Advanced cosmonautics

Pokročilá kosmonautika

B2

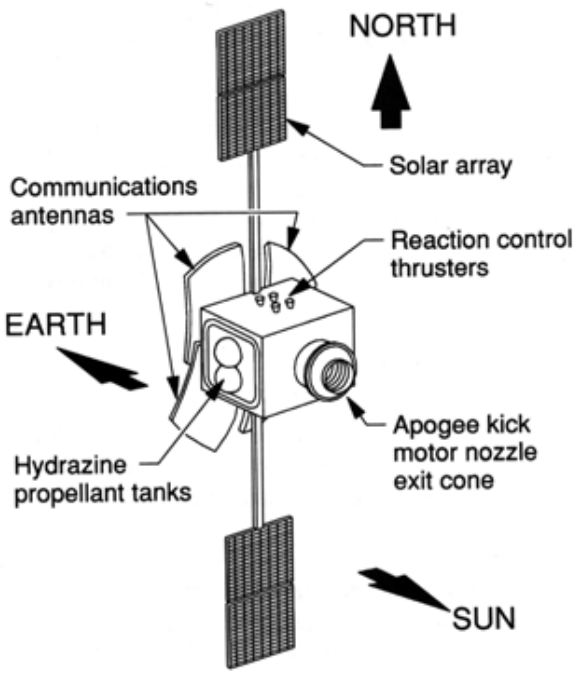
Satellites and telecommunication / *Družice a jejich role v telekomunikaci*

A communications satellite is an artificial satellite that relays radio signals, creating a link between a transmitter and a receiver on Earth. Because radio waves travel in a straight line, they are normally blocked by the Earth's curve. Satellites solve this by bouncing the signals from space, allowing global communication for television, internet, and military use.

Some satellites are placed in geostationary orbit (GEO), over 35,000 km high. They appear completely still in the sky, so ground antennas don't need to move to catch the signal.

However, modern internet services rely on massive satellite constellations in Low Earth Orbit (LEO). A famous example is SpaceX's Starlink, which uses thousands of small satellites working together to provide high-speed internet. Because LEO satellites move fast across the sky, ground antennas must constantly track them. To prevent chaos, international rules strictly control the radio frequencies these satellites use.

Typical telecommunication satellite



What are space debris, why are they a problem? If you don't know, ask the teacher if you may use your phone, and try searching the LASAR team for inspiration!

Why has the Starlink project, in particular, gained such negative attitudes from astronomers?

Do you think you use satellites in your daily living?

Vocabulary / *Slovíčka*

Parts of a satellite

antenna (plural antennae) – anténa
satellite dish – satelitní parabola
transmitter – vysílač
transponder – odpovídač
receiver – přijímač
ground station – pozemní stanice
solar array – solární panely
thruster – manévrovací tryska

By satellite in this text, we mean *artificial* satellite, i. e. manmade, we distinguish them from natural satellites, which we typically call moons.