

Assignment 10 Coupled Oscillations

1. Consider the problem of two coupled oscillators for the case that the three springs all have different force constants. Find the two characteristic frequencies and compare the magnitudes with the natural frequencies of the two oscillators in the absence of the coupling.
2. Find the eigenfrequencies and describe the normal modes for a system as discussed in Section 12.2 but with three equal masses m and four springs (all with equal force constants) with the system fixed at the ends.
3. A mass M moves horizontally along a smooth rail. A pendulum is hung from M with a weightless rod and mass m at its end. Find the eigenfrequencies and describe the normal modes.