

CHAPTER OVERVIEW

5: Uniform Circular Motion and Gravitation

This chapter deals with the simplest form of curved motion, **uniform circular motion**, motion in a circular path at constant speed. Studying this topic illustrates most concepts associated with rotational motion and leads to the study of many new topics we group under the name *rotation*. Pure *rotational motion* occurs when points in an object move in circular paths centered on one point. Pure *translational motion* is motion with no rotation. Some motion combines both types, such as a rotating hockey puck moving along ice.

[5.1: Prelude to Uniform Circular Motion and Gravitation](#)

[5.2: Rotation Angle and Angular Velocity](#)

[5.3: Centripetal Acceleration](#)

[5.4: Centripetal Force](#)

[5.5: Fictitious Forces and Non-inertial Frames - The Coriolis Force](#)

[5.6: Newton's Universal Law of Gravitation](#)

[5.7: Satellites and Kepler's Laws- An Argument for Simplicity](#)

[5.E: Uniform Circular Motion and Gravitation \(Excercise\)](#)

Thumbnail: Two bodies of different mass orbiting a common barycenter. The relative sizes and type of orbit are similar to the Pluto–Charon system. (public domain; Zhatt).

Contributors and Attributions

- Paul Peter Urone (Professor Emeritus at California State University, Sacramento) and Roger Hinrichs (State University of New York, College at Oswego) with Contributing Authors: Kim Dirks (University of Auckland) and Manjula Sharma (University of Sydney). This work is licensed by OpenStax University Physics under a [Creative Commons Attribution License \(by 4.0\)](#).

This page titled [5: Uniform Circular Motion and Gravitation](#) is shared under a [CC BY](#) license and was authored, remixed, and/or curated by [OpenStax](#).