

Seminar über Microwavephysics and Atmospheric Physics

Referent: Dr. Veerle Sterken, Institute of Applied Physics, University of Bern

Titel: Interstellar dust in the heliosphere

Interstellar dust (ISD) from the Local Interstellar Cloud traverses the solar system at 26 km/s, owing to the relative motion of the Sun and the Local Interstellar Cloud. These particles are messengers from interstellar space that can be studied in situ with dust detectors on space missions inside the solar system.

In 1993, the first such ISD particles were detected using the Ulysses cosmic dust detector. The mission provided a total of 16 years of ISD data and thus covered almost one 22-year solar magnetic cycle. This is important since the dust trajectories are shaped by the solar radiation pressure, gravity and Lorentz force, as they are charged and move through the interplanetary magnetic field that changes throughout the solar cycle. Interpretation of these data is carried out using Monte Carlo simulations of dust trajectories, which allows us to constrain the particle properties and it teaches us about the role of the heliosphere.

Finally, in 2006, Stardust brought a few samples of interstellar dust material back to Earth, and in 2016, the Cassini mission provided the first time-of-flight mass spectra of 36 ISD impacts on the Cassini Cosmic Dust Analyzer.

In this talk, we review the latest developments in the study of "local" interstellar dust with astronomical, in-situ, and sample return techniques. The dynamics of the ISD as it moves through the heliosphere will be explained and finally, we elaborate on what we can gain from computer simulations and spacecraft data for constraining both the ISD properties as well as for studying the heliosphere.

Zeit: Freitag, 26.10.2018, 10:15 Uhr

Ort: **Hörsaal A97**, Gebäude exakte Wissenschaften, Sidlerstrasse 5, Bern, Schweiz