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Design of powerful new X-ray source is moving ahead -- with $12 million in state funds

By Anne Ju

A lot has to happen before Cornell can start tunneling several stories underground to install what would be one of the most advanced X-ray sources in the world.

Though the university hopes the National Science Foundation eventually will support the $300 million to $400 million synchrotron radiation facility at Cornell, called the Energy Recovery Linac (ERL), it is New York state funds that have proved instrumental in the early stages of the proposal's development.

The ERL would put Cornell at the forefront of advanced X-ray technology, revolutionizing materials and biological science and other research. And thanks to the $12 million allotted over four years that was included in last year's state budget, researchers are now working on engineering studies and other analyses important for determining what goes into such a massive endeavor. Preliminary plans for construction involve a roughly 1 kilometer-long tunnel underneath B parking lot, about five stories underground.

"The $12 million is for the kinds of things you need to put a solid proposal together," said Sol Gruner, professor of physics and director of X-ray science for the Cornell Laboratory for Accelerator-Based Science and Education (CLASSE), which oversees the ERL project. So far, the allocation has paid for things the NSF would not have funded.

What NSF did fund was $18 million for Cornell to build components of the ERL as a prototype, an effort that has been under way for about two years, Gruner said. Cornell also has kicked in several million dollars toward the prototype development.

Vice President for Planning and Budget Carolyn Ainslie called the ERL "the next-generation project for our world-renowned physicists."

"The size and scale of the project will require partnership of federal, state and private resources to enable this cutting-edge research tool," Ainslie said. "State support will signal to other partners our collective commitment to research and its possibilities, and is vital to the success of the project."

Gruner said the team preparing the design proposal for the NSF is working toward a 2008-09 goal for completion and submission.

Cornell may then seek additional state funds for the project.

"We'll certainly be talking to the state about how they want to be involved," Gruner explained. For example, sometimes the state is interested in things like classroom space for such a facility, he said.

Joel Brock, professor of applied and engineering physics who is part of the design team for the ERL, said the device would "transform the research landscape at Cornell," and would be one of the university's largest capital undertakings in history.

"You're talking about three to five times a Duffield Hall, and hundreds of employees," Brock said.

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