

ISS thus contributes to the analysis and scientific interpretation of data coming from several international space missions that study the near and far Universe. Through the projects developed during the ESA PECS Programme, ISS played an essential role in Romania's accession to ESA, which was ratified at the end of 2011.

Together with space research, another important component of the ISS activity is represented by space applications, the design and development of space technologies. From this perspective, ISS was the scientific coordinator for the GOLIAT mission, the first Romanian nanosatellite. Currently, ISS is involved in ESA's QB50 project-an international network of 50 CubeSat satellites.

ISS is open to technological transfer via space applications that could serve social and strategic goals such as: disaster management, portable satellite communications for telemedicine in critical situations, weather conditions surveillance, remote sensing and counter measurements for human space flight under hostile conditions.

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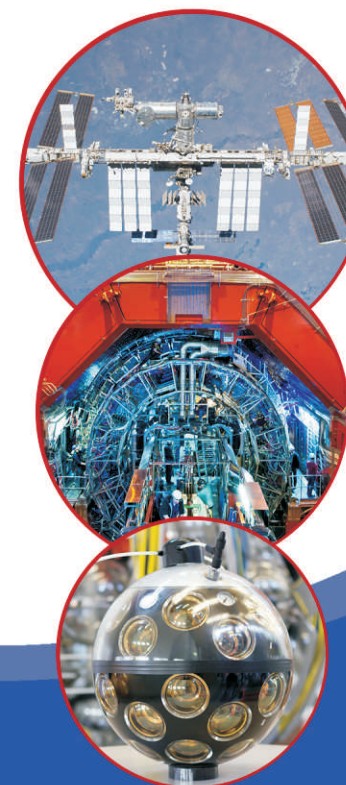


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National leader in space research and development, the Institute of Space Science (ISS) develops scientific research projects on the ground, under water, in the atmosphere and in space. ISS owes its broad spectrum of research to the various areas of expertise of its researchers, such as: Astrophysics, Cosmology, Astroparticle Physics, High Energy Physics, Theoretical and Experimental Gravity, Space Engineering, etc.

With an average age of 38 years, the ISS teams have both internationally renowned leaders and young, well-trained researchers, some of whom completed their studies abroad. ISS also encourages the training of students by offering internships and supporting Master or PhD programmes.

The ISS organigram has six laboratories:

- The Astrophysics, High Energy Physics and Advanced Technologies Laboratory
- The Cosmology and Astroparticle Physics Laboratory
- The Theoretical Physics Laboratory
- The Space Plasma and Magnetometry Laboratory
- The Space Applications for Health and Safety Laboratory
- The Gravity, Microgravity and Nanosatellites Laboratory

ISS has GRID and HPC (High performance computing) capabilities and a GRID, HPC, GPU and Cloud computing infrastructure. Due to these capabilities, ISS has access to and processes data coming from some of the largest experiments in the world such as CERN, the Planck space telescope and the Pierre Auger Observatory.

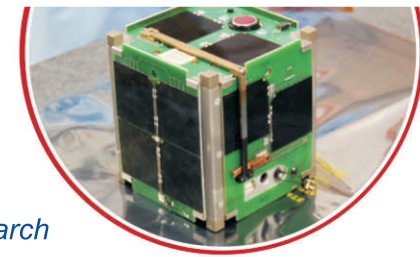
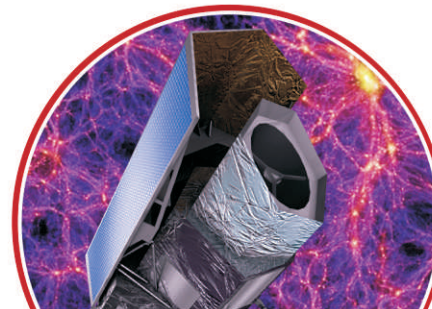
ISS has a strong international presence due to its extensive participation in international space programmes, in institutes and international collaborations, such as:

Underwater research

- ANTARES, the first underwater neutrino telescope
- KM3NeT, the successor of Antares, this underwater telescope will have an observation area of several cubic meters in the Mediterranean Sea

Ground-based research

- Brookhaven National Laboratory, USA – BRAHMS – RHIC – an experiment designed to study hadrons, the only particle accelerator in the USA that it is still active
- CERN, Geneva – LHC-ALICE, an experiment that studies quarks
- CERN, Geneva – MoEDAL, the experiment that aims to observe the magnetic monopole at LHC, as well as other exotic particles
- International Linear Collider – FCAL, an international collaboration meant to develop instrument concepts for ILC
- GSI – NUSTAR R3B, which aims to develop technical solutions for developing detectors that can help study radioactive high energy beams
- JINR Nuclotron, Dubna, Russia – BEQUEREL, an experiment that studies the nuclear fragmentation and clustering through the irradiation of nuclear emulsions



Atmospheric research

- Pierre Auger Observatory, Argentina – the largest cosmic rays research experiment in the world, which aims to uncover the mystery of these ultra high energy cosmic messengers

Space research

- ESA – CLUSTER, a mission formed by four satellites on Earth's orbit to study its magnetosphere
- ESA – Euclid, the space telescope that will study the primordial Universe by observing galaxies and galaxy clusters in the visible and infrared spectra
- ESA – KEEV project, developed by ISS for the CLUSTER and VENUS EXPRESS missions
- ESA – Planck, the first ESA mission to study the origin of the Universe
- ESA – PTW, a project coordinated by ISS whose goal was to develop a portable telemedicine workstation
- ESA – SWARM, a mission of three satellites that will study the near-Earth magnetic field
- NASA/ESA – CFS-A, the first Romanian experiment on the International Space Station, through which the ISS scientists sent fungi in space to study their capacity to survive and reproduce in order to evaluate the contamination risk of the Station with microorganisms brought from Earth.
- NASA – FAST, a mission that made measurements that allow researchers to study the aurora borealis.