University of Wisconsin-Milwaukee

Dept. of Physics
COLLOQUIUM

CERN: An In-Depth Look

Dr. Vincent Smith

Honorary Research Fellow; Univ. of Bristol (UK)

Friday, 8 March 2019

3:30 PM (coffee/cookies at 3:15 PM)

Lapham Hall – Room 160

CERN (near Geneva, Switzerland) was founded in 1954 by 12 European countries and now has 22 "member states." I have been fortunate to have worked on experiments there since 1976, when the *new* Super Proton Synchrotron was commissioned. Since the late 1990's, I have been a member of the Compact Muon Solenoid collaboration, one of the big experiments on CERN's Large Hadron Collider. I worked initially on the development, installation and commissioning of the Electromagnetic Calorimeter, a system of over 75,000 crystals of Lead Tungstate (PbWO_4) to measure the energy and direction of high energy gamma rays, electrons and positrons from collisions in the center of the detector. This part of the detector provided the accurate measurements of the two-photon decay of the Higgs boson, which we discovered (jointly with Atlas) in 2012. I am one of the 2,500 authors of the CMS Higgs discovery paper!

Since my retirement, I have had the benefit of an honorary position at Bristol, which allows me to visit CERN and continue my involvement with the CMS experiment. I often serve as a "Shift Leader," with overall responsibility for the smooth operation of the detector during the 8-hour shifts. My talk will begin with a little background about the foundation of CERN, and some history of the laboratory, but then concentrate on the results, existing and hoped-for, from the CMS experiment. This will include the discovery of the Higgs boson, the search for Supersymmetry, and perhaps Dark Matter.

UNIVERSITY of WISCONSIN
UWMILWAUKEE