

SEMINAR IN PHYSICS

FRIDAY, April 22, 2016

3:30-4:25 · Ross 0220

~ Refreshments! ~

Physics of the Eye

Kourteney Zadina, UNC Physics Student

Our eyes have many different parts, and they all have to work together in order for us to have clear vision. Believe it or not, the eye has many physics properties that we learned in optics. Light has to travel through different mediums in the eye, which have various indexes of refraction. Snell's Law shows us how light bends when going from one medium to the next. The air to cornea surface is a major region because of the large difference in the indexes of refraction. But the physics doesn't stop there. Errors can occur in the eye where the light does not focus on the retina where it should, either converging too quickly or too late. Lenses can fix this problem as well as reshaping the cornea with eye surgery. I will share the properties of lenses and shapes of the cornea that can correct these problems in the eye.

Reinventing the Wheel: An Introduction to Quantum Computing

Solomon Smith, UNC Physics Student

Quantum computing has been a hot topic in the realm of science and technology for the past few decades, and has in recent years become a reality and a center of interest for a number of organizations worldwide. Though normal computers have been getting more powerful throughout the ages, there are physical limitations (largely being the size of the parts) that make them less adept at certain tasks. Quantum computers, through the use of qubits, can surpass these limits and be used to revolutionize several genres of advanced computation including quantum mechanical simulation, data encryption, and database searching. This presentation will cover the research leading up to modern quantum computers, the basics of how they work, and their current and potential applications in science and technology.

The Physics Behind Speakers

Casey Montoya, UNC Physics Student

Speakers are all around us. Everywhere from smartphones to the vehicles we drive, these devices are used in our everyday lives for producing sound. When you want to listen to music you simply plug in your headphones or attach a speaker to a media device, and by means of mere wizardry you can be swept away by your favorite tunes. Although they appear simple, speakers are rather complex systems. A speaker has mechanical and electrical qualities of a simple harmonic oscillator, and thus it acts like a mass on a spring. This presentation will discuss how a speaker behaves in such a manner.