UNIKASSEL VERSITÄT

CINSaT Center for Interdisciplinary Nanostructure Science and Technology

Physikalisches Kolloquium

Thursday, 23.11.2017, 17:15, HS 100
Reception with coffee & cookies 16:45
(For university staff: please bring your own cup for sustainability reasons)

Dr. Ralf Möller, German Aerospace Center (DLR e. V.), Cologne:

CINSaT Colloquium: What do we learn from microbiological space experiments?

Abstract
The majority of experiments on microorganisms in space were performed using Earth orbiting robotic spacecraft, or human-tended spacecraft, and space stations, e.g. the International Space Station (ISS). The responses of microorganisms to selected factors of the space environment were determined in space and laboratory simulation experiments. In a variety of space experiments, spores of Gram-positive bacterium Bacillus subtilis have been used as valuable biological test organisms. Onboard several spacecraft, e.g. Apollo 16, Spacelab 1, LDEF, D2, FOTON, spores of B. subtilis were exposed to selected parameters of space, such as space vacuum and different spectral ranges of solar UV-radiation and cosmic rays, applied separately or in combination (Horneck et al. [2010]). Spores have since been recognized as the hardiest known form of life on Earth, and considerable effort has been invested in understanding the molecular mechanisms responsible for the almost unbelievable resistance of spores to environments which exist at (and beyond) the physical extremes which can
support terrestrial life (Nicholson [2009]). Because of their high resistance to environmental extremes and their reported longevity bacterial spores have also been suggested as ideal test system for studying the “Lithopanspermia” theory, the hypothetical transfer of (microbial) life between the planets of our Solar System via meteorites (Mileikowsky et al. [2000]). Data on the survival, molecular mechanisms and potential transport of bacterial spores in space (from one planet to another) in support of the “Lithopanspermia” theory be will present and an outlook of the ongoing and future space microbiology/astrobiology activities of the DLR will be given.

All of you interested in physics are cordially invited!

Contact: Dr. Dennis Holzinger, COO CINSaT, More Information: uni-kassel.de/go/physikalisches_kolloquium