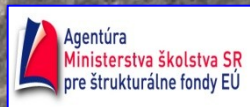




Centre of excellence

**Centre of Space Research:
Space Weather Influences**



Centre of Space Research: Space Weather Influences

Projects financed from the **European Regional Development Fund**.

Operational Programme: Research and Development - calls in 2008 and 2009.

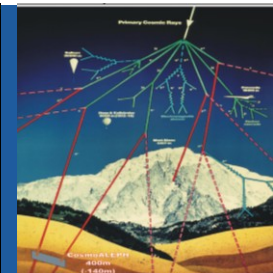
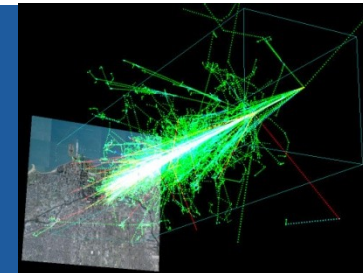
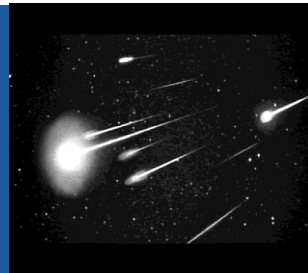
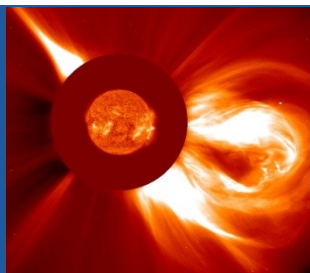
Solved projects:

Centre of excellence “Centre of Space Research: Space Weather Influences (ITMS No. 26220120009)” and „Centre of Space Research: Space Weather Influences – the Second Stage (ITMS No. 26220120029)”.



The goal

Combination of instrument deployment, analysis and interpretation of space weather data from the deployed instruments in conjunction with space data, and communicate the results to the public and students.



Centre of Space Research: Space Weather Influences

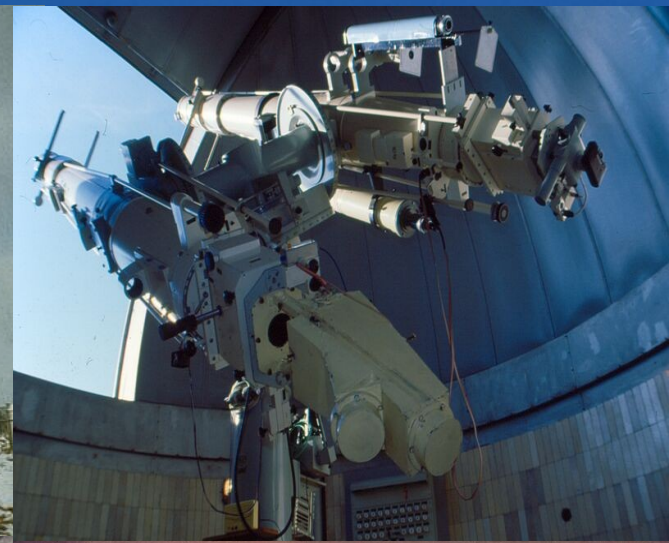
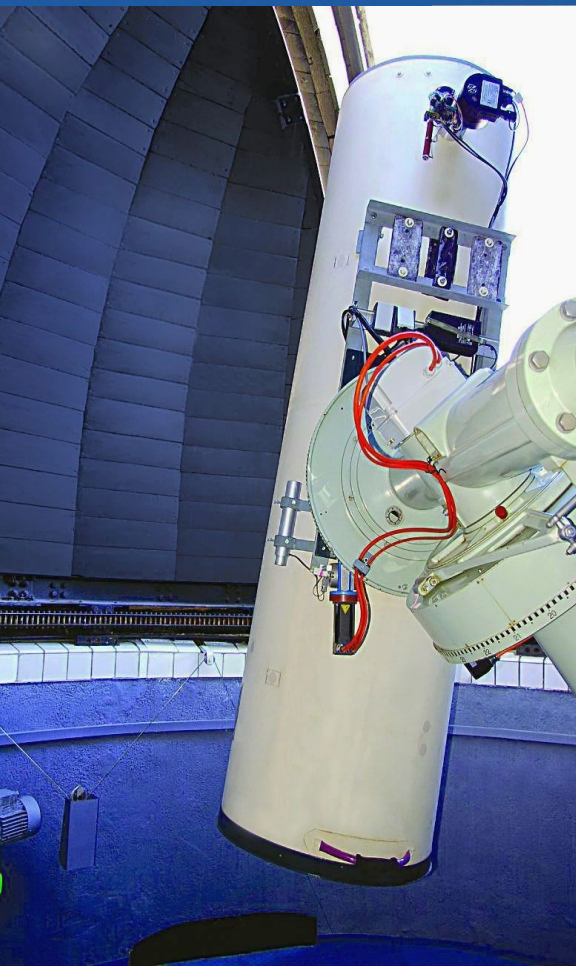
Partner 1: Astronomical Institute of the Slovak Academy of Sciences



Department of solar physics - solar atmosphere from the photosphere to the corona, magnetic fields, Solar-Earth relations

Department of interplanetary matter - dynamics and physics of comets, asteroids and meteors

Stellar department – astrophysics of stars and stellar systems

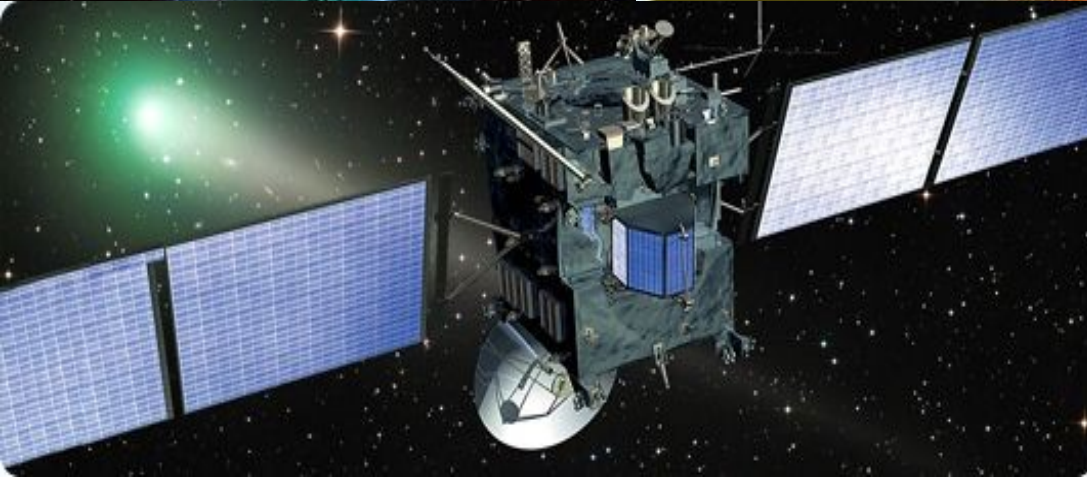
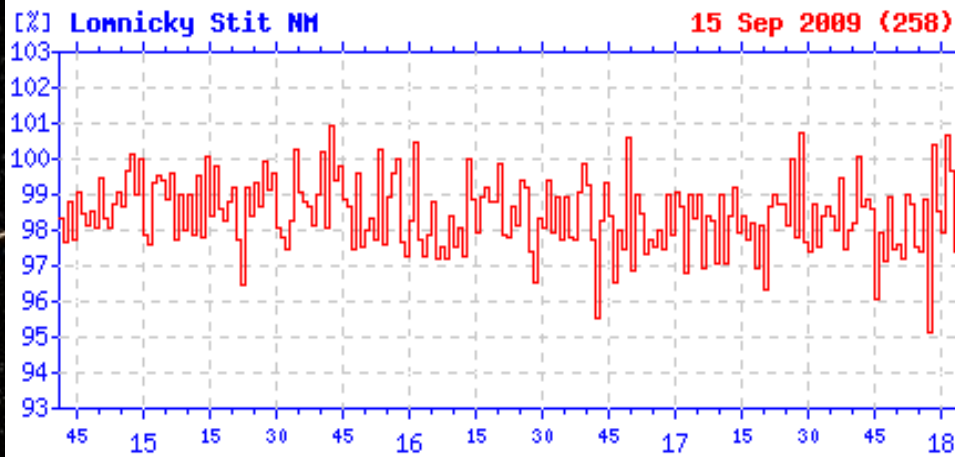
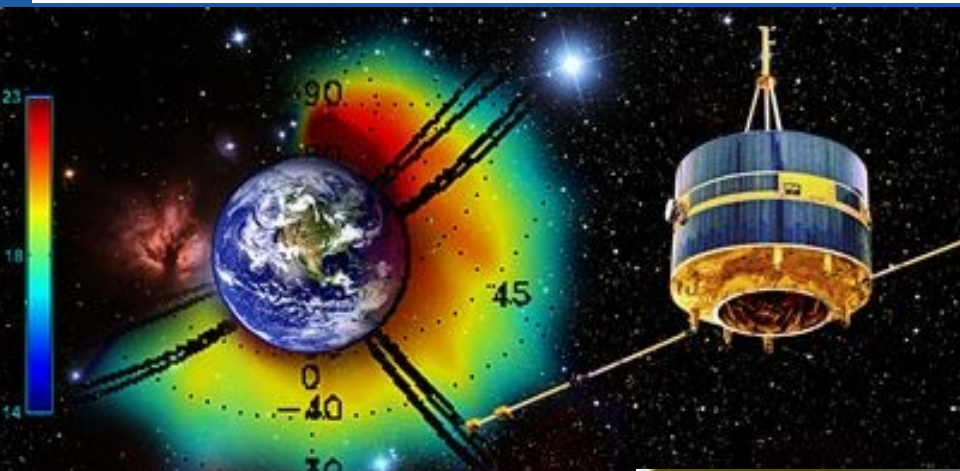


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Partner 2: Institute of Experimental Physics of the Slovak Academy of Sciences



Department of space physics - investigation of physical processes in space through the study of energetic cosmic particles, including galactic cosmic rays. Research of the Earth's magnetosphere, interplanetary space, solar surface and the heliosphere. Preparation of space satellite experiments. Continuous measurement of galactic cosmic rays by a neutron monitor at Lomnický štít.



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Partner 3: Pavol Jozef Šafárik University in Košice



Faculty of Science – Institute of Physics - Department of Theoretical Physics and Astrophysics

- Education in astronomy and astrophysics
- Research on physical properties of selected interacting binaries



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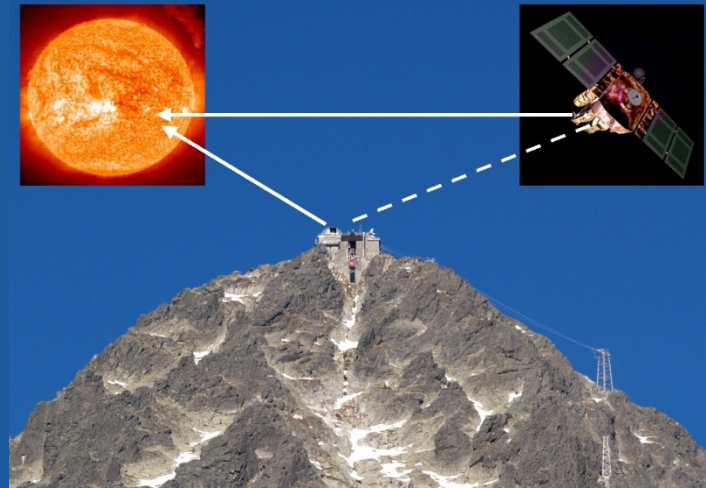
Budget:

4 millions €

Two periods

I. 2009-2011 (1.3 mil €)

II. 2010-2013 (2.7 mil €)



Main tasks

- A. An influence of the Sun to the Earth environment
- B. Interaction of the solid component of the interplanetary matter with the Earth's atmosphere
- C. Impact of an energetic particles (neutrons) on the Earth
- D. An improvement of an experimental devices for space projects (satellites)
- E. Improvement of IT, communication, teaching, public relations



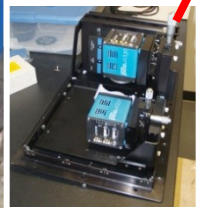
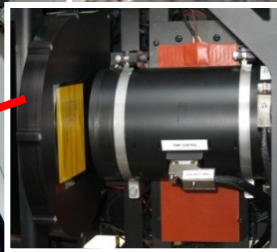
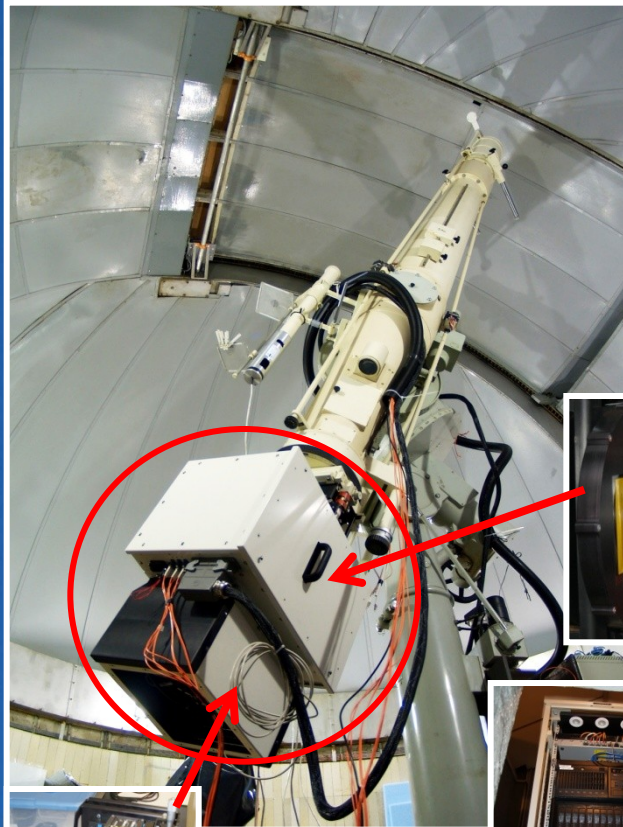
Centre of Space Research: Space Weather Influences

Main task

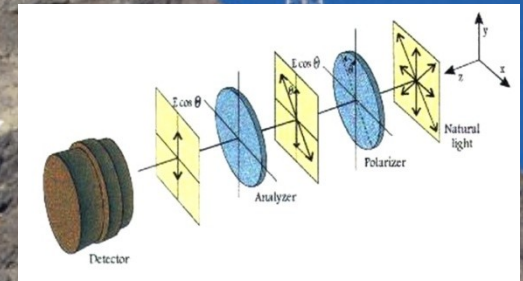
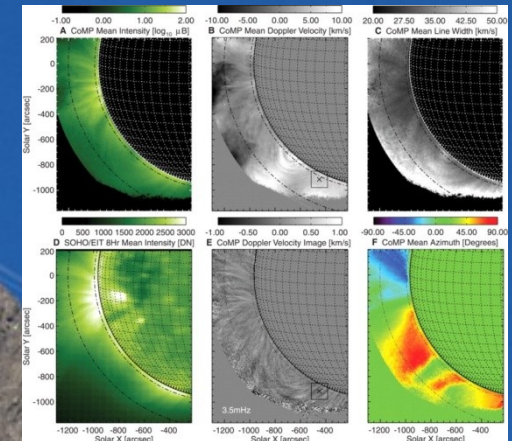
A. An influence of the Sun to the Earth environment

Instrumentation

CoMP - Coronal Multi-channel Polarimeter



Measurements of a **magnetic** and **velocity** fields in the solar corona



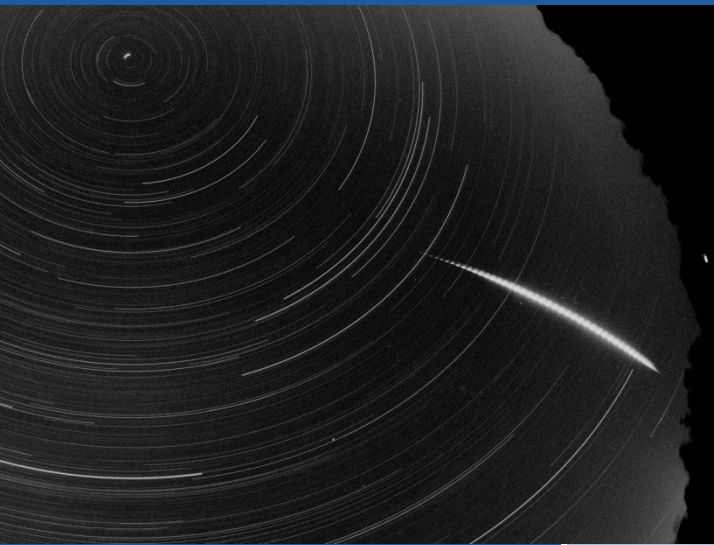
Centre of Space Research: Space Weather Influences

Main task

B. Interaction of the solid component of the interplanetary matter with the Earth's atmosphere

Instrumentation

Automatic bolide camera and system of meteor video-cameras



Precise meteor trajectories, bolides,
European bolide network



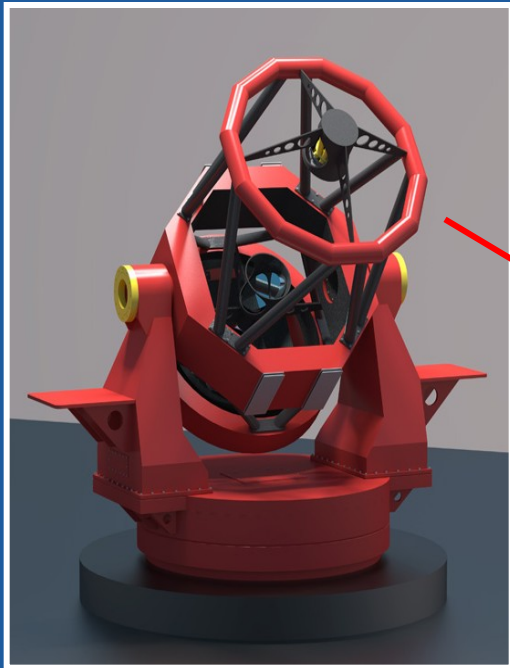
Centre of Space Research: Space Weather Influences

Main task

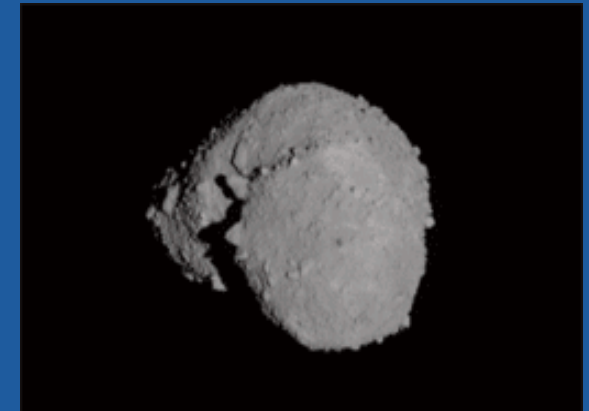
B. Interaction of the solid component of the interplanetary matter with the Earth's atmosphere

Instrumentation

Robotic 1.3 m telescope, alt-azimuth (ASTELCO)



Near Earth Objects
(asteroids and comets)



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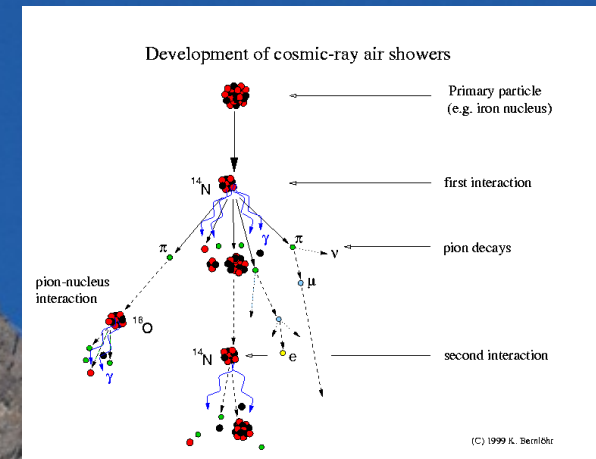
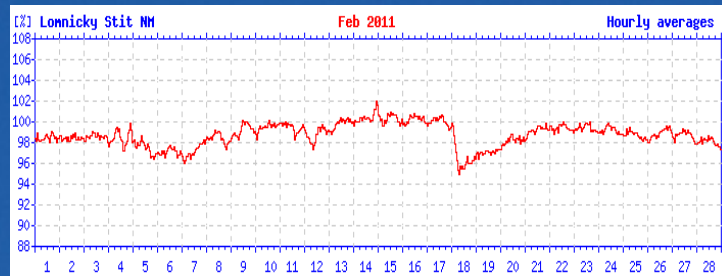
Main task

C. Impact of an energetic particles (neutrons) on the Earth

Instrumentation

New LND cylindric tubes for the neutron monitor at Lomnický štít

Secondary cosmic rays measurements - monitoring



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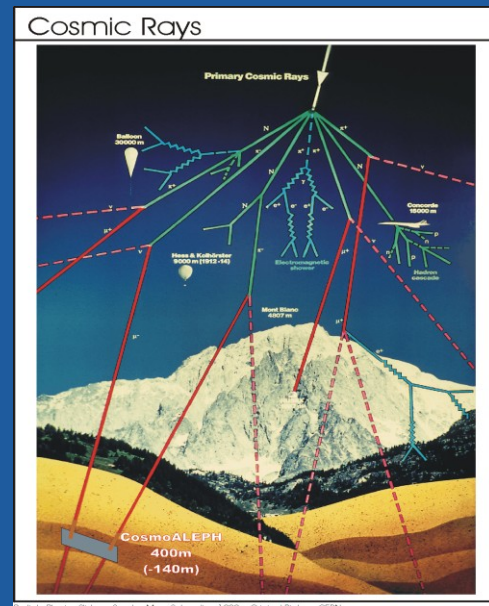
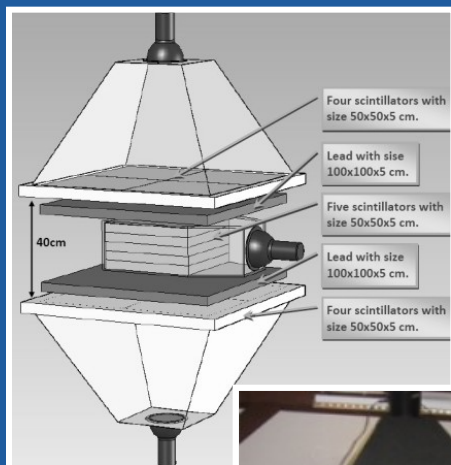
Main task

C. Impact of an energetic particles (neutrons) on the Earth

Instrumentation

SEVAN network – particle detectors and CZELTA - CZEch Large-area Time coincidence Array

New type of particle detectors will simultaneously measure changing fluxes of most species of secondary cosmic rays, thus turning into a powerful integrated device used for exploration of solar modulation effects.



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Main task

D. An improvement of an experimental devices for space projects (satellites)

Instrumentation

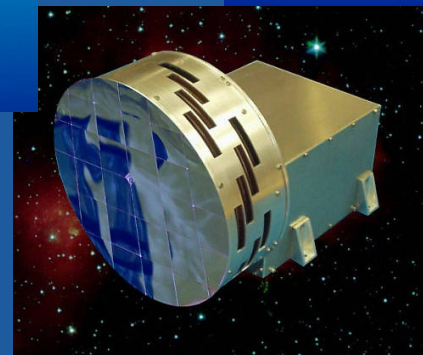
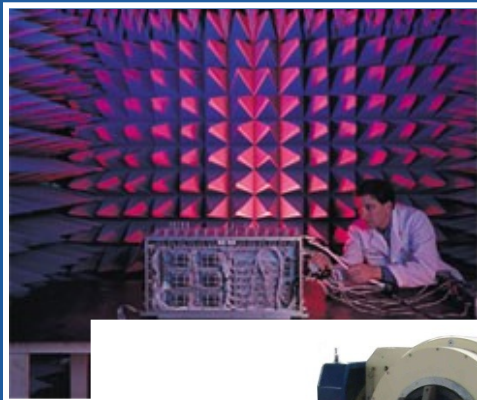
Workplace - tests of electromagnetic compatibility EMC

Workplace of vibration tests

Semiconductor detectors for particle space experiments

Radiation-resistant components for particle space experiments

Construction and manufacturing devices for space missions.



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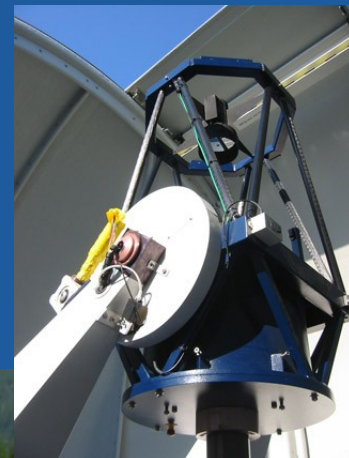
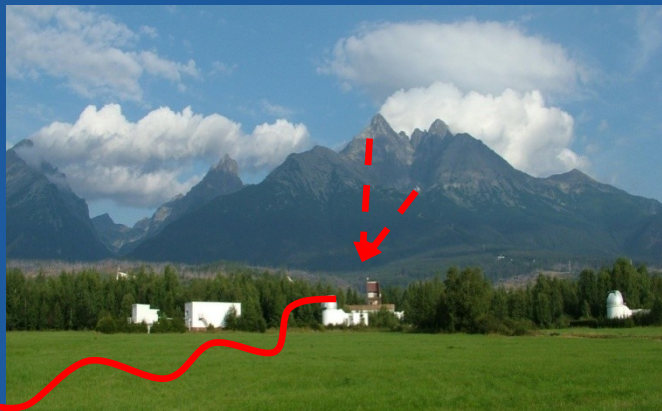
Main task

E. Informatics, communication, teaching, public relations

Instrumentation, activities

Improvement of a communications and teaching

- Three computational clusters, servers, software,
- Fast radio-connection to Lomnický štít and Skalnaté pleso observatories
- Videoconference system
- 50 cm teaching telescope (University Košice)



Centre of Space Research: Space Weather Influences



presentation was prepared by **Doc. RNDr. Ján Svoreň, DrSc. and RNDr. Aleš Kučera, PhD.**
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