

SEMINAR IN PHYSICS

FRIDAY, March 11, 2016

3:30-4:25 · Ross 0220

~ Refreshments! ~

Brief Introduction to Non-linear Mechanics and Chaos

Nickolay Pokatilov, UNC Physics Student

Presentation would lightly touch upon a complicated nature of chaos, as well as systems that lead to such phenomenon. A rudimentary approach would be taken along with example of a driven damped pendulum, with a light mathematical analysis of its differential representation, and an analysis leading to chaos arisen from this non-linear system.

A brief detour would involve, in the beginning, some historical remarks regarding significant people with the greatest contribution to the development of this relatively new field (Chaos). I would touch upon the universality of chaotic systems, along with several applications in the external fields of study in applications within disciplines such as fluid mechanics, economics, sociology, neuroscience, meteorology, and others.

The Journey to Absolute Zero

Alec Helm, UNC Physics Student

Scientists in the field of thermodynamics have always sought new ways to cool objects down as cold as possible: absolute zero. The methods throughout time have varied from techniques such as cryocooling to laser cooling. These have opened up vast research opportunities pertaining to superconductors, superfluidity, and even Bose-Einstein Condensates. We are going to delve into the history and theories of these processes as well as look into the phenomena discovered and technologies that were spawned from them.

The Higgs Boson

Chad Garcia, UNC Physics Student

The Higgs Boson is a new discovery to the science world. It was discovered only a few years ago, and it has already changed much of how the world in physics is looked at. It is now considered to be an elementary particle with a zero spin and charge. The Boson's existence also dictates that there is a field that accompanies it. This field is revolutionary in the fact that it solves some of the dilemmas with the Standard Model. The Higgs Boson was discovered at CERN's Large Hadron Collider, using top tier technology of this era.