

# SEMINAR IN PHYSICS

Friday, March 23, 2018  
3:30-4:25 – Ross 0220

~ Refreshments ~

## An Introduction to Complex Plasma

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Complex Plasma, better known as Dusty Plasma, is a naturally occurring phenomenon throughout nature and the cosmos. Although Dusty Plasma is known to be naturally occurring, its characteristics are very difficult to observe in natural settings. Auspiciously, this phenomenon can be reproduced in laboratory settings where the characteristics are effortlessly studied -- even with the naked eye.

I will be introducing what a Complex Plasma is, what makes it significant for research purposes, and which of its many characteristics are most outstanding -- specifically, Complex Plasma replicating the kinematics of phase transitions. Seemingly obvious from the name Dusty Plasma, this phenomenon occurs under interactions between dust particles and ordinary plasma. Although the foundation of a complex plasma seems very simple, its unique characteristics are quite amazing and special in the fields of nonlinear physics, astrophysics, and the kinetics of phase transitions.

## From Prediction to Detection: The Observation of Gravitational Waves Using Laser Interferometry

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Two detectors of the Laser Interferometer Gravitational-Wave Observatory (LIGO) were the first to make a direct detection of gravitational waves on September 14, 2015. The theories and experiments leading up to this detection have a fascinating history spanning over 100 years.

The detection and resulting data have uncovered new information about the universe and is truly one of the greatest discoveries of our lifetime. LIGO has set the stage for new detectors around the world (and in space), and has influenced the way in which gravitational waves will be detected and interpreted for years to come. This talk will explore how interferometry is used in the detection of gravitational waves.