



Fun Piano Repair & Tuning Demo

(using free [FFTuner](#); public welcome!)

by 3 physicists using a laptop, microphone, hammer and tricks

Bruce Vogelaar, Hans Robinson, Tatsu Takeuchi

3:00 – 4:30 pm Sat, Apr 20, 2019 in Hahn North Rm 130

900 W Campus Dr, Blacksburg, VA (free parking)

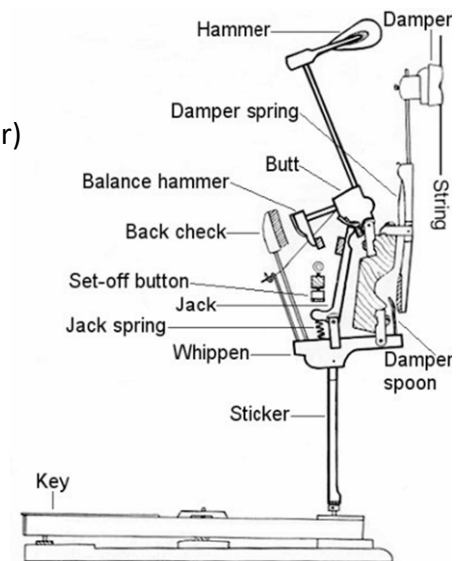
Ever want to play that old piano at home? With a little bit of engineering and physics one can make a huge difference. We'll show you how to transform a \$50 piano from the thrift store into something playable again.

Background:

1. Modes on [piano](#), [guitar](#), [drum](#), [trumpet](#), [tuning fork](#); where the hammer falls; timbre
2. Spectral analysis - an engineer's good friend
3. Just Temperament (why certain notes sound good together; psychoacoustics?)
4. Circle of Fifths (and the Wolf fifth)
5. Number of notes per octave (define 'cent')
6. Equal Temperament (why Western cultures are so hyper)
7. Self-inharmonicity of a *single* real wire (Spinet to Concert Grand)
8. Stretch tuning

Doing it!

9. Pianos really ARE made to come apart (and hopefully go back together)
10. Action (removal and regulation – fixing broken keys)
11. Tuning: Pins, Unisons, Octaves, Stretch (where the 'art' comes in)
12. Drum Tuning (demo with a floor tom), Guitar Tuning
13. What you CAN'T play with this tuning... (microtonal compositions)



www1.phys.vt.edu/~kimballton/home/pub/w.shtml?piano/flier2019.pdf