

## CHAPTER OVERVIEW

### 13: Simple Harmonic Motion

#### Learning Objectives

- Understand how to model the position, velocity, and acceleration of a mass attached to a spring.
- Understand the conditions under which a system undergoes simple harmonic motion.
- Understand how to model the motion of a pendulum when it undergoes simple harmonic motion.

In this chapter, we look at oscillating systems that undergo “simple harmonic motion”, such as the motion of a mass attached to a spring. Many systems in the physical world, such as an oscillating pendulum, can be described by the same mathematical formalism that describes the motion of a mass attached to a spring.

#### Prelude

What do the motion of a mass attached to a spring, a cork bobbing in the water, and a pendulum have in common?

[13.1: The motion of a spring-mass system](#)

[13.2: Vertical spring-mass system](#)

[13.3: Simple Harmonic Motion](#)

[13.4: The Motion of a Pendulum](#)

[13.5: Summary](#)

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