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Dr. Dennis Kovar
Associate Director for High Energy Physics
Office of Science
Department of Energy

Dr. Tony Chan
Assistant Director for Mathematical and Physical Sciences
National Science Foundation

Dear Dennis and Tony:

I am writing to summarize the meeting of the High Energy Physics Advisory Panel (HEPAP) held in Rockville, Maryland on February 24-25, 2009.

Pat Dehmer gave a report on the DOE Office of Science, including Secretary Chu's priorities for the Department of Energy. HEPAP is very pleased to see the first bulleted item on the Secretary's list is Science and Discovery, which includes re-energizing the national laboratories as centers of great science and innovation. HEPAP was also relieved and happy that the FY09 budget conference committee report provides a significant increase for the Office of Science and the high-energy physics program. Although the detailed implementation of the American Recovery and Reinvestment Act (ARRA) has yet to be finalized, the allocation to the Office of Science should allow significant improvement in our field's infrastructure.

Dennis Kovar gave an update on the DOE Office of High Energy Physics (OHEP). He observed that significant scientific progress was made during the past year, noting that HEP results from the energy, intensity, and cosmic frontiers were among the American Institute of Physics top ten science stories of the year. OHEP has proposed to use funds from the ARRA to both create jobs and invest in scientific infrastructure. The Office is responding to recommendations in the P5 report by establishing a subpanel on particle astrophysics. It will also hold a workshop on advanced accelerator R&D, for which high energy physics has been the traditional steward. The workshop will consider the broad accelerator needs of the nation. Dennis also reported on the first meeting of the DUSEL Joint Oversight Group which will coordinate planning of the DUSEL experimental program.

Michel Spiro reported on European planning in astroparticle physics being carried out by the Astroparticle Physics European Coordination (ApPEC) and funded through ASPERA, the network of European funding agencies. They are considering projects covering a broad range of astroparticle physics topics. Not included is dark energy, for which they support participation in

the current and future US program. Their projected budgetary needs would require more than a factor of two increase in the annual budget in the next 10 years. Part of the solution to this problem is to better coordinate with Asia and North America. HEPAP agrees that worldwide cooperation is necessary to maximize scientific output.

Tony Chan gave a report on the NSF MPS directorate. He pointed out that ARRA funding represents a one-time infusion of a significant fraction of an annual budget. It is important to structure expenditures to avoid creating obligations that cannot be met in future years. There was a recent Physics Committee of Visitors which recommended, as has other committees, a midscale instrumentation program to cover projects that fall between the MRI and MREFC ranges. A change in the MREFC process is being considered in which the National Science Board (NSB) would provide the Foundation with project advice and prioritization earlier, just after the conceptual design stage.

Joe Dehmer reported on the NSF Physics Division. ARRA allocations to the NSF divisions will be considered by the Office of Management and Budget in the next few weeks. Funds for young faculty along with their postdocs and graduate students would represent creation of new jobs. NSF had its first annual review of the DUSEL design project. In response to the S4 solicitation, 24 experimental proposals were received. They will be reviewed during the spring and awarded over the summer. DUSEL is on schedule for presentation to the NSB in the spring of 2011. The Physics Division is planning a new program in accelerator physics and midscale physics instrumentation that might begin in FY2010. Joe also reported on the gains made in female and minority grant awards.

Bonnie Fleming summarized the R&D activities underway and planned for large liquid argon detectors for neutrino experiments and the search for proton decay. The main challenges are purification, cold low-noise multiplexed electronics, vessel design, and cost. Advances are being made in all of these areas. The current device has a 0.3 ton fiducial volume. That will be followed by MicroBooNE and then a 5 kiloton module for DUSEL. In response to a question from the panel, Bonnie said that cryogenic engineers are actively working on the safety issues associated with a large cryogenic volume in an underground cavern.

Neil Gehrels reported on the recent work of the JDEM Science Coordination Group, which reviewed the science goals and developed a reference mission that incorporates three dark energy probes: baryon acoustic oscillations, weak lensing, and supernovae. The final report should be available in the next few weeks. Regarding the JDEM program, Neil reported that discussions with the European Space Agency are in progress and that the Announcement of Opportunity should be released this spring.

Glen Crawford described the new laboratory research reviews that are carried out by research area on a three-year rotating schedule. They are parallel to university grant reviews, with proposals, peer review, and comparative evaluation. Reports are now in for the theory reviews carried out last year, and broad conclusions can be drawn. Lab theory contributions have been especially important in phenomenology and lattice QCD. Issues raised include identifying clear missions for lab theory groups and more clearly identifying the aspects of particle astrophysics that should be pursued.

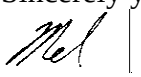
Dennis Kovar described in detail the charge to HEPAP to form a Particle Astrophysics Scientific Assessment Group (PASAG), which will assess current and proposed projects at the Cosmic Frontier and make detailed program recommendations under a number of specific budget scenarios. Steve Ritz has agreed to chair the subpanel. Dennis was asked whether dual-purpose experiments that address science in the PASAG charge as well as other astronomical topics would be considered. He responded that they would. A concern was raised about non-accelerator experiments that don't fall within the charge, for example neutrinoless double-beta decay and neutrino mass measurements. Dennis responded that they are prioritized separately from this subpanel.

I announced changes in three HEPAP working groups. Two members are joining the effort to help recruit applicants for posted agency positions. The demography project has almost reached a steady state; two HEPAP members are joining the group that oversees that work. In response to the University Grant Program Subpanel, I am initiating a working group that will focus on the health of the university program and report each year on systemic issues.

Michael Strayer reviewed the current status of the advanced scientific computing program within the DOE, including the three-year-old program to deliver petascale computing. Michael described important scientific results that have been produced over a wide range of physical and biological problems. Novel architecture will be needed in the future to maintain the rate of increase in computing power. To understand how best to address this problem, they have had town hall meetings and workshops with a number of scientific communities including high-energy physics.

The next HEPAP meeting will be held on May 21-22 in Washington. HEPAP assumes that the details of the enacted FY2009 and proposed FY2010 budgets will be presented along with the final implementation plan for the American Recovery and Reinvestment Act expenditures in high-energy physics.

Sincerely yours,



Melvyn J. Shochet
Chair, HEPAP