

CHAPTER OVERVIEW

49: The Gyroscope

A gyroscope (from the Greek *gyros*, "a ring," and *σκοπεω*, "see") is a wheel attached to an axle; the wheel and axle are spun to rotate at an angular velocity ω , so that the gyroscope has an angular momentum $L = I\omega$, where the moment of inertia $I \approx MR^2$. The gyroscope has various uses as a children's toy (where it is similar to a top), as an apparatus for demonstrating principles of physics, or as an instrument for navigation. The Hubble Space Telescope, for example, has six gyroscopes on board that are used to help determine the attitude of the spacecraft (its orientation in space).

[49.1: Precession](#)

[49.2: Nutation](#)

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