DOE Announces First Awards in Scientific Discovery through Advanced Computing Program

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WASHINGTON, D.C. -- The U.S. Department of Energy (DOE) today announced its first awards under the new Scientific Discovery through Advanced Computing (SciDAC) program. Fifty-one projects will receive a total of $57 million this fiscal year to advance fundamental research in several areas related to the department's missions, including: climate modeling, fusion energy sciences, chemical sciences, nuclear astrophysics, high-energy physics, and high-performance computing. Brookhaven National Laboratory, which is owned by DOE, will participate in four of these projects.

"This innovative program will help us to find new energy sources for the future, understand the effect of energy production on our environment, and learn more about the fundamental nature of energy and matter," said Secretary of Energy Spencer Abraham. "A major strength of many of the projects is a partnership between scientists at the Energy Department's national laboratories and universities."

Selected from over 150 proposals, the SciDAC activities involve collaborations among 13 DOE laboratories and more than 50 colleges and universities. Brookhaven is collaborating on the following projects:

- A particle accelerator simulation project that will improve the efficient use of existing accelerators and aid in the design of future accelerators.
- A project to perform theoretical calculations that will provide important insights and support for the large experimental efforts in high-energy and nuclear physics.
- An effort to build a unified system to handle the capture, storage, retrieval, and analysis of data from particle physics experiments at five critical research facilities, including Brookhaven, and make these data available to the worldwide research community.
- A "simulation tools and technology center" that will enable scientists to use multiple analysis and computational strategies within a single simulation.

SciDAC is an integrated program that will help create a new generation of scientific simulation codes. The codes will take full advantage of the extraordinary computing capabilities of terascale computers (computers capable of doing trillions of calculations per second) to address ever larger, more complex problems. The program also includes research on improved mathematical and computing systems software that will allow these codes to use modern parallel computers effectively and efficiently. Additionally, the program will develop "collaboratory" software to enable geographically separated scientists to effectively work together as a team, to control scientific instruments remotely, and to share data more readily.

"These projects represent a significant change in the way we do computational research, with greater emphasis on integrated teams," said James Decker, acting director of the department's Office of Science. "Our strategy is to support coordinated efforts by the scientists working to solve complex problems in physics, chemistry, biology, and the applied mathematicians and computer scientists working to develop the computational tools required for that research." Success of the SciDAC program requires multi-disciplinary teams from universities and laboratories to work in close partnership.