



DEPARTMENT OF PHYSICS AND ASTRONOMY
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December 12, 2016

Dr. Cherry Murray
Director, Office of Science
U.S. Department of Energy

Dear Dr. Murray:

The Report of the Committee of Visitors to the High Energy Physics Advisory Panel was presented at HEPAP's meeting on December 1st and 2nd, 2016. This Committee of Visitors reviewed the fiscal years 2013, 2014, and 2015. HEPAP discussed the Report extensively following its presentation, made some changes in wording or details of the recommendations, and approved the Report.

The CoV found that the award process followed by the Office of High Energy Physics (HEP) and the leadership of HEP management have resulted in a broad, strong particle physics portfolio. HEP has managed to balance the many aspects of the program within challenging budget constraints. The project portfolio is of appropriate depth and uniqueness, and the program as a whole has many world-leading capabilities in experimental and theoretical research. HEP has moved the U.S. particle physics program toward the goals set out in HEPAP's 2014 P5 Report. A number of important new projects have been launched during this period, and HEP is forging strong international partnerships on the large projects. The COV commended HEP for the quick, successful formation of the international DUNE/LBNF collaboration and the rapid progress on the international neutrino program hosted at Fermilab. It commended HEP as well for the organized progress on the LHC detector upgrades.

Nonetheless, a recurrent theme in the HEPAP discussion was the health of the Research Program, which has experienced programmatic reductions in funding in order to increase the fraction of the HEP budget invested in projects. This shift in funding was recommended by the 2014 P5 subpanel, as well as the 2013 COV, as particle physics builds for the future. The project fraction has by FY16 climbed to 24%, near the upper end of P5's target range of 20-25% as noted by the COV, and at the same time the research fraction has fallen to 41%, barely above the P5 guideline of $> 40\%$. The cumulative reductions to the budget of the Research Program (not including Early Career Awards) are large, 21% over the last five years (2011-2016). Theory research, Energy Frontier research, and Advanced Technology R&D experienced cuts of 24%, 32%, and 36%, respectively.

HEPAP is extremely concerned regarding the health and vitality of the Research Program at this time. It is concerned that current funding levels are inadequate for each of the sub-programs of the Research Program to realize the full scientific potential of the field's facilities, experiments, and scientists. It is concerned about the capability of the research communities in the experimental frontiers to operate and fully harvest the physics potential of new projects. It is concerned about the capability of the theory community to identify new directions for the field and to support the experimental program. It is concerned about the capability of the advanced technology R&D community, particularly in accelerator R&D, to discover and develop the advances that will enable the field's next-generation accelerators and experiments. HEPAP is concerned that further reduction in funding will do lasting damage to the field, particularly in the field's ability to train young scientists for careers in particle physics or elsewhere in science and technology.

HEPAP recognizes the very constrained funding environment of HEP; nevertheless, it advises that further reductions in funding for the Research Program be a last resort as the field's projects are constructed. HEPAP emphasizes the strong scientific potential of the P5 report and urges that funding be found to support its full strategic vision, keeping construction of HEP's projects on track, efficiently operating existing and new facilities, and sustaining the vitality of the research community in order that it is capable of fully realizing the scientific potential of the HEP program.

HEPAP submits to you the Report of the Committee of Visitors.

Respectfully yours, on behalf of HEPAP,

A handwritten signature in cursive script that reads "Andrew J. Lankford". The signature is written in black ink and is positioned above the printed name and title.

Andrew J. Lankford
Chair, High Energy Physics Advisory Panel

Cc: Steven Binkley, Deputy Director for Science Programs, Office of Science
James Siegrist, Associate Director for Science of High Energy Physics
Glen Crawford, Director, Research & Technology Division, Office of High Energy Physics
Michael Procario, Director, Facilities Division, Office of High Energy Physics