

**Prestige Lecture**  
**Dr Stephen Myers OBE FREng**  
**CERN, Geneva, Switzerland**  
**Cranfield University, Vincent Building Auditorium**  
**Tuesday 8 April 2014 at 14.30 pm**

***The Engineering Needs for Particle Physics and the CERN Large Hadron Collider (LHC)***

**Abstract**

Today's particle accelerators and detectors are among the most complicated and expensive scientific instruments ever built by mankind, and they exploit almost every aspect of today's cutting edge engineering technologies. In many cases accelerator needs have been the driving force behind these new technologies; necessity being the mother of invention. The CERN Large Hadron Collider (LHC) is the most recent and most powerful of these devices.

In this lecture an overview is given of some of the engineering requirements for construction and operation of modern day accelerators with particular reference to the LHC. The subject is quite enormous, so it will not possible in the limited time to go into any engineering detail, but rather give an overview of the range of multi-discipline engineering skills and technologies needed.

A short description of the steps to increase the performance of the LHC which allowed sufficient data to be accumulated for the discovery of the Higg's boson will also be given.

**Biography**

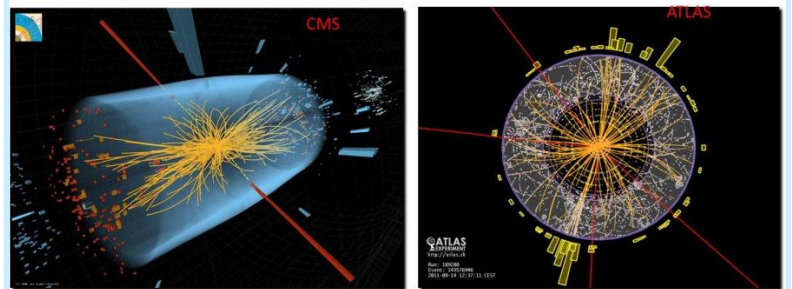
Dr Stephen Myers OBE FREng started at CERN as Engineer-in-Charge for the operation of the Intersecting Storage Rings Collider (ISR) before moving on to the Large Electron Positron (LEP). He took responsibility for the commissioning of LEP, was in charge of the preparation for physics in the 1990s, and was nominated Project Leader of the upgrade (LEP2) from 1996 until 2000.

In October 2008, he was nominated Director of Accelerators and Technology, responsible for the operation and exploitation of the whole CERN accelerator complex, with particular emphasis on the LHC and for the development of new projects (CLIC etc.) and technologies. He directed the repair of the LHC after the serious accident in September 2008 and steered the operation of the collider in 2010, 2011, and 2012. On July 4, 2012 the collider had produced enough events to allow the two large LHC experiments (ATLAS and CMS) to discover the "Higgs-like" boson.

Dr Myers has been appointed the Head of Medical Applications at CERN, as of January 2014. He has been honoured with several awards, including honorary doctorates from the University of Geneva and the Queen's University of Belfast. He was the recipient of the IOP Duddell Medal in 2003, and was awarded the 2010 International Particle Accelerator Achievement prize for a lifetime of outstanding work in the field. In 2012 he was joint recipient of the European Physical Society "EPS Edison Volta prize", and more recently in June 2013 he has been awarded an OBE for services to science and technology as part of the Queen's Birthday Honours.



**The Higg's Boson**



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