MCTP
Mesoamerican Centre for Theoretical Physics

ICTP

UNIVERSIDAD AUTÓNOMA DE CHIAPAS
UNACH

CONACYT

UNESCO
United Nations Educational, Scientific and Cultural Organization

PENTAQUARKS

Science for Development ICTP-UNACH-UNESCO Regional Seminar Session Theoretical Physics.

Thursday August 13, 2015.
Sala de Usos Múltiples del MCTP.
Ciudad Universitaria, UNACH.
Tuxtla Gutiérrez, Chiapas, México.
12:00 p.m.

Lecture by Prof. Luciano Maiani

SUMMARY

The most recent discovery of the LHC, the pentaquark and it Is significance for fundamental physics will be exposed.
The pentaquark represents a way to aggregate the fundamental constituents of ordinary protons and neutrons in a pattern that has never been observed before in over 50 years of experimental searches. Studying it is properties may allow us to understand better how ordinary matter, the protons and neutrons from which we're all made, is constituted.
Earlier experiments that have searched for pentaquarks have shown inconclusive evidence. Where the LHCb experiment differs is that it has been able to look for pentaquarks from many perspectives, with all pointing to the same conclusion. It's as if the previous searches were looking for silhouettes in the dark, whereas LHCb conducted the search with the lights on, and from all angles. The next step in the analysis will be to study how the quarks are bound together within the pentaquarks.

LUCIANO MAIANI
BRIEF PROFILE

In 1964 Luciano Maiani received his degree in physics and he became a research associate at the Istituto Superiore di Sanità in Italy. During that same year he collaborated with R. Gatto's theoretical physics group at the University of Florence. He did a post-doctoral fellowship at Harvard's Lyman Laboratory of Physics in 1969. In 1976 Maiani became a professor of theoretical physics at the University of Rome. He traveled widely, holding visiting professorships at the Ecole Normale Supérieure of Paris (1977) and CERN (1979–1980 and 1985–1986). Maiani also took an interest in the management of particle physics research starting with CERN's Scientific Policy Committee, from 1984 to 1991. In 1993, he became president of Italy's Istituto Nazionale di Fisica Nucleare (INFN). From 1993 to 1996 Maiani served as a scientific delegate in CERN council and as that Council's president in 1997. He became director general of CERN, serving from 1 January 1999 through the end of 2003. He served as President of Consiglio Nazionale delle Ricerche from 2008 to 2011.
Luciano Maiani has authored over 200 scientific publications on the theory of elementary particles often with several coauthors.
In 1970 he predicted the charmed quark in a paper with Glashow and Iliopoulos, later discovered at SLAC and Brookhaven in 1974. working with Guido Altarelli in 1974, they explained that the observed octet enhancement in weak non-leptonic decays is due to a leading gluon exchange effect in quantum chromodynamics. They later extended this effect to describe the weak non-leptonic decays of charm and bottom quarks and also produced a parton model description of heavy flavor weak decays. In 1976 Maiani analyzed the of CP violation in the six-quark theory and predicted the very small electric dipole moment of the neutron. In the 1980s he started using the numerical simulation of lattice QCD and this led to the first prediction of the decay constant of pseudoscalar charmed mesons and of B mesons. A proponent of supersymmetry, Maiani once said that the search for it was "primary goal of modern particle physics". He has not confined his interest to the theoretical side of physics either, with involvement in ALPI, EUROBALL, DAFNE, VIRGO and the LHC.

More information in the
Scientific calendar MCTP
or 01 (961) 61 61 780 00 ext. 8200.