

6.0: Model Specifics

Linear Oscillations

In this section, we will investigate a new model that can be viewed as an extension, or application, of the models previously studied. This application concerns the motion, of either a particle or a rigid body, after it is displaced from its *equilibrium position*. (The equilibrium position is the position at which the total force acting on the object is zero.) The model hypothesizes the existence of a force that acts to return the object to its equilibrium position. This force is termed the *restoring force*. Furthermore, the magnitude of this restoring force will be restricted to be *linearly dependent* on the magnitude of the initial displacement from equilibrium. This means that the farther the object is displaced from equilibrium, the larger the magnitude of the force acting to return it to equilibrium. When these two criteria are met, we will show that the object's position will oscillate about the location of its original equilibrium position.

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