CHAPTER OVERVIEW

3: Resonance

Resonance is a key concept in the production of sound in instruments and in acoustics. We will come across it many more times in this book. The ***natural frequency*** (f_o measured in *hertz*) is the frequency at which an oscillating system naturally wants to vibrate. For a mass on a spring, this is determined by the size of the mass and the stiffness of the spring; a stiffer spring has a higher natural frequency as we saw in the previous chapter. To keep a system vibrating in the presence of friction we have to keep pushing it with a periodic force. The frequency of this periodic driving force is called the ***driving*** frequency, f which is totally independent of the natural frequency (we can push our mass on a spring at a frequency different from the frequency at which it wants to vibrate).

Key Terms:

Natural frequency, driving frequency, angular frequency, damped harmonic motion, driven harmonic motion, resonance, resonator, Helmholtz resonance, Quality or Q-factor.
