

Abstract Submitted
for the TSF17 Meeting of
The American Physical Society

Introducing the Light Guitar RUSSELL STONEBACK, University of Texas at Dallas — The traditional acoustic guitar uses the resonance of strings and instrument body to produce pleasing sounds. We present a variant upon this technique to create a new class of musical instruments, one that uses the resonance of electromagnetic fields (20 MHz- 20 GHz), rather than sound waves, to produce music. From a functional perspective each system in an acoustic musical instrument is replaced with an electromagnetic equivalent. Wooden instruments are replaced with conductive materials, resonant motions of acoustic instrument bodies are replaced with resonant surface currents, and resonances of instrument strings are replaced with the resonance of voltage and current along a coaxial cable. Waves produced by these new musical instruments are not directly visible or audible, but they are measurable, enabling the recording of waveforms and playback of these signals as music. An overview of these new musical instruments will be presented followed by a musical performance.

Russell Stoneback
University of Texas at Dallas

Date submitted: 28 Sep 2017

Electronic form version 1.4