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At AAAS, Cornell physicists stress need to maintain U. S. prominence in accelerator science

By Lauren Gold

Cornell physicists Maury Tigner and Ernest Fontes spoke on the potential and future of accelerator-based science at the 2009 annual meeting of the American Association for the Advancement of Science in Chicago, Ill.


Tigner

Speaking Feb. 13, Tigner, the Hans A. Bethe Professor Emeritus of Physics and director of the Cornell Laboratory for Accelerator-based Sciences and Education, addressed major changes in U.S. accelerator science since the 1980s, "when only a few hundred intrepid users visited the [six federally funded U.S.] synchrotron light sources each year."

Tigner played a leading role in the design and construction of the first Cornell storage ring, and has been a pioneer in accelerator sciences for four decades. He noted that almost 10,000 scientists now visit the synchrotrons annually, and that particle accelerators are used in fields from the arts and nuclear physics to zoology. But while U.S. investment in accelerator operations for materials science work is on the rise, he said, funding for operations for particle physics -- the source of new accelerator technologies -- is falling.

Tigner called for a conscious U.S. effort to maintain leadership in accelerator sciences in the coming years. "Agencies, laboratories and universities together will be key in this," he said.

Fontes, assistant director for the Cornell High Energy Synchrotron Source, spoke about the capabilities of light source research facilities during the Feb. 16 symposium, "Casting New Light on Ancient Secrets."

In his overview to the session, Fontes described how X-rays can interact with atoms and cause them to fluoresce, and how scientists can record fluorescent images to map the chemical composition of the material world.

"Accelerator-based X-ray sources are providing new vision capabilities that are impacting fields of study ranging from marine biology to art history to dendrochronology," Fontes said.

Fontes added that the need to see the properties of individual atoms and molecules is propelling the development of even brighter X-ray sources, such as the Energy Recovery Linac -- a next-generation light source that is being developed at Cornell with support from the National Science Foundation.

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