

SPACE PHYSICS

- Space, planetary magnetism, solar-terrestrial coupling
- Characterization of plasmas, plasmas in space
- Charged particles in electromagnetic fields (particle motion in electromagnetic fields, drifts of particles, adiabatic invariants, drift shell splitting)
- Heliosphere (structure, spatial and temporal variations, cosmic radiation and energetic particles)
- Solar wind (Parker's theory, measurements in interplanetary space and comparison with theory, structure of interplanetary space, shock waves, CIR)
- Terrestrial magnetosphere (geomagnetic field, topology, plasma populations, plasma sources and losses, open and closed magnetosphere models, geomagnetic disturbances, polar aurora)
- Eruptive phenomena in geospace (geomagnetic storms, magnetospheric substorms)
- Energetic particles in geospace (ring current, Van Allen radiation belts, acceleration and loss mechanisms, wave-particle interactions)
- Space weather (Coronal Mass Ejections, solar flare effects, Solar Energetic Particles, relativistic electrons, technological and biological impacts)
- Magnetospheres of outer planets (satellites and rings in the magnetospheres, special study for: Europe and Callisto, Ganymede, Io, Titan, Enceladus and Triton).
- Comets and solar wind; interaction between solar wind and Moon, Mercury, Venus and Mars.