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TIFR, part of atom experiment, celebrates

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INDIAN physicists involved with the CERN experiment under way in Europe reacted enthusiastically to the peaking of energy levels at the world's largest atom smasher.

Atul Gurtu, senior professor of physics and in-charge of the 30-member team at the Tata Institute of Fundamental Research (TIFR), Mumbai, that is a part of the CERN experiment, said scientists had now crossed a key milestone in the search for the mysterious Higgs particle, the factor that is believed to hold matter together.

"This is a very important milestone for science," Gurtu said. "The energy at which the proton beams have been collided is three-four times more than what has been attempted in the past. When people talked about the Higgs particle, or the super-symmetry particle that is supposed to be responsible for dark matter, they would say, we don't have a high-energy machine powerful enough to find them, if they do exist. Well, now we have that machine."

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The Large Hadron Collider (LHC) achieved a record total energy of 7 teraelectronvolts (TeV), with the collision of two proton beams travelling at 99.9 per cent of the speed of light in the European Organisation for Nuclear Research's (CERN's) 27-km tunnel under the Swiss-French border. The LHC aims to simulate the Big Bang and understand the birth of the universe 13.7 billion years ago.

Over 200 members of the Indian particle physicist community have worked with 1,800 scientists from other countries over two of the six LHC experiments: ALICE (A Large Ion Collider Experiment) and CMS (Compact Muon Solenoid).

At TIFR, part of the CMS experiments, two large screens were erected today to show the live webcast from CERN. "There was a lot of excitement here," said Gurtu. "The first collision at 7 TeV happened at 4.36 pm IST. One TeV is basically something like the energy of a flying mosquito, but concentrated in a single proton. What the LHC has achieved is sufficient to study subatomic particles and explain nature better. This is a definitive experiment."

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Watching the news on TV, Harish Banerjee, Prof Emeritus at Bose Institute, Kolkata, said, "This is an ambitious exercise. They still have to achieve the maximum energy of 7 TeV plus 7 TeV. That will take some time and even then, finding the super-symmetry particle or the Higgs Boson is a formidable task.