

'Study of dark matter may give key insights into formation of galaxies'

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MOST of us know $E = mc^2$, thanks to Albert Einstein. But after listening to Prof Ashutosh Kotwal's lecture on 'Higg's Boson, Dark Matter and Black Holes' on Wednesday, one begins to do a re-think on even the most basic theorems in physics.

Kotwal is in town to discuss the Large Hadron Collider (LHC) located at Geneva, Switzerland, the largest scientific instrument ever built.

In his lecture, he elaborated on

some of the primary motivations behind the construction of the collider. The first reason the professor states is to prove the Higg's postulate.

The Higgs is said to be a substance that is present in all of space, that is, even empty space is not really empty, it is filled with Higgs.

The LHC aims at proving the existence of the Higgs by allowing there to be enough particle collision energy to cause a ripple in the Higgs, resulting in the formation of Higg's boson, a new particle. It is a discovery that scientists

all over the world are eagerly anticipating. The second reason the professor mentions is to explain the existence of dark matter. According to physics, the planets, stars and other astronomical bodies are all kept in place in the universe due to the existence of a centripetal force.

However observations recorded that the movement of distant stars was not proportional to the gravitational pull of the galactic centre.

This led scientists to suspect the existence of certain additional non-luminous matter in the universe that cannot be seen by any

radiation. New research has discovered the possibility of dark matter being a cloud of sub-atomic particles, having certain properties that can be produced at the LHC, allowing scientists to recreate dark matter in laboratories.

The study of these particles could give us valuable insights into the formation of galaxies in the universe.

Kotwal is optimistic about the collider. "The LHC is operating successfully. Data is collected and analysed round the clock and we await discoveries that could start new revolutions in physics".