

# Wind Bubbles, Astrospheres and the Heliosphere: Environments and Cosmic Ray Accelerators

4 - 8 November 2013

Ruhr-University Bochum, Bochum, Germany

The interdisciplinary workshop will give a synoptic overview of the commonality and differences between astrospheres (or stellar wind bubbles) and the heliosphere, as well as the production and leakage of cosmic rays in such 'Spheres'.

The heliophysical research has reached a state of unprecedented theoretical knowledge, a very detailed modeling and rich high resolution in-situ and remote sensing observations. The astronomical remote sensing and modeling approach also reached a sophisticated level. Because the large-scale modeling in both fields is based on a similar set of (magneto-)hydrodynamic equations, one aim of this workshop is to identify the commonalities and discuss the underlying physics like the influence of neutrals or plasma cooling on the large-scale structure. In addition, the transport of energetic particles, which are naturally involved in the dynamics of the heliosphere, and its extension to astrospheres will be a major topic of the workshop. This workshop is important because it allows to explore and compare physical processes that are fundamental for astrophysical and heliophysical as well as for laboratory plasmas.

The workshop is very timely, because with the present and especially the upcoming observational possibilities to detect the details of astrospherical structures, an understanding and quantitative modeling of the underlying fundamental physical properties is required. Moreover, astrospheres of hot stars can contribute the flux of (sub-)TeV cosmic rays, which is observed by large-area cosmic ray telescopes. Beside the modeling and observation of large-scale astrospherical structures, one of the main topics. Thus the workshop will cover many aspects regarding the large-scale structure of the heliosphere and astrospheres, its observational aspects, as well as the role of the latter as sources of cosmic rays and other energetic particles. This is manifest by the five major workshop topics, namely

- \* The heliosphere as a special example of an astrosphere
- \* Astrospheres
- \* Magnetic fields in and around astrospheres
- \* Acceleration and leakage of energetic particles from astrospheres
- \* Latest developments in astrospherical physics (including the heliosphere)

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