CHAPTER OVERVIEW

11: Rotational Dynamics

We have already seen the quantum mechanical treatment of angular momentum and rotational dynamics. In this section we study these subjects in a classical, non-relativistic context. We first define the concepts of torque and angular momentum in order to understand the orbital motion of a single particle. Next we examine two particles in arbitrary motion and learn how kinetic energy and angular momentum are partitioned between orbital and internal components. Two particles fixed to the ends of a light rod constitute a dumbbell, which serves as a prototype for the rotation of rigid bodies. We then see how what we learned for two particles extends to an arbitrary number of particles. Finally, we explore the physics of structures in static equilibrium.

Before we begin, we need to extend our knowledge of vectors to the cross product.