

CERN in 3 Minutes

CERN is the World's largest particle physics research laboratory. It covers six squared km scattered over 12 sites either side of the Franco-Swiss border near Geneva. In 34 km of tunnels, and caverns the size of cathedrals, at over 100 m underground, CERN houses facilities for experimental physics.

Scientists from all over the World work here, in international collaborations, to study and understand the mysteries of the Universe.

Stars, planets, seas, air, humans. Everything around us is made of matter.

Matter is made of atoms. Atoms are made of electrons orbiting around a nucleus, which in turn is made of protons and neutrons. Inside these, we find quarks.

In CERN's newest accelerator, the Large Hadron Collider, particles collide at near the speed of light to study the quarks and other particles.

Many of these particles only existed in the early universe, for a fraction of a second after the Big Bang, when all the energy transformed into matter.

In CERN's accelerators, we can recreate conditions that existed just after the Big Bang and shed light on such questions as: Why do particles have mass? What is the nature of dark matter in the Universe? Why did matter triumph over antimatter in the first moments of the Universe, making our existence possible? What was the state of matter just after the Big Bang?

Four gigantic instruments called particle detectors will study the data from the LHC collisions in search of the answers to these fundamental questions.

The experimental and theoretical study of these conditions allows us to understand the fundamental laws of nature and to unveil the ultimate mysteries that govern our Univers.

In the course of their research, CERN scientists have often come across discoveries that have affected our every day life. The technology used for particle detectors is at the origin of security scanning equipment and several medical applications,

And the World Wide Web was invented at CERN in 1990 by British scientist Tim Berners-Lee.

The web soon grew beyond the world of particle physics, and has become our primary repository of information, changing and improving the way people interact and communicate .

To treat the massive amounts of data produced by the Large Hadron Collider, physicists ,together with experts from industry, are building a web of cooperative computing called the Grid.

The Grid will allow thousands of research centres and universities to share their data storage resources and computing power, transforming the Internet into a giant global supercomputer, and building capacity for the science of tomorrow.