



American  
Physical  
Society

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**Malcolm R. Beasley**  
*Stanford University*

June 6, 2014

**President-Elect**  
**Samuel H. Aronson**  
*Brookhaven National  
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The Honorable Cynthia Lummis  
Chairwoman, Subcommittee on Energy  
House Committee on Science, Space, and Technology  
2321 Rayburn House Office Building  
Washington, DC 20515

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**Homer A. Neal**  
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The Honorable Eric Swalwell  
Ranking Member, Subcommittee on Energy  
House Committee on Science, Space, and Technology  
2321 Rayburn House Office Building  
Washington, DC 20515

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Dear Chairwoman Lummis and Ranking Member Swalwell:

**Editor in Chief**  
**Gene D. Sprouse**  
*Stony Brook University  
(On Leave)*

As President of the American Physical Society (APS), representing more than 50,000 scientists in universities, industry and national laboratories, I applaud the efforts of the U.S. Particle Physics Project Prioritization Panel (P5) in developing an exemplary strategic plan for the future of U.S. particle physics. The P5 report, "Building for Discovery," comes at a time when American particle physics is at a tipping point. The flagship research field has seen federal support for its activities decline in real terms by more than 50 percent over 25 years, and it no longer enjoys a large major facility in the United States.

The P5 report notes that particle physics in the 21<sup>st</sup> century has become an international endeavor, and the U.S. research community continues to make substantial contributions to advances in the field, boasting the largest contingent of scientists involved with the thrilling discovery of the Higgs particle at CERN's Large Hadron Collider two years ago. Today, the U.S. community remains the acknowledged global leader in accelerator technology.

But the P5 document, which represents the work of nearly 1,000 physicists during the course of one year and reflects the field's consensus view, carries a stark warning for policymakers and lawmakers: "Without the capability to host a large project," the report notes, "the U.S. would lose its position as a global leader in this field, and the international relationships that have been so productive would be fundamentally altered."

Particle physics, or high-energy physics, has a long track record of extraordinary accomplishments, not simply in its own realm of scientific discovery, but also through its impact on other scientific fields and technologies that have widespread utility. Breakthrough discoveries, such as the Higgs boson, often grab headlines and may capture the public's imagination. But the advances stemming from particle physics have been central to the development of synchrotron light sources upon which biologists, chemists and material scientists heavily rely; MRI machines that have become standard tools for medical diagnosis; proton accelerators that find applicability for treating cancer; the World Wide Web and the browsers that have transformed 21<sup>st</sup> century commerce; and many other less visible technological applications. Additionally, theoretical advances in particle physics now provide essential knowledge for cosmology, nuclear physics and condensed matter physics. And just as important as all of these, the exciting discoveries in fundamental science inspire our youth to study science and to continue the American tradition of innovation, which is at the heart of our economic well-being.

APS supports the report's two central recommendations that (1) the U.S. host a world-class, international facility, such as the Long Baseline Neutrino Facility to be based at Fermilab, and (2) the U.S. continue partnering in high-priority facilities located in Europe and Asia. However, doing so while maintaining the other elements necessary for a successful particle physics research program will require stronger federal support of the field.

Against the backdrop of constrained budgets, P5 was charged with the unenviable task of prioritizing research projects. With the number of excellent projects far outweighing available resources, the panel made difficult choices and designed a decade-long research program under three budget scenarios. APS strongly agrees with the P5 report's assertion that the lowest budget scenario is precarious and severely threatens our nation's standing in the field.

This is a challenging time for U.S. particle physics. As the field forges into unexplored territory, inspiring the next generation of budding scientists and engineers, U.S. policymakers must decide whether our nation will continue to be a leader in the field or whether it will allow it to fade into the background.

The P5 report, "Building for Discovery," provides a community vision for the future of the flagship field and roadmap for making it a reality. It offers a balanced strategy for the U.S. to regain momentum in a field where we have long been the leader. The report leaves policymakers with two choices: increase federal support and make smart investments, enabling the U.S. to maintain a world-class particle physics program and continue to be a leader in unlocking the mysteries of the universe; or allow federal support to decline even further than it already has, forcing the U.S. to step back from being a global leader in particle physics and send some of our most talented scientists abroad to achieve their dreams. For me, the choice is clear. We must renew our commitment to a field that has served our nation well in so many ways for more than half a century.

Sincerely,



Malcolm R. Beasley  
President of the American Physical Society

cc: The Honorable Lamar Smith  
The Honorable Eddie Bernice Johnson