EP 6: The Future of Space Research

Zeit: Dienstag 8:30–10:30 Raum: KGI-Aula

Hauptvortrag EP 6.1 Di 8:30 KGI-Aula

Das deutsche Programm zur Erforschung des Weltraums im Überblick — •Wolfgang Frings — Deutsches Zentrum für Luft- und Raumfahrt e.V., Königswinterer Str. 522-524, 53227 Bonn

Die Erforschung des Weltraums, ist ein Grundpfeiler des deutschen Raumfahrtprogramms. Wissenschaftliche Schwerpunkte des Programms sind die Entstehung und Entwicklung des Universums, die Entstehung und Entwicklung unseres Sonnensystems und die Beeinflussung des Lebensraums Erde durch die Sonne sowie die Überprüfung physikalischer Gesetze. Die deutschen Aktivitäten beinhalten die Nutzung von Weltraumobservatorien, die technologische Vorbereitung von Weltraummissionen und die Entwicklung der zugehörigen Instrumente sowie die Durchführung bilateralen Kooperationsprojekten. Vor allem durch die deutsche Mitgestaltung des ESA-Wissenschaftsprogramms, z. B. durch die Beistellung von Instrumenten, lassen sich die genannten Ziele realisieren. Die erfolgreiche Beteiligung deutscher Wissenschaftler an ESA-Missionen wie XMM-Newton, Integral, Mars-Express und ROSETTA soll im künftigen *Cosmic Vision 2015 -2025*-Programm der ESA durch wissenschaftliche Führungsrollen bei Großprojekten wie der Gravitationswellen-Mission LISA oder der Röntgenmission XEUS fortgesetzt werden. Im Vortrag werden die Inhalte und Ziele des Programms sowie die laufenden Vorhaben des DLR in der Extraterrestrik vorgestellt, zu dem wird ein Ausblick auf künftige Projekte gegeben.

Hauptvortrag EP 6.2 Di 9:00 KGI-Aula

The XEUS Mission — •Günther Hasinger — Max-Planck-Institut für extraterrestrische Physik, Garching, Germany

The X-ray Evolving Universe Spectroscopy mission, XEUS, is Europe's next generation X-ray observatory, designed to address two of the four main questions posed in Cosmic Vision, namely: "What are the fundamental laws of the Universe? and, How did the Universe originate, and what is it made of?" In its goal to study the early Universe, XEUS is fully complementary to the major future ground- and space-based observatories, JWST, LISA, ALMA, ELT and SKA. XEUS will be placed into an L2 orbit and comprises a Mirror Spacecraft and a Detector Spacecraft flying in formation at a focal length of 35 m. The main requirement for XEUS is to provide an effective aperture of 5 m2 at 1 keV and an angular resolution <5", which is achieved using silicon micro-pore optics. There are five focal plane instruments. The cryogenic imaging spectrometer (NFI) uses an array of superconducting Transition Edge Sensors to give energy resolution of 2 to 6 eV FWHM, over the energy range 0.1-8 keV and an FoV of 1.6'. The Wide Field Imager (WFI), based on silicon pixel arrays, has a FoV of 7' and a fast readout. The Hard X-ray Imager (HXI) extends the energy range up to 40 keV. The High Time Resolution Spectrometer (HTRS) enables the study of sub-millisecond variations in bright X-ray sources. Finally, the X-ray POLarimeter (XPOL) will for the first time allow the diagnostic power of X-ray polarisation.

Hauptvortrag EP 6.3 Di 9:30 KGI-Aula

Lunar Exploration Orbiter (LEO) — •Ralf Jaumann and and the LEO Team — Deutsches Zentrum für Luft- und Raumfahrt (DLR), Institut für Planetenforschung

The Moon is an integral part of the Earth-Moon system, it is a witness to more than 4.5 b. y. of solar system history, and it is the only planetary body except Earth for which we have samples from known locations. The Moon is our closest companion and can easily be reached from Earth at any time, even with a relatively modest financial budget. Consequently, the Moon was the first logical step in the exploration of our solar system before we pursued more distant targets such as Mars and beyond. The vast amount of knowledge gained from the Apollo and other lunar missions of the late 1960's and early 1970's demonstrates how valuable the Moon is for the understanding of our planetary system. Even today, the Moon remains an extremely interesting target scientifically and technologically, as ever since, new data have helped to address some of our questions about the Earth-Moon system, many questions remained. Therefore, returning to the Moon is the critical stepping-stone to further exploring our immediate planetary neighborhood. In this concept study, we present scientific and technological arguments for a national German lunar mission, the Lunar Explorations Orbiter (LEO. LEO will be unique, because it will globally explore the Moon in unprecedented spatial and spectral resolution gaining information about the lunar surface composition, surface ages, mineralogy, physical properties, interior, thermal history, gravity field, regolith structure, and magnetic field.

Hauptvortrag EP 6.4 Di 10:00 KGI-Aula

Intercultural Aspects in Research: Pathways to Successful Collaboration — •Sabine Preusse — Steinbeis-Europa-Zentrum, Karlsruhe, Germany

International and interdisciplinary collaboration as well as projects with enterprises play an essential role in research. Differences in way of thinking, working habits and behaviour are expected. They can often be traced back to differences in not only national but also organisational cultural background and are often a source of mutual misunderstanding. Though this is well known, the influence of the resulting conflicts on the outcome of research is usually underestimated or even negated.

My objective is to raise awareness about this topic: With the German cultural characteristics as an example I will discuss some cultural dimensions like individualism - collectivism, task orientation - personal orientation, low context - high context communication and time orientation. In this context I will highlight strategies and pathways for individuals and teams for successful intercultural collaboration.