The God Particle

**Higgs discovery sparks new era in physics: Physicists at the CERN lab in Geneva have spotted the Higgs boson, the “God particle” that explains the existence of mass and holds together the Standard Model, the theory that forms the foundation of modern physics. Researchers have searched for the Higgs for 48 years, ever since British physicist Peter Higgs and colleagues predicted its existence. “For physicists, this is the equivalent of Columbus discovering America,” University of Liverpool physicist Themis Bowcock tells Bloomberg.com. The Higgs is evidence that an invisible energy field – activated shortly after the Big Bang, 13.7 billion years ago – permeates the universe. Without the Higgs field, all particles would have no mass – like the photons that create light – and would zip chaotically through a universe that would have no atoms, no stars, no planets, and no life. But the Higgs field acts like an invisible sea of cosmic molasses, slowing down certain types of particles, including the quarks and electrons that make up atoms, making them react to each other in ways described in the laws of physics. “This boson is a very profound thing,” says CERN spokesman, Joe Incandela. “It’s a key to the structure of the universe.” Physicists sought the Higgs by smashing protons together at nearly the speed of light in CERN’s Large Hadron Collider. Researchers sifted through the debris from more than 1,000 trillion collisions looking for evidence of a decaying Higgs. The data pointed to the existence of the particle almost exactly where the Standard Model predicted it would be found, at about 126 billion electron volts. But the findings contained “just enough differences” with theory to keep some questions unresolved, says California Institute of Technology physicist Sean Carroll. Some physicists hope the new particle turns out to be an unexpected variation of the Higgs – or multiple Higgs particles. A more complex Higgs, physicists say, might provide clues about another grand mystery: why 96 percent of the universe appears to be invisible “dark matter” and “dark energy.” *(The Week magazine, July 20, 2012)***

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