

Minutes of the March Users' Executive Committee Meeting

Present: Alton, Bertram, Bloom, Finley, Gottschalk, Hughes, Nguyen,
Rolli, Tanaka, Trischuk

Video: Artuso, Messier, Hagopian

GSA Representatives: Clark, Copic, Katsanos

Chair Trischuk called the meeting to order at 9AM.

Inreach Committee Report: Andrew Alton

Alton reported on the Quality of Life survey. People were asked to categorize themselves as commuters, longterm visitors, non-residents and residents; the largest group was resident. Overall, people responded that the quality of life is "good" or "could be improved," though no one characterized it as "great." Use of facilities and attendance at events seemed to be minimal, with most respondents reporting attending 0-1 educational events/month and 0-1 social events/month. Cafeteria usage was split between those who almost never eat there (0-1/week) to those who eat there nearly every day (4-5/week). The most common evaluation of the cafeteria was a call for "better food," while 81 out of 188 respondents would eat vegetarian meals if available.

Most users responded that utilization of a shuttle service to the Metra or to local supermarkets would be minimal if offered (0-1/month). However, respondents favored an off-site taxi service during collaboration meetings (114 in favor/59 against) in order to reduce travel expenses. The option of having food at the Users' Center received positive responses from 50% of those surveyed, though only 10% reported going to the the Users' Center more than twice a month.

Other questions included whether the HEP job fair is a good idea (75% in favor) with roughly equal positive response from users who characterized themselves as employers and those who were employees. The fraction of respondents who attended the Users' Meeting was fairly constant over the last five years.

One issue involved the summer bicycle program: five out of the twenty respondents who participated in the program reported problems.

Users' Meeting: Ken Bloom

Ken Bloom reported on the status of the planning for the Users' Meeting.

A

draft poster has been made, along with a draft program. The two day program has three hours of talks in the morning and four hours in the afternoon. The first day will end with a talk by outgoing Director Witherell, while the second day will end with incoming Director Oddone. There was a call to address the issue of the midterm plan for US high energy physics. It was suggested that the directors would discuss this in their presentations. Over the next few weeks the poster draft will be finalized, a website set up, and the program pamphlet with the PhD list prepared.

GSA Report: Katherine Copic

The GSA reported on their preparations for the New Perspectives conference.

So far invitations for speakers have had limited response. The GSA also hopes to update the "Guide to Life" in the time frame of one month. All five

GSA officers will participate in the trip to Washington D.C.

User's Organization membership and other issues:

There was a call to ensure that the members of the particle astrophysics community at Fermilab are aware of the Users' organization and the User's Executive Committee, particularly with the inauguration of the Astrophysics

Center. During discussions, it was pointed out that the usual registration

process at Fermilab automatically adds people to the user's mailing list, so

that it is likely that the astrophysicists are already included.

(Receiving

these minutes via the user mailing list indicates registration as a Fermilab user.)

Non-US Users Survey: Simona Rolli

Rolli reported on some preliminary results from the Non-US Users surveys. Nearly a hundred users participated, with most of the respondents coming from

Western Europe. Overall, it appears that users are reporting an improvement in

the visa process, with 18% reporting delays and 8% reporting problems with

immigrations. Despite the improvement, more than half of the respondents felt that the process created a negative impression on performing research

in the United States. The relatively low turnout for the survey and the small rate of reported problems indicate that the visa situation has improved,

but lingering negative impressions remain.

Discussion with Fermilab Director Mike Witherell:

The big news since the last UEC meeting is the 2006 budget and the NuMI dedication. Among the important outcomes of the budget are the cancellation of the BTeV project, the termination of SLAC B-factory operations in 2008 at the latest, and attention to research and development for the neutrino program and the International Linear Collider.

The budget continues the trend of close to flat-flat funding (constant without correction for inflation). The results of this are that the operations of existing facilities now dominate the high energy physics budget, with very little money left for research and development and construction of new projects. The operations of the facilities has been relatively constant once inflation is accounted for, but have taken an increasing portion of the overall budget.

While the Department of Energy's Office of Science has seen a 22% increase since 2000, more or less tracking inflation, High Energy Physics funding has remained below inflation. Priorities are currently applied towards research with immediate benefits to society.

Another significant change is the beginning of the handover of SLAC accelerator operations to Basic Energy Sciences. Finally, the concept of a "base budget" for laboratories is no longer recognized, since the Office of High Energy Physics directly controls the High Energy Physics Program, and funds the laboratories to carry out that program.

To assist its planning of the program, the OHEP will initiate a review of neutrino physics through NuSAG, a new review of the RSVP project, and reconstitute the P5 (Particle Physics Prioritization and Planning Panel). While this weakens the role Fermilab Physics Advisory Committee, it still means that projects emerging from Fermilab will be well-reviewed by the PAC and provide P5 with very good input. One of the outstanding issues with the new programming changes is that the approval process is not defined yet.

The High Energy Physics Office is considering the following list of mid-size

projects, several of which would be done at or through Fermilab:

1. Reactor-based $\sin^2 2\theta_{13}$ measurement
2. Off-axis neutrino detector
3. High Intensity Proton Driver
4. Neutrinoless Double Beta Decay.

5. Dark Matter searches

6. Ground-based study of Dark Energy

There is opportunity in 2008/2009 for funding a new project as the B-factory and Tevatron terminate operations. The operation costs could be transferred to project money.

Rob Plunkett: the NuMI/MINOS project

The NuMI/MINOS project sends a neutrino beam from Fermilab to the Soudan Mine in Minnesota, where the MINOS detector is situated. There are currently

28 universities from 6 countries participating in the project, with more people joining, forming a collaboration of about 200 scientists.

In order to send the neutrinos to Soudan, the beam actually has to point downward to account for the curvature of the Earth. Initially, the beam is

sloped very steeply to get through the water table as soon as possible.

The

initial intensity of the beam is expected to be 2×10^{13} protons per pulse.

The civil construction, primarily the excavation of the 675 meter decay pipe,

was a \$75 million project. The total cost of the beamline is \$171 million dollars.

The construction went very well, with the construction crew handing over buildings the day they were completed. Due to the dedication of the Fermilab

staff, the construction of the near detector proceeded rapidly at a rate of

3-5 planes/day. While the project had some difficulty in the initial stages,

mostly with the construction of the decay tunnel, after rebaselining in September 2001, the project has met all expected dates and cost estimates.

The NuMI beamline starts very near the Recycler ring. Collaborators have been very active in the primary beamline instrumentation, including 24 beam position monitors and 54 loss monitors in order to achieve the desired beam loss rate of less than 5×10^{-3} . The decay region is instrumented

with hadron monitors at the end, with muon monitors behind a set of absorbers.

The target hall is filled with concrete in order to contain radiation.

The

focusing horn, which will become highly radioactive, can be removed into steel shielding, viewed through 1 foot lead glass window and operated on remotely. The beam focusing can be optimized for three energy ranges (low/medium/high) by moving the target within the horn. In the first case, the

target actually sits inside the horn. Currently, we are running in the medium energy configuration.

The MINOS far detector in the Soudan has been operational since June 2003 with greater than 95% live time. Upward-going muons from atmospheric neutrinos have been detected, providing the start of analysis that can distinguish neutrino from anti-neutrino oscillations. The monitoring of the far detector is done from the control room on the 12th floor of Wilson hall, while mine crews and visiting physicists at the Soudan Mine have physical access to the detector from 7:30-5:30 on weekdays.

The beamline commissioning went very well; operations were established within one hour, and beam was on the target after 10 pulses. The first event in the near detector was observed on the fourth pulse after the horn was turned on. We are currently studying slip-stacking in order to achieve 2×10^{13} protons-per-pulse.

In conclusion, the NuMI/MINOS construction project has concluded very successfully. The beamline commissioning is proceeding very rapidly and both the near and far detectors are working very well.

Report from the DC Trip Committee: Erik Gottschalk:

A folder containing materials to be handed out at appointments has been put together. The folder includes a CD about high energy physics, a Fermilab ruler, a Fermilab map, an issue of "Symmetry" magazine, the Department of Energy's 20 year "Facilities for the Future" report, a pamphlet about the Linear Coherent Light Source at SLAC, a pamphlet about tours at Fermilab, and a copy of the "Quantum Universe" report. We will try to include the URA report as well. A spreadsheet will be sent out that will summarize both the primary and secondary appointments for each participating UEC/SLUO member.

Report from 14-15 February High Energy Physics Advisory Panel (HEPAP) Meeting:
David Finley

The complete notes from the meeting can be found at:
<http://tdserver1.fnal.gov/Finley/0502DFhepapNOTES.pdf>

The meeting opened with a welcome from Gilman (chair of HEPAP).

High Energy Physics Human Resources Study:

James Whitmore.

The study aims to identify the human resource needs of high energy physics through 2009 in both the Department of Energy and NSF. While many principal investigators have responded, the study is currently waiting for further responses, particularly from groups funded by the DOE.

ILC: Maury Tigner

Maury Tigner presented the status of the International Linear Collider, including the Director Search, the evolution of the collaboration organization and the site selection. Barry Barish has been offered the directorship of the Global Design Effort and will decide by March whether to accept the offer.

(Note: Barish has accepted the directorship.)

EPP 2010: Jonathan Bagger

On behalf of Sally Dawson, Jonathan Bagger reported on the National Academy of Science's Experimental Particle Physics study (EPP2010), which seeks to identify the key questions in particle physics and a realistic program to confront them. The committee includes non-physicists and will produce a report by December 2005. Bagger reported that there has been little input from the high energy physics community thus far and encouraged more contact.

(Note in UEC discussion: the UEC should send an email to the user community to encourage contact with the EPP2010 committee members.)

Website for EPP2010 study:

<http://www7.nationalacademies.org/bpa/EPP2010.html>

NSF: Michael Turner by phone

Turner praised the APS neutrino study as well as the move of the NSF budget into a new House appropriations committee. The NSF budget is up 2.4% in the proposed FY06 budget following the 3.2% decrease in FY05. Turner reported that "the President and Congress recognize the basic research and NSF's central role" but that current national priorities are not well matched to it. In the near term, the NSF Experimental Particle Physics will pursue the LHC, RSVP, a

wide range of non-accelerator based experiments and a neutrino program. An important issue that needs to be resolved is the jump in the RSVP program cost. By the summer, the NSF will decide to redesign, descope or terminate the project based on a fixed budget. Input from HEPAP on RSVP will be very useful.

NSF Experimental Particle Physics and Particle Astrophysics Funding:

James Whitmore

Currently, there are two major constructions in FY06 (RSVP (\$41.76 million) and Ice Cube (\$50.45 million)) with LHC, with highest priority, ramping up to \$13.5 million from the base funding. CESR will be turned off in FY08.

Department of Energy, High Energy Physics:

Robin Staffin

The Office of Science funding is down 3.9% in the proposed FY2006 budget relative to the FY05 appropriation. The HEP budget is down 3.3%, which should be compared to similar and larger decreases in Biological and Environmental Research and Nuclear Physics. Currently, there is a 3.7% planned decrease for the Office of Science through 2006; accounting for inflation decreases it further. The priorities for FY06 are the operations of the Tevatron and the B factory, along with the LHC. In response to the opportunities in neutrino physics (summarized by the APS Neutrino Matrix study), overall R&D and new initiatives are up 7.1% to \$91 million. The cancellation of BTeV was "no reflection on the quality of the work," but based on P5 recommendations that a project finish in FY10 or beyond would leave BTeV unable to compete effectively, from which "no one would benefit." Staffin emphasized that "we are committed to Fermilab" and its long range plan. As for new initiatives, the Department of Energy is soliciting CD0s for a reactor-based theta13 experiment, an off-axis neutrino experiment, a neutrinoless double beta decay experiment, an underground search for dark matter, and a ground-based dark energy search.

Report from Fermilab:

Fermilab Director Mike Witherell

Fermilab is in the middle of exciting times, with the Tevatron Run II going well, the NuMI/MINOS program proceeding on schedule, MiniBooNE, and the LHC physics center and astrophysics going very well. The FY06 budget for DOE

High Energy Physics, however, was a low point: the \$850 million funding in FY2000 has decreased to \$690 million in FY2006 (in FY05 dollars). The cancellation of the BTeV project, with its excellent science potential, as well as being "as good a value for the science as any in Department of Energy" indicates that "the field cannot do a project." The present budget shows the neutrino program at Fermilab as the only HEP experiment at the end of the decade, with KOPIO and MECO not assured, indicating an unhealthy balance of operations and new initiatives. Witherell will work with Oddone to "adjust quickly" and "balance again." Fermilab now has "a new and central role as home for US HEP."

DOE HEP funding

Glen Crawford

In FY03/04/05, actual appropriations were \$20 million less than the request;

we can probably expect this in FY06 as well. In order to plan for initiatives

in FY10 and beyond, the B-factory will be turned off in FY08 at the latest.

FY06 includes the start of a focused R&D program for neutrinos in FY06, for

which \$4 million has been dedicated.

Following a statement from Joel Butler regarding BTeV, a few comments were made:

1: Projects should not get as far as BTeV did and get canceled.

2: The field should make decisions like this, not the funding agency.

3: The process needs more transparency, particularly for foreign collaborators

and younger researchers.

4: We should publicize the effect of BTeV's cancellation and the impact of the

absence of an-accelerator-based program in the US.

5: EPP2010 is an opportunity to make our case.

15 February 2005

"Advancing Energy, Economic and National Security through Science, Technology

and Environmental Stewardship":

Ray Orbach:

The Office of Science supports 42% of US physical science, including 25,000 PhDs, post-docs and graduate students. There are 19000 users/year at

Office of Science facilities. The creativity of HEP has and will continue to

create a great legacy for other fields, resulting in facilities like the LCLS.
The President's goal of halving the deficit by 2009 means a difficult 3-4 years ahead. We will go for an ILC construction start in 2010, but the current cost is too high. Lehman's current cost estimate for ILC in the US based on TESLA is \$12 billion. Even assuming half comes from non-US sources it is still too expensive. We need something closer to \$3 billion for the US share. The ILC is critical for maintaining attraction in the US for particle physics.

HEP Program Planning:
Robin Staffin:

While a few hard years in funding lie ahead, "we believe that the pendulum will swing back" and the field needs to be ready to respond to this opportunity. The HEP community needs a way convince the public of the importance of the ILC. The EPP2010 study is a good place to start.

The field should also plan some medium scale experiments to start construction in 2007-2010. The physics (outlined in the APS Neutrino Matrix study) is based on neutrinos, dark matter and dark energy. We should plan for about \$50-100 million/year remaining after ILC R&D and LHC. The advisory process will be based on the EPP2010 and HEPAP to outline the overall strategy and P5 (which will be reconstituted for another two years) to identify "best in class" opportunities based on advice from Scientific Assessment Groups (SAGs). For example, NuSAG (Neutrino Scientific Assessment Group) will evaluate choice of reactor theta13 experiments, off-axis experiments and neutrinoless double beta decay searches.

Report of Cosmic Microwave Background Task Force:
Rainer Weiss

The CMB Taskforce is an NSF, NASA and DOE collaboration. The question of what dark energy and dark matter is "more exciting than 1900 or 1905."
The Task Force recommends a program of CMB observations that would include a space mission (CMBPOL) with capabilities beyond WMAP and PLANCK and ground-based/balloon missions to measure CMB polarization. NIST should be included in CMBPOL as well. The task force will produce a report in March 2005.

Next meeting: April 9th