



**Western University**  
**DEPARTMENT OF PHYSICS AND ASTRONOMY**

## **PHYSICS & ASTRONOMY COLLOQUIUM**

**Date:** **Thursday, 3<sup>rd</sup> November 2016**  
**Time:** **1:30 p.m.**  
**Location:** **Physics & Astronomy Seminar Room 100**

### **Dr. Robert Scott**

Laboratoire de Mathématiques de Bretagne Atlantique  
Université de Bretagne Occidentale (UBO)  
Brest, France

***“What is curved spacetime? What is all the excitement about gravitational waves?”***

#### **ABSTRACT**

I will give a general introduction to Einstein's theory of general relativity, explaining the meaning of curved spacetime and how it can be visualized. I'll also show how this leads to the familiar effects of gravity including the attraction of massive objects and spacetime curvature effects balancing inertial forces in a near-circular orbit. I will briefly explain how spacetime curvature leads to purely relativistic phenomena like time dilation and gravitational waves.

In the second part, I will give a broad overview of why the recent detection of gravitational waves is a truly remarkable discovery in itself, as well as try to anticipate how it will shape future research. I will explain how the frequency spectra of gravitational wave detection can be broadened with pulsar timing arrays, and give some examples of questions that may be addressed in cosmology, astrophysics, and particle physics.

**Coffee will be available in the Atrium, 2nd floor, at 1:15 p.m.**

**We look forward to seeing you at the Colloquium! As a courtesy to the speaker and audience, please set your cellphones to “silent” mode. Thanks!**