Physical Research Laboratory, Ahmedabad

COLLOQUIUM - 12-38

Speaker: Prof. Sunanda Banerjee
High Energy Nuclear and Particle Physics Division, SINP, Kolkata.

Title: Higgs Boson - Have we seen it?

Abstract

The Standard Model of particle physics has been extremely successful in explaining all the precision data collected during the past few decades. The model, however, is incomplete with one of the key particles still not experimentally observed. This particle is predicted by the theory in the context of providing mass to the fundamental constituents as well as the exchange particles W and Z bosons. In the recent past, two experiments, ATLAS and CMS operating at the Large Hadron Collider, CERN have observed the evidence of a new state. Search signal of this object has been motivated by the Higgs boson within the Standard Model. Meanwhile, in the ~20 years since the inception of these experiments there has been a growing conviction that the Standard Model is not the end of the story. In this lecture the LHC physics program and some of the most important recent results including the discovery of a new Higgs-like particle will be presented.

The Speaker

Prof. Sunanda Banerjee earned his B.Sc. degree from Calcutta University (Presidency College, Kolkata) and joined the M. Phil. course of London University in Imperial College. He obtained his PhD degree from University of London and Diploma of Imperial College in 1976. He did his post-doctoral work at Imperial College (1975-77). He joined Tata Institute of Fundamental Research (TIFR), Mumbai in 1978 and subsequently visited Karlsruhe (1981-82) and spent several years at CERN, Geneva, working on the L3/CMS experiments (1986-90, 1996-97, 2003-2004). His area of research interest is Experimental High Energy Physics. Recently he moved to the Saha Institute of Nuclear Physics and started an experimental high energy physics group. Prof. Banerjee worked on charm hadrons in anti-proton/proton experiment Neutrino (also anti-neutrino)-nucleon experiment with narrow band beams from CERN SPS. He observed the first quantitative evidence of QCD-logarithmic violation of scaling (in Nachtman moments). He worked with hybrid spectrometers in studying the properties of charmed hadrons and then joined the L3 experiment at the large electron-positron (LEP) collider at CERN. He worked with the LEP data in establishing the running of the strong coupling constants, in the precise determination of the Electroweak Standard Model parameters and in the search of supersymmetric partners of leptons. He led the EHEP group in the Belle experiment at KEK, which looked for high precision measurement of b-quark decays leading to the observation of CP violation in b-quark sector. He also joined the CMS experiment at CERN, from proton-proton collision at the Large Hadron collider, which has detected the Higgs particle. Prof. Banerjee was selected as a Young Associate of the Indian Academy of Sciences, Bangalore in 1986. He is a fellow of the Indian National Science Academy, New Delhi and the Indian academy of Sciences, Bangalore.

Wednesday: 26 December, 2012, 16:00 hrs
K.R. Ramanathan Auditorium, PRL
Tea at 15:30 hrs
ALL ARE WELCOME

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A YEAR OF NEW SCIENCE, NEW DISCOVERIES and DEEPER SOCIETAL COMMITMENT