

## Louisiana helps out with huge collider

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NEW ORLEANS — The secrets to the origin of the universe teased an audience of LSU and national researchers Wednesday at an Internet conference in New Orleans.

The computer scientists in Louisiana linked up via high-definition video conference with researchers working on the so-called “big-bang machine” — the Large Hadron Collider — near Geneva.

LSU’s Ed Seidel, who is the new National Science Foundation cyber-infrastructure director, led the Internet2 university network conference discussion on the hadron collider, called LHC.

Seidel described the LHC as the “most complex, comprehensive project ever assembled on the planet.”

The LHC is designed to re-enact the beginning of the universe back to one-billionth of a second after the theorized big bang.

The LHC, with its proton accelerator and detectors, encircles about 17 miles near the French-Swiss border 328 feet underground.

“It’s going to help us understand some of the most basic questions of science,” Seidel said. “We want to know why this happened. Why are we here?”

The big bang is the theory that the universe began with the explosion of a dense ancient atom and that the universe has expanded ever since.

The project is so immense — 10,000 scientists nationwide are involved — some critics were even concerned the LHC would create a black hole that could threaten the planet.

“I’m more worried about getting hit by a bus,” Seidel said, dismissing such concerns.

The world’s biggest atom smasher is based out of CERN, or the European Organization for Nuclear Research, and first started operating last month to the delight of physicists worldwide. But the LHC had some kinks early on and will be started up again early next year.

Speaking from CERN, Jim Virdee, a lead professor and spokesman for the LHC's Compact Muon Solenoid project, said detectors take 40 million pictures every second of the colliding atoms moving nearly at light speed.

The tremendous amount of data will be studied worldwide and in the U.S. through laboratory and university networks like Internet2 and the Louisiana Optical Network Initiative, or LONI.

Louisiana Tech University will be studying some of the proton collisions through LONI. The Louisiana network links into TeraGrid, which is the backbone of the nation's cyber-infrastructure.

Virdee said he is interested in discovering theoretical objects like dark matter and the Higgs boson — nicknamed the “God particle.”

Higgs boson is a hypothetical and undiscovered particle, which is theorized to be the mechanism by which all objects acquire mass.

“We are recreating the collisions of the big bang,” Virdee said.

“Without dark matter, the galaxies would not have formed, and we would not be here asking questions today,” Virdee said.

Also speaking from CERN, Jim Strait, one of the early LHC developers, said the early kinks have prevented many questions from being answered yet. But he emphasized that protons have already circled the LHC thousands of times.

“The (proton accelerator) beam of course seems to have a mind of its own,” Strait said.

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