There were discussions about the rotation cycle of accelerator conferences among regions. Also, an important question is that of when FALC (the Funding Agencies for the Linear Collider) becomes a more formal body. Director Oddone's position is that it should be talking about defining the rules for a bid to host the Linear Collider. The committee asked what can be done to move in that direction. The Director thinks that quite a lot can be done once the Reference Design Report is issued by the Global Design Effort.

ACCELERATOR DIVISION SHUTDOWN PLANS

Ioanis Kourbanis gave the committee an update on plans for the current shutdown. As mentioned to the committee previously by Dave McGinnis, the major focus will be on machine upgrades required for the neutrino program. Running two neutrino experiments means that higher rep rates and higher intensities are needed. The shutdown work will aim at opening the Booster and Main Injector apertures, installing pulse magnets with higher rep rates, and reducing losses. The other focus during the shutdown will be on routine maintenance: TeVatron cryo work, water system maintenance, and power supply and feeder maintenance. Most of the components of the Run II machine upgrade have already been installed.

A new injection system for the Booster will be installed, which uses a simplified string of 3 magnets instead of 4. The new system will be a better lattice match and will be capable of 15Hz rate, improved from 7.5 Hz. The Booster dump will be relocated. The committee asked if experiments would be possible in the new dump location; no, this capability will be lost. New water manifolding and more reliable power supplies for the 400 MeV line will be installed.

Major work in the Main Injector includes the installation of four collimators and more instrumentation in the MI-8 line. The aperture will be increased by installing wide aperture quads at Injection/ Extraction Areas. The MI-8 collimators will have an outer sheath of marble to improve radiation resistance.

Work in the Recycler Ring will include installation of a new damper system for improved response, and replacement of 30 mil flying wires with 5 mil wires, to reduce emittance growth during flies.

In the Pbar Source, motorized stands will be installed on the D60 extraction kicker. This will remove the need to introduce a beam bump. The TeV shutdown activities are repairing the cold leaks at E-2 and F4, unrolling some quads, and replacing and adding some separators with higher voltage.

Kourbanis was asked if, after this shutdown, the accelerator complex would be ready for another very long run. He said that the neutrino program would require some more shutdowns, probably of 1-2 months duration.

NEWS FROM THE PARTICLE ASTROPHYSICS CENTER

Rocky Kolb gave an overview of what is going on at Fermilab in astrophysics. The Particle Astrophysics Center at Fermilab encompasses these projects: Theoretical astrophysics, the Sloan Digital Sky Survey, the Pierre Auger Observatory, the Cryogenic Dark Matter Search, the Supernova/Acceleration Project, and the Dark Energy Survey. He briefly described each area.

The Theoretical Astrophysics Group is the oldest astrophysics effort at Fermilab, established in 1983. There are 10-15 members (depending on the level of visitors). The group is partially funded by a NASA grant. It has published over a thousand papers since its inception, and sent 36 of its postdocs on to university or lab positions.

The Sloan Digital Sky Survey (E885) was initiated in 1991. The project has ~ 150 scientists from 14 institutions, and funding from the Sloan Foundation, DOE, NSF, NASA, USNO, Monbusho, Max Planck and universities. Its first 5 year mission was to find the redshifts of 10^{*6} galaxies and 200,000 quasars, and to understand the role of dark matter in shaping structure. SDSS II has just been funded for another 3 years by the Sloan Foundation and NSF. Sloan publications have passed 10000 citations.

The Pierre Auger Project (E881) began in 1995. It has ~250 scientists from 16 US institutions and 16 other countries, and is funded by DOE, NSF, and 13 foreign agencies. It is managed by URA. The project is designed to measure the spectrum, source, and composition of the highest energy cosmic rays, using a huge (3000 sq km) array in the Argentine pampas. The experiment presented 38 papers at a recent cosmic ray conference (ICRC).

The Cryogenic Dark Matter Search (E891) began in 1996, and has ~50 scientists from 12 US institutions, with funding from DOE and NSF. The detector is located in the Soudan mine in northern Minnesota. It currently provides the best limit in the world, by a factor of 4, on the direct detection of dark matter. It has already probed a significant fraction of MSSM model space, and will be able to achieve another factor of 3-4 in the limit.

Two new initiatives are underway which have participation from the PAC. One is the Dark Energy Survey, proposed in 2004, which would survey 5000 square degrees of the southern

galactic cap, using a new 2.2 sq deg CCD camera to be constructed for the Blanco 4m telescope at Cerro Tololo International Observatory. Construction is projected for 2005-2009, and observation would be from 2009-2014. This project would measure the w parameter in the dark energy equation of state to $\sim 5\%$, and place constraints on dw/dz .

The other new initiative is the Supernova Acceleration Project (SNAP). This is proposed as the NASA/DOE Joint Dark Energy Mission. The R&D on the project is being led by LBNL; Fermilab joined the collaboration in 2004.

Possible projects further on the horizon are a second Auger array in North America, and SuperCDMS.

The Particle Astrophysics Center has as a goal to be an intellectual center that unifies and focuses the astrophysics program at Fermilab, and enhances its effectiveness and recruiting ability. Its membership is open to all Fermilab employees working on existing astrophysics and new initiatives. The Center also aspires to assist the user community involved in its programs.

There are 'rules of engagement' governing what projects the Center participates in. These should be projects that require the resources of a national lab, and for which the talents and techniques available at Fermilab are relevant to the project. The Center wants to participate in strength, to participate along with universities and other labs, and to participate in the science of the projects as well as the construction and operation.

There was some discussion between the Committee and Kolb regarding how to define an astrophysics user community for Fermilab, and how to integrate its representation within the Users Organization. One suggestion which will be applied this year is to make sure the collaboration management of Center experiments receives sufficient advertisement of the annual Users Meeting. Also, the UEC Chair will communicate will these experiments to explain the mission of the Users Organization.

NEW BUSINESS

No new business was proposed.

FUTURE MEETINGS

Future meeting dates: Apr 1; May 6

DC Trip - March 7-10

Users Meeting - May 31-Jun 1

Submitted by Wyatt Merritt, UEC Secretary