



## Institute Lecture

# Significance of the discovery of a Higgs boson at CERN

**Prof. Rohini Godbole, Professor, Centre for High Energy Physics,  
Indian Institute of Science, Bangalore**

**Monday, 10<sup>th</sup> September 2012, Time: 6.00 PM, Venue: L-1, Lecture Hall  
Complex**

### Abstract

I will like to put in context the announcement of the discovery of a new boson in the proton proton collision experiments at CERN. I will begin by summarising the importance of the 'direct' observation of the Higgs boson in particle collisions, for proving the correctness of our current description of the theory of fundamental interactions among elementary constituents of matter: the Standard Model (SM). I will also summarise the theoretical predictions for various properties of this particle. I will then discuss the implications of the above mentioned discovery for the SM and theories of particle interactions beyond the SM: the so called Beyond the Standard Model physics. I will discuss how the determination of the various properties of this new state will help confirm whether it is THE Higgs boson (or otherwise), providing possible glimpses of physics beyond the SM, which we theorists believe must exist, but without being able to give a clear prediction for the energy scale at which it should exist. Moreover, absence of any 'direct' signal for such physics at the Large Hadron Collider so far, makes such indirect hints from the Higgs sector very valuable. I will also point out specially the contributions made by the late Prof. Joglekar to this subject.

### About the speaker

Prof. Godbole did her MSc from IIT Bombay in 1974. She was honoured with a silver medal for her academic performance. She did her PhD from SUNY, Stony Brook, USA. She then joined TIFR as a visiting fellow. She was a faculty at University of Bombay from 1982 to 1995. After that, she joined Center for theoretical Studies, IISc as a faculty member. She was the chairperson of the center from 1996 to 2002.

She has made fundamental contributions in High Energy Physics, specifically the Standard Model and BSM. She has extensively worked on the interpretation of high energy collider data. Her contributions in this field have received international recognition.

She has received several recognitions viz. Sheel Memorial Lecture Award by NASI; Jawaharlal Nehru Centenary Visiting Fellowship of INSA; Distinguished Alumnus Award by Indian Institute of Technology Bombay; Rustom Choksi Award for Excellence in Research by IISc; Satyendranath Bose Medal for Theoretical Physics by INSA; Meghnad Saha Memorial Gold Medal for Physics by Asiatic Society of Kolkata; J C Bose Fellowship etc.

She is the editor of the prestigious journal PRAMANA and is a fellow of the Indian National Science Academy and the National Academy of Sciences.

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**Tea at 5.45 PM**

**All interested are welcome.**

A. K. Chaturvedi  
Dean of Research and Development  
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