

CHAPTER OVERVIEW

9: Rotational Dynamics

Rotational motion, which involves an object spinning around an axis, or revolving around a point in space, is actually rather common in nature, so much so that Galileo thought (mistakenly) that circular motion, rather than motion on a straight line, was the “natural,” or “unforced” state of motion for any body. Galileo was wrong, but there is at least one sense in which it is true that rotational motion, once started, can go on forever in the absence of external forces. The underlying principle is the *conservation of angular momentum*, which I will introduce later in this chapter.

As pointed out in the previous chapter, rotational motion is also extremely important in mechanical devices. In every case, the rotation of an extended, rigid body can be mathematically described as a collection of circular motions by the particles making up the body. Two very important quantities for dealing with such collections of particles in rotation are the rotational kinetic energy, and the angular momentum. These will both be introduced, and their properties explored, in this chapter.

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[9.2: Angular Momentum](#)

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