

Department of Physics

Particle Physics

The Denys Wilkinson Building, Keble Road, Oxford OX1 3RH



Experimental Particle Physics Seminar

at 2.15 pm

Dennis Sciama Lecture Theatre

Tuesday 15th October 2019

Professor James Pinfold FRSC

University of Alberta

Dedicated Experiments, a New Paradigm in the Search for New Physics at the LHC

Abstract

The unprecedented collision energy of the LHC has opened up a new a new discovery frontier, where a theory underlying the Standard Model may yet be revealed. Now that the Higgs boson - the last piece of the Standard model puzzle - has apparently been discovered, the search for such new phenomena has assumed a key importance. However, the LHC has been running for several years and no signals for physics beyond the Standard Model have been observed. Either this new physics is simply not there, or it is somehow evading detection by the general-purpose LHC experiments, ATLAS and CMS. We discuss here those theoretical scenarios that may have evaded detection by the main LHC experiments. We explore how dedicated detectors, like the pioneering MoEDAL experiment and its new sub-detector MAPP, can enhance the physics reach of the LHC and widen its discovery horizon. Other dedicated experiments including the approved FASER) and the proposed MilliQan, CODEX-b and MATHUSLA experiments, are briefly described.