

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 30th October 2018

Dr Jon Coleman

University of Liverpool

Atom Interferometry: exploring the dark sector and gravitational waves

Abstract

Ongoing advances in atomic clocks and atom interferometry, enable broad applications for basic science. Due to their sensitivity to the distortion of the space-time between the sensors, they can be used to answer questions in quantum mechanics, dark sector physics, and 'mid-band' gravitational wave detection. Efforts to explore the contents of the vacuum and detect well-motivated ultra-light dark matter candidates several orders of magnitude beyond current bounds, will be presented. In parallel to this, a proposed probe into the gravitational wave spectrum between the Advanced LIGO and the proposed LISA experiments using this technology will be outlined.

The Status and experimental plans will be presented.