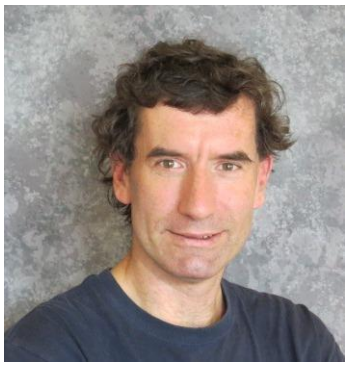
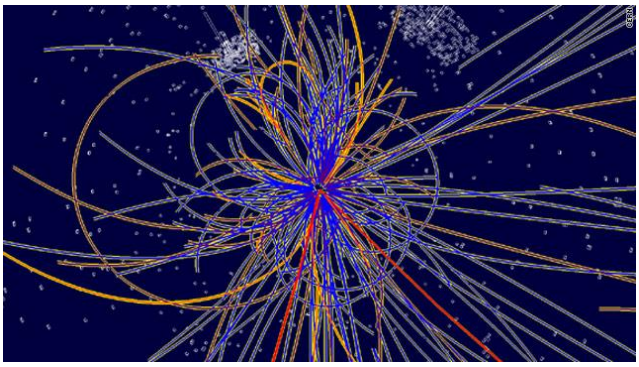
The Discovery of the Higgs Boson

A talk at The Adstock Science Club by Professor William Murray – 19th October, 2017 (Warwick University and LHC)



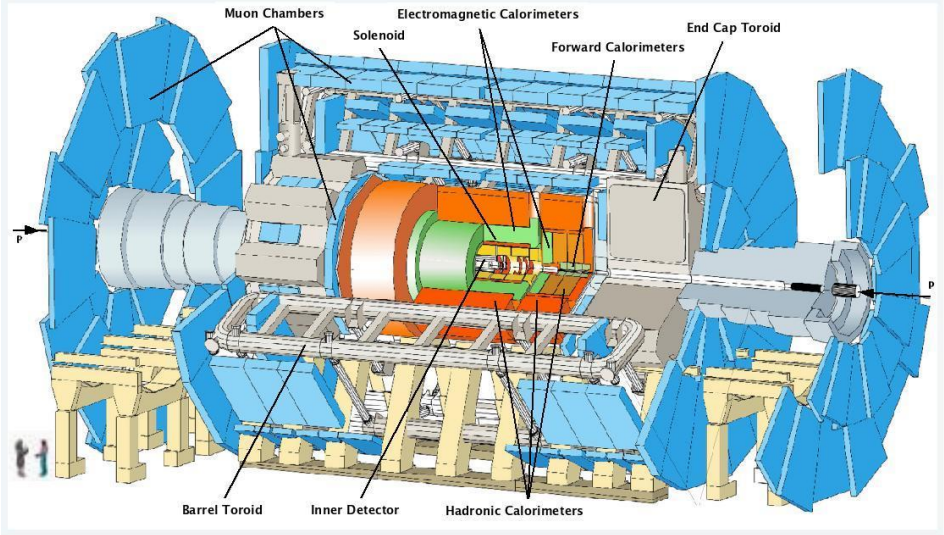
Professor Murray began his talk by bringing everyone up to speed on what we currently know about the atom. From its conception in ancient Greece where Democritus advocated that all matter was made up of small indivisible particles called atoms to today's well tested theories of the atom being made up of a number of electrons orbiting a heavy central nucleus composed of protons and in all but one case, hydrogen, neutrons. We also now know that both protons and neutrons are in fact made of other more fundamental particles called quarks, there being two "Up" quarks and one "Down" quark in the proton with the neutron possessing two "Down" quarks and one "Up" quark. Professor Murray also discussed a number of the other particles that are currently known about, Muons and Neutrinos with the latest particle to be discovered the Higgs Boson and the impact this has had on science and how this strengthens the case for the "Standard Model" of particular physics.

From here he explained a little about the development and operation of the Large Hadron Collider at CERN which spans the border of Switzerland and France, and in particular the ATLAS experiment and his part in developing some of the highly sensitive CCD detectors.



He described some of the problems encountered during the design and development. Also shown were some particle traces and energy distribution graphs showing in particular the small bump which indicated the presence of the Higgs Boson.

Once the Higgs was discovered researches were able to make the case to continue experiments using the LHC for another ten years though funding to allow this to happen is still being sought.



The ATLAS Experiment