

Cern to test new particle model

Theory Predicts Higgs Boson Can Disintegrate Into Dark Matter

Geneva: The Higgs particle can disintegrate into particles of dark matter, according to a new model that is being tested at the particle physics laboratory Cern.

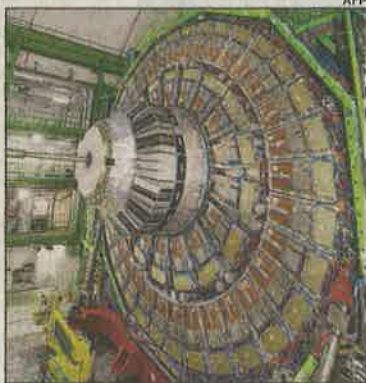
Physicists describe the smallest constituents of nature — elementary particles and forces acting between them using a set of theories known as “the Standard Model”.

This model was developed in the 1970s and has been very successful, particularly in predicting the existence of undiscovered particles. The last in the series was the Higgs particle, or the ‘Higgs Boson’, the existence of which was confirmed by the scientists at the Large Hadron Collider (LHC) at Cern in 2012.

The problem is that there are several things the Standard Model is unable to explain, for example dark matter, that makes up a large part of the universe. Many particle physicists are therefore working on developing new, more comprehensive models.

One of them is Christoffer Petersson, who carries out research in theoretical particle physics at Chalmers University of Technology in Sweden and the Universite Libre in Belgium. Together with two colleagues, he has proposed a particle model based on what is known as supersymmetry.

This model contains more elementary particles than the Standard Model, including dark matter particles. In addition, the model gives the



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Higgs particle different properties than the Standard Model predicts.

It proposes that the Higgs particle can disintegrate into a photon (a particle of light) and particles of dark matter. However, these properties are quite difficult to discover. Petersson's model has met with a response at Cern. Two independent experimental stations — Atlas and CMS — at the LHC are now looking for the very properties of the Higgs particle his model predicts.

“It's a dream for a theorist in particle physics. LHC is the only place where the model can be tested,” said Petersson. “If the model is found to fit, it would completely change our understanding of the fundamental building blocks of nature.” PTI