SACRAMENTO STATE

Department of Physics and Astronomy

Physics & Astronomy Colloquium

Spring 2011

"Fundamental Physics with Atomic Interferometry"

Atomic clocks and atom interferometry in general have made rapid progress in the past decade. These high-precision tools can be put to use in areas ranging from astrophysics, to particle physics and gravitation. I will describe a new proposal to use this atomic technology to detect cosmic axion dark matter. The axion is a theoretically well-motivated dark matter candidate that is otherwise impossible to search for over much of its parameter space. I will also discuss recent proposals to detect gravitational waves with atomic interferometry. This may open up new, lower-frequency pieces of the gravitational wave spectrum to exploration in terrestrial detectors. Further, it could significantly ease the technological requirements of a satellite mission to detect gravitational waves. Finally, I will discuss the use of atom interferometry to test general relativity in the laboratory at a precision that may become competitive with solar system tests.

Peter Graham

Stanford University

Thursday, April 14, 2011

***4:20 -5:45 PM - MND 1015**

*** Note - later time than previous semesters**

Open & Free to all Students, Faculty & Public