

**PHYSICAL COLLOQUIUM
INVITATION**

Monday, 28.05.2018, 4.15 p.m., W2-1-148

speaks

**Prof. Dr. Marc Avila,
Executive Director ZARM –
Center of Applied Space Technology and Microgravity,
Chair of Fluid Dynamics, Faculty of Production Engineering,
University of Bremen**

about

**“Progress in understanding fluid turbulence:
from physics to engineering”.**

Fluid flows are ubiquitous in nature and engineering and occur at all spatial and temporal scales. Examples are rapidly rotating gas in astrophysical accretion disks, the circulation of blood in the human body and the transport of oil in pipelines. In such systems, whether flows are quiescent (laminar) or erratic (turbulent), determines their transport efficiency and energetic expense. While blood flow is under most conditions laminar, most engineering flows are turbulent. In the last decade, much insight has been gained in the physics and dynamics of turbulence and turbulence transition. This has been driven by a steady increase of the computing power, the development of new measurement techniques and the construction of large-scale facilities. In this talk, I will summarize recent advances made by deploying nonlinear-dynamics approaches to canonical flows and discuss how applications are beginning to benefit from these advances. Examples will be the generation of nanoparticles in the pharmaceutical industry and the transport of momentum in accretion-like flows. I will conclude with an outlook to the future of fluid mechanics as an increasingly interdisciplinary enterprise.

All interested persons are cordially invited.

Sgd. Prof. Dr. Joachim Peinke