Subject: Pipes, tapered pipes and Helmholtz resonators
Posted by Wayne Parham on Thu, 22 Sep 2005 17:57:19 GMT
View Forum Message <> Reply to Message

We've had some discussions here about bass-reflex, tuned pipes, tapered pipes and horns, specifically about their similarities and differences. So I've taken a moment to put together a list of references from authors other than those that normally contribute here.Acoustics and Vibration Animations, list of articles and demonstration by Dr. Daniel RussellAcoustic High-Pass, Low-Pass, and Band-Stop Filters, Daniel Russell discusses propogation of sound through ducts, transmission lines and acoustic filter chambersSuperposition of Waves, shows the interaction of standing wavesRadiation from a Baffled Piston, shows the effects of frequency on directivityEvanescent Modes in Waveguides, shows higher order modes in ducts driven above and below their cutoff frequencyMass-Spring Systems with Damping, shows how system damping affects resonance amplitude, which in turn affects responseThe Forced Harmonic Oscillator, shows systems driven below resonance, at resonance and above resonanceCoupled Oscillators, shows two mass-spring systems, like the mechanical resonance of a loudspeaker and the acoustic resonance of the cabinetThe Dynamic Vibration Absorber, shows how two tuned systems can be optimized for working together. Think speaker and box.Vibrational Modes of a Circular Membrane, shows cone flex breakup modesHyperPhysics - Resonance, several links on the subjectHyperPhysics - Air Column Resonance, online calculator of open pipe, closed pipe and tapered pipe resonant modesHyperPhysics - Cavity Resonant Frequency, online calculator of Helmholtz resonant frequencyResonance, standing waves, & Eigentones, discussion of resonance and QMusical Acoustics - Some Introductory Pages, several links about matters acoustic from the University of New South WalesPipes and Harmonics, University of New South Wales, compares closed cylinder pipes, open cylinder pipes and closed conical pipesHelmholtz Resonance, University of New South Wales, describes Helmholtz resonanceSound Waves and Music, several online lessons from the Physics ClassromResonance and Standing Waves, Physics ClassroomStanding Waves and Resonance, describes standing waves in mechanical, electrical and acoustic transmission linesResonata, a groovy applet