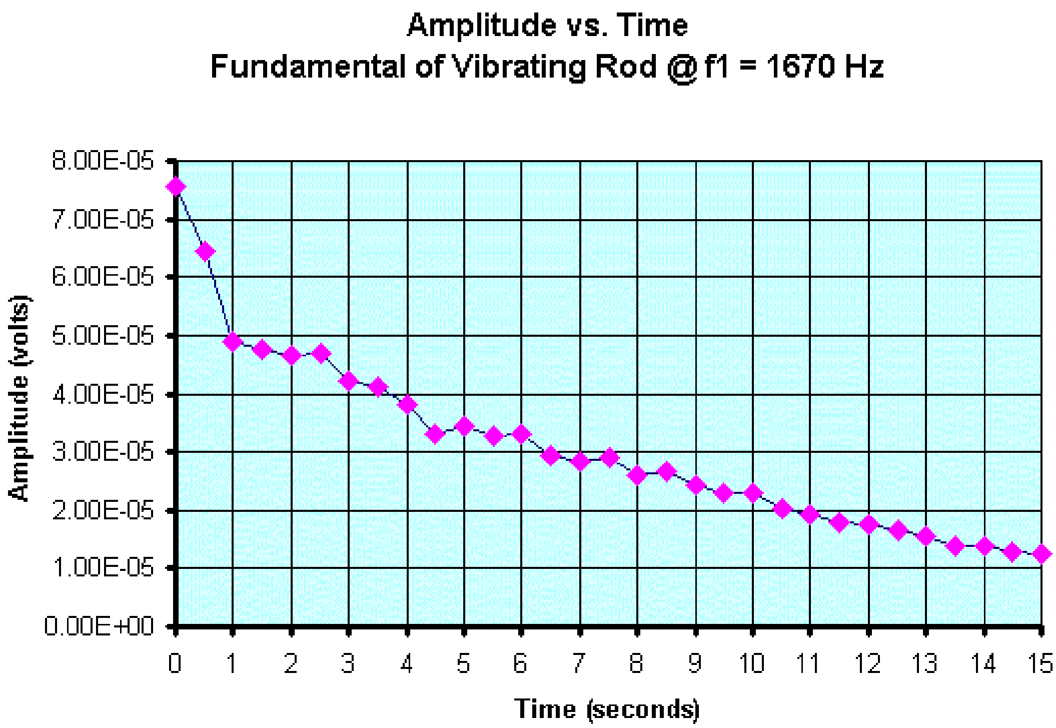
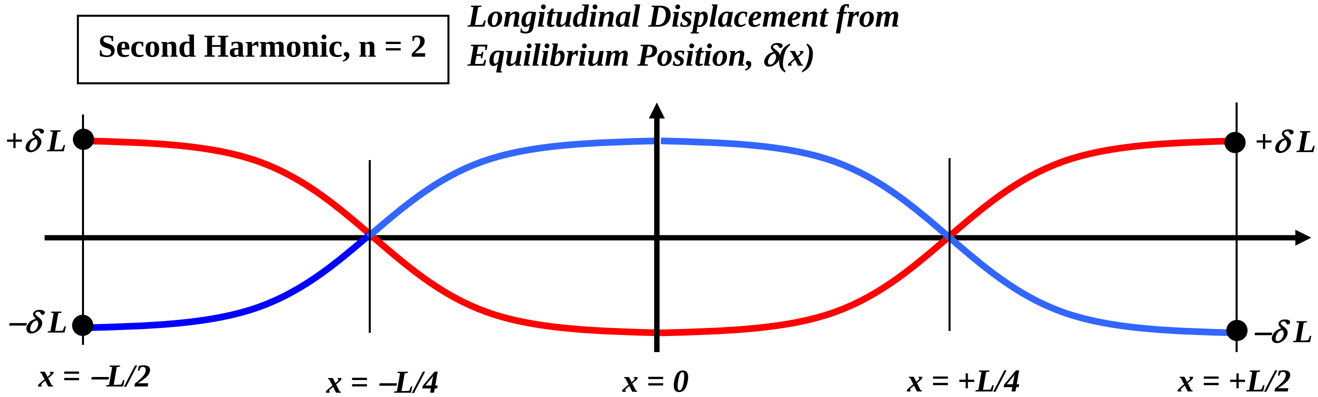


It is also possible to excite other, higher modes of vibration of the rod. Instead of holding the rod at its mid-point, one can hold the rod at a point one-quarter of its length, measured from one end of the rod. Pulling on the rod along its length with rosin-dusted thumb and index fingers of the free hand will excite the next higher, second harmonic mode (n = 2) with a frequency, $f_2 = 2 f_1 = 2*1671.8$ Hz = 3343.6 Hz. This corresponds to a wavelength, $\lambda_2 = v/f_2$ = (5082.4 m/s)/(3343.6 Hz) = L = 1.52 meters. The displacement from equilibrium along the length of the rod, for this higher mode of oscillation, would thus appear as:



The red curve is the longitudinal displacement profile, $\delta(x)$ along the rod at one instant in time, say at time t = 0 seconds. The blue curve is the longitudinal displacement profile, d(x) along the rod one half cycle of oscillation later, at time $t = \tau_2/2$, where $\tau_2 = 1/f_2$ is the period of for this mode of vibration of the rod. The frequency f_2 is twice that of the fundamental frequency, f_1,