DEPARTMENT OF

PHYSICS & ASTRONOMY

SPEAKER SERIES

Bose-Einstein Condensates as Gravitational Wave Detectors

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Tuesday, Jan 29
1:40-2:55PM
D632

Everyone welcome!

With the recent direct observation of gravitational waves, a new avenue of observing the Universe has become available. As a result, much effort is being devoted to the design of new detectors sensitive to different gravitational wave sources. In this talk, I will review the physics behind gravitational waves and explain the current method of detection. I will then discuss how it might be possible to use ultra-cold atoms in a Bose-Einstein condensate to detect high-frequency gravitational waves. Using a Bose-Einstein condensate as a gravitational wave detector is currently limited at lower frequencies by methods in quantum optics and damping at higher frequencies. I will show that future improvements in experimental techniques can make Bose-Einstein condensates competitive detectors for gravitational waves of astrophysical and/or cosmological origin.

University of Lethbridge

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