

A Charge to NSAC

July 17, 2001

Dr. T. James Symons
Chairman
DOE/NSF Nuclear Science Advisory Committee
Nuclear Science Division
Lawrence Berkeley National Laboratory
Berkeley, CA 94720

Dear Dr. Symons:

Although the Nuclear Science Advisory Committee (NSAC) is currently in the midst of the development of its new long-range plan, the major findings and recommendations have already been conveyed to us in your briefings and have provided valuable guidance that is being incorporated into our planning. These recommendations address opportunities for significant scientific progress that can be realized by both effective use of existing capabilities and investments in new initiatives.

Further guidance is requested at this time by the Department of Energy (DOE) Nuclear Physics program in the implementation of these recommendations for its program in one of the major areas of nuclear physics research, namely nuclear structure and astrophysics studies. The future roles of its existing facilities in the Nation's nuclear structure and astrophysics research program need to be assessed in the context of the new capabilities in the United States and elsewhere. In the long-range planning exercise, the need for a facility such as the proposed Rare Isotope Accelerator (RIA), with next generation capabilities for exotic beams, was reaffirmed as important for addressing the forefront scientific questions. The priority of continued investments in the pursuit of this new facility in the context of a strategic plan for this subfield of nuclear physics needs to be determined. It is important that the available resources are directed to optimize DOE efforts, in coordination with the Nuclear Physics program at the National Science Foundation (NSF), for a strong national research program in this scientific area in the coming decade.

This letter requests that NSAC review and evaluate current and future scientific capabilities in the area of nuclear structure and astrophysics supported by the DOE Low Energy Nuclear Physics subprogram and make recommendations of priorities consistent with projected resources and the scientific opportunities identified in the new long-range plan.

The DOE program in nuclear structure and astrophysics supports operations and research at three national user facilities: ATLAS at Argonne National Laboratory, HRIBF at Oak Ridge National Laboratory, and the 88-Inch Cyclotron at the Lawrence Berkeley National Laboratory. Support is also provided for facility operations and research at four university Centers of Excellence at the Cyclotron Institute at Texas A&M University, the Triangle Universities Nuclear Laboratory at Duke University, the Center for Experimental Nuclear Physics and Astrophysics at the University of Washington, and the Wright Nuclear Structure Laboratory at Yale University. Funding is provided to university scientists and students for research at these facilities and elsewhere and for R&D activities at both national laboratories and universities in support of RIA.

In your examination of these facilities and research activities, please respond to the following questions:

What scientific opportunities should be addressed and what facility and instrumentation capabilities should be used and developed, including those supported by NSF and outside the United States, in order to maintain a strong scientific program in the coming decade?

What opportunities can be pursued with funding at the FY 2002 Budget Request level (\$52.7 million) and an assumed constant level of effort into the outyears? What is the appropriate mix of facility operations, research, investments in instrumentation and RIA R&D that will be needed to optimally exploit these opportunities?

What are the priorities of the scientific opportunities that could be pursued with additional funds beyond this constant level of effort?

We request that an interim report be given to DOE by November 15, 2001, and a written report responsive to this charge be provided by December 15, 2001.

Sincerely,

James F. Decker
Acting Director
Office of Science
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Robert A. Eisenstein
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