* Travelling waves and wave propagation in a medium
  + One-dimensional medium - bead-spring system
  + One-dimensional transverse and longitudinal waves
  + Wave propagation in two and three dimensions
* One-dimensional standing waves
  + Sum/superposition of two counter-propagating travelling waves
  + Boundary conditions for standing waves
    - Reflection, refraction, diffraction of travelling waves
    - Interference effects
    - Resonance effects
  + Transverse standing waves, e.g. on a guitar/violin/piano string
  + Longitudinal standing waves, e.g. in air - organ pipes/flutes
* Standing waves in two and three dimensions
  + Vibrating membranes/plates - drums, cymbals, musical saw, Chladni's law
* Doppler effect - source/observer motional effects on sound waves in air.
* Beats - interference between two frequencies
* Distortion - non-linear response & generation of harmonics of fundamental
* Intermodulation distortion - non-linear response with 2 or more frequencies.
* The Human Ear/Human Hearing
  + Structure of the outer & inner human ear, and its response to sound
  + Why two ears? Phase sensitivity, source location determination.
    Human hearing localization optimized for sound propagation in air…
  + Sound Intensity, I (Watts/m^2)
  + Sound Intensity Level, L (decibels)
    - Threshold of hearing, threshold of pain, noise levels/occupational exposure
  + Sound Pressure Level, L_p (decibels)
  + Loudness Level (phons)
  + Loudness (sones)
* Musical Tone Quality/Timbre
  + Pure tones/simple tones - sine/cosine waves
    - have well-defined frequencies/wavelengths, amplitudes & phases
  + Partial tones (= partials) - assembly of pure tones
    - = a mix of different frequencies & amplitudes
  + Complex tone - superposition of simple tones - complex waveform
  + Periodic complex waveform - has fundamental + harmonics/overtones
    - harmonics/overtones = integer multiples of fundamental frequency
    - phase sensitivity of human ear to complex tone/tone quality/timbre
    - harmonic (Fourier) analysis of musical instrument tones
  + Formants - resonances
  + Sound Envelope - attack time/decay time
* Sound Effects
  + Vibrato, tremelo, chorus, phase shift/flanging, reverberation/echo, etc.
  + Noise
  + Subjective tones - (non-linear response/distortion in the ear)
  + Auditory sensation "tricks"
* Musical intervals, musical scales, tuning and temperament
  + Consonance/dissonance
  + Discrete frequencies = scale