

This thesis is divided into two parts. The first part explains development and history of the first Czechoslovak satellites Magion. Satellites Magion were developed for the Earth's ionosphere and magnetosphere research. The thesis describes the beginning of the project, Magion's technical data, its construction problems and interesting details from the background of the project. The second part of this thesis explains the Magion stabilization by its rotation, where properties of a free gyroscope are used. The text is written for students at secondary schools and also for their teachers. Because of it, everything is explained without using differential or integral calculus. The whole explanation is structured continuously, it supposes only basic knowledge, begins from the movement on the circle, continues through moments of inertia and angular momentum and ends by explanation of a free movement of the gyroscope. The whole theory is illustrated by stabilization of the satellite Magion 4 and by the experiments made during the project.