

April 29, 2005

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Dear Ray and Michael,

I am writing to communicate both a summary of the meeting in Washington of the High Energy Physics Advisory Panel (HEPAP) on February 14 - 15, 2005 and the actions that have been taken since then that flowed from that meeting.

We thank you, Ray, for taking the time on the second day of the meeting to come and talk directly to us about the budget proposal for FY06 and what it means for the Office of Science. We thank you, Michael, for communicating with us and answering questions by phone-link on the overall NSF situation and on the new charge to HEPAP on the science of RSVP.

A large part of the discussion in and around the meeting concerned the FY06 budget. The context is the plan to cut the federal deficit in half over four years. Non-defence discretionary spending is down. We understood from Ray's talk that with a cut of 1.6% from FY05 (without the Congressional mandates) in the Office of Science as a whole, there were very difficult choices to be made. The construction of a few of the future world-class facilities was continued. Other facilities were not started and cuts were made in the core research program and operating budgets across the Office of Science. As bad as the situation is, HEP has not taken the worst hit.

The consequences for DOE HEP were spelled out by Robin Staffin and Glen Crawford. The budget is down by 3% from FY05; taking into account the

BES support of part of the SLAC linac the budget is flat-flat. Priority was given to operating the Tevatron Collider and the B-Factor, given their finite lifetimes; ramping up the LHC research program; and maintaining investment in the near- and long-term future with R&D for the ILC, for neutrino physics, and for exploring the nature of dark energy. These priorities, the FY06 budget level, and the expectations for the outyears led to the decision not to go ahead with BTeV.

These priorities are consistent with HEPAP's and P5's recommendations. Nevertheless, the announcement on February 7 by the Secretary of Energy of the decision not to fund BTeV in the FY06 budget, the immediate loss of years of work by a large international collaboration, the loss of excellent science from the U.S. program, and the lack of any medium-term construction project in DOE HEP all combine to make the cancellation of BTeV very painful and worrying for the HEP community. HEPAP emphasizes that we see this decision as due to budgetary priorities – the budget situation and outlook are so stringent that even projects such as BTeV that are high on the list of priorities have to be cut.

HEPAP will work to give its best advice within the constraints. We received a series of charges at this meeting that look toward developing a mid-term program whose construction would start in the period 2007 to 2010. We return to these charges below.

HEPAP did hear of major progress in one area: the Linear Collider. Another major step forward has been accomplished by the choice of the Central Team Director for the Global Design Effort (GDF) for the International Linear Collider (ILC). At the meeting, Maury Tigner described the process of nominations from the three regions and the interviews that led to Barry Barish being the ILCSC's top candidate for Central Team Leader. Since the meeting, Barish has accepted the job and is off to an excellent start.

International scientific and technical progress has continued with the accelerator workshop in KEK last November and the workshop at SLAC in March, leading to the major workshop at Snowmass in August. On the governmental side, the Funding Agencies for the Linear Collider (FALC) is moving forward. HEPAP greatly appreciates the important role being played by the U.S. DOE and NSF. It was particularly pleased to hear Ray Orbach's strong statement of support and priority for the ILC in his talk to HEPAP.

HEPAP now has six subpanels operating. They will have a major impact on the mid- and long-term program:

- Jonathan Bagger gave HEPAP an update on the EPP2010 Committee, working under the auspices of the Board of Physics and Astronomy of the National Academy of Sciences. The Committee is charged to survey elementary particle physics, building on previous studies to identify, articulate, and prioritize the scientific questions and opportunities. and then to recommend a fifteen-year implementation plan with priorities. Meetings have been held in Washington near the end of last year and at SLAC a couple of weeks ago. The next meeting is at Fermilab in May. The Committee is asking the right questions. It has since written to HEPAP and the community some specific questions on the ILC. The answers will need to be crisp and clear.

At its February meeting HEPAP received a long-expected charge to write a report on the synergy of the LHC and the ILC. The result will undoubtedly be closely related to answering the questions raised by EPP2010. Since the meeting, a 14 person subpanel has been formed, co-chaired by Joe Lykken and Jim Siegrist, that is moving toward developing the report and has begun trying out the basic themes on potential readers.

- At the meeting, HEPAP received the signed charge to provide advice on the science value of the Rare Symmetry Violating Processes (RSVP) experiments in the context of the U.S. and world particle physics programs. Since the meeting, a Subpanel has been formed, chaired by Bob Cahn, that has had several meetings and will be giving a preliminary report to HEPAP in May.
- The Dark Energy Task Force (DETF) is a joint subpanel reporting to HEPAP and to the Astronomy and Astrophysics Advisory Committee (AAAC) of NSF and NASA. With Rocky Kolb as the chair, the DETF met shortly after HEPAP and is well underway.
- The final version of the charge for the Neutrino Scientific Assessment Group came after the HEPAP meeting. Co-chaired by Gene Beier and Peter Meyers, the initial charge has them focusing on three areas: neutrinoless double-beta decay experiments; reactor experiments to measure θ_{13} ; and accelerator-based long-baseline neutrino experiments. Their first report is aimed for this summer.

- The Cosmic Microwave Background (CMB) Task Force, a subpanel joint with AAAC, was at the stage of writing its final report at the time of the HEPAP meeting. HEPAP heard an excellent talk by Rainer Weiss on how we can gain understanding of the inflationary epoch, and in particular the role that detecting CMB polarization would play and its connection to gravitational waves. We look forward to their report in mid-May.
- The Particle Physics Project Prioritization Panel (P5) is being reestablished. The chair of the Subpanel will again be Abe Seiden. It is expected that the charge will involve a broader look at the program and the balance of facility operations, ongoing research, and new-facility R&D for the next several years, in addition to prioritizing specific projects that will be coming to it. An input into this effort will come at the next HEPAP meeting with a report from the Human Resource Study that aims to understand the match between experiments that the U.S. program is committed to carry out and the human resources needed to do them over the next five years.

We hope that both of you will be able to address us at our next meeting on May 18-19, 2005 in Washington.

Sincerely,



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HEPAP Chair

cc: Dr. Glen Crawford
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