SEMINAR IN PHYSICS

FRIDAY, APRIL 1, 2016

3:30-4:25 • Ross 0220

~ Refreshments! ~

Superconductors and Quantum Levitation

Zachary Rossiter, UNC Physics Student

First discovered in 1911 by Dutch physicist Heike Kamerlingh, superconductors are any material through which electrons are able to move with zero resistance. Many elements and compounds exhibit this phenomenon after being cooled to specific critical temperatures, dependent upon the structure and composition as well as the pressures the materials are placed under. Moreover, superconductors are categorized as either Type 1 "soft" or Type 2 "hard". While both have their uses only Type 2 are subject to Quantum levitation, which is the process where magnetic fields flow through imperfections in the superconducting material causing it to be pinned in the magnetic field. In my talk I will give a brief overview of both types of superconductors as well as discuss some of the many uses we have for superconductors in the modern day.

3-D Printing

Brock Loftus, UNC Physics Student

3-D printing is also known as additive manufacturing or desktop fabrication. 3-D printing uses design software to create 3-D objects that can be used for prototyping. These 3-D objects are designed with a CAD (computer-assisted design) software. After the virtual design is mastered, the design is then saved in an STL format and sent to the computer for printing. My goal is to show that 3-D printing is very versatile, and to show that it is a useful tool for engineers and many other careers in the sciences. Engineers have found many uses for 3-D printing such as prototyping, but engineers are not the only people who make their job easier with 3-D printing. As of late 3-D printing has made it into the medical field, and has made it easier for doctors by making 3-D models of the part of the patient's body they are working on. In my study I have found that 3-D printing is impacting industries such as medical, automotive, architecture, and many more. With 3-D printing companies can test new ideas at a low cost, which is one of the reasons 3-D printing has made it to so many industries. I concluded that 3-D printing is versatile and is the future in innovation.