



Physics Colloquium

**Friday March 1st, 2013
4:10 – 5:00 pm, EPS108**

“Physics of the Piano”

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Abstract:

Why does a piano sound like a piano? A similar question can be asked of virtually all musical instruments. A particular note, such as middle C, can be produced by a piano, a violin, and a clarinet. Yet, it is easy for even a musically untrained listener to distinguish between these instruments. One would like to understand why the sound of the “same” note depends greatly on the instrument. In particular, we would like to understand what aspects of the piano are most critical in producing its musical tones. The questions we will address in the talk include:

- Who invented the piano and why?
- Why does the piano have 88 keys and not more or fewer?
- How and why is the tone color of a loud note different from that of a soft note, and why is this important?
- Why are the bass strings on a piano made by wrapping a coil of wire around a central wire core?
- A piano tone is the sum of components that can be described by sine waves. The frequencies of these sine waves deviate a small amount from a simple harmonic series. What is the source of these deviations and why are they important?

After we have addressed all of these questions, we’ll be able to understand why a piano sounds like a piano.

Host:

Rufus Cone

**Refreshments 3:45 p.m.
EPS 2nd Floor Atrium**