Graz Advanced School of Science
PHYSICS COLLOQUIUM OF THE UNIVERSITY OF GRAZ AND
THE GRAZ UNIVERSITY OF TECHNOLOGY

Paul Beck

University of Graz

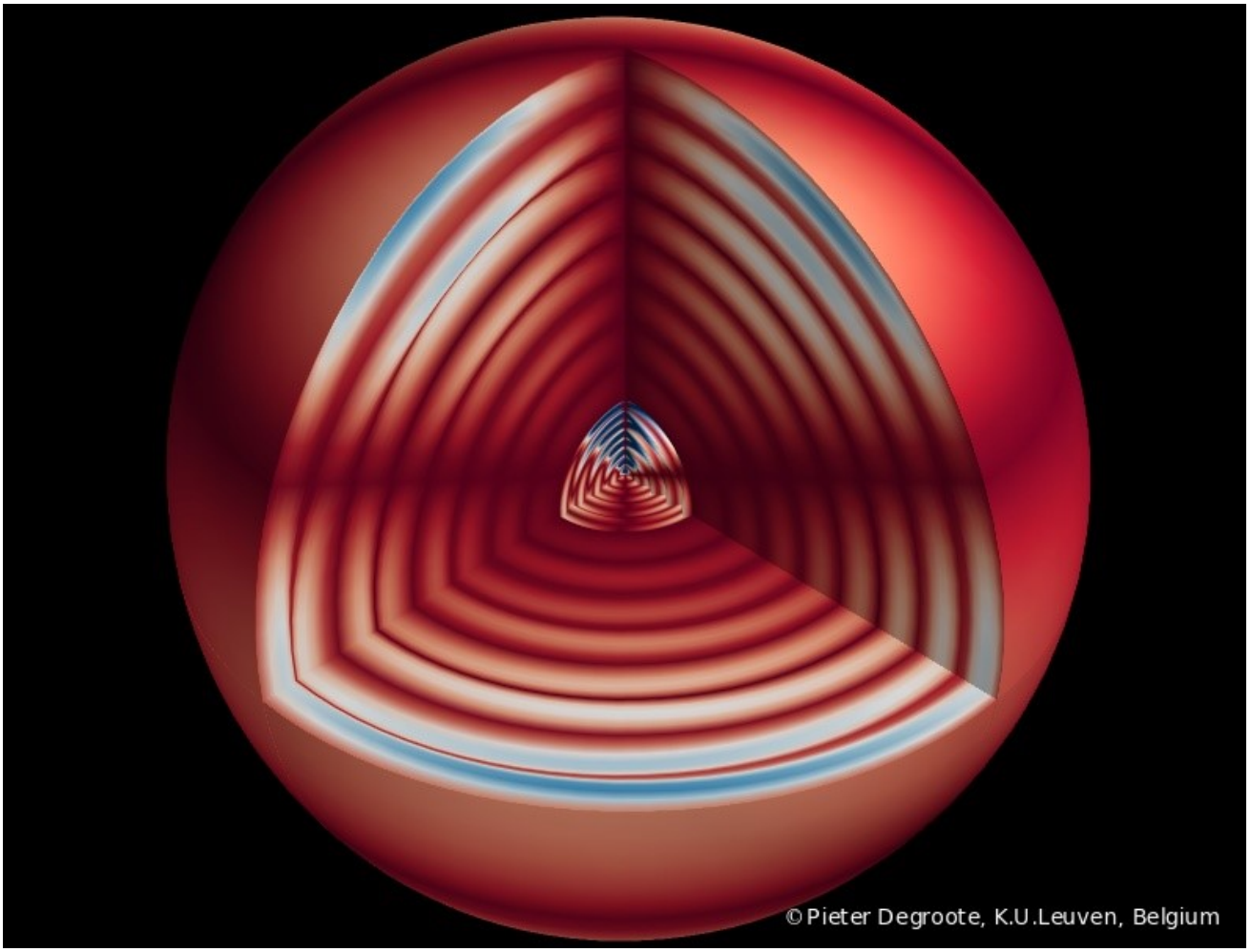
Stellar Insights - Sounding the structure and evolution of stars like the Sun with Asteroseismology

Asteroseismology is a powerful tool to study structure and dynamics of the stellar interior as well as their evolution. Such analysis can be done for thousands of stars in differing evolutionary stages from data of unprecedented photometric quality, provided by the NASA Kepler space telescope. In particular, the study of stochastic, solar-like oscillators in combination with high-resolution ground-based spectroscopy has led to numerous breakthroughs in our understanding of the stellar structure and evolution of solar-like stars and is an important tool to characterize the host stars of exoplanets.

In this talk, the principles of asteroseismology of solar-like oscillators will be discussed on the basis of case studies. We first view the best studied case, the Sun. On the main sequence, solar-analogue stars provide a treasure trove of high-quality oscillation spectra which provide besides mass and radius also information on age, activity cycles, etc. Combined with complimentary data, such as activity proxies, surface rotation rate or lithium abundances allow to draw a comprehensive picture of stars like our Sun. Solar-like oscillations are also found further away from the main sequence, in the more advanced evolutionary phases of the sub- and red-giant branch. Due to a characteristic in the oscillation properties, we can use seismology to look even deeper into the stars and ultimately study the properties of the core with seismic techniques.

Finally, an outlook to the forthcoming space missions, such as NASA TESS and ESA PLATO will be given and how they will influence the future of asteroseismology and the search for exoplanets.

Join via Zoom. Meeting-ID: 869 7191 5652



Date: Tuesday, 23 November 16:15
Location:
Host: Peter Banzer, KFU

For a regularly updated colloquium program see: https://www.if.tugraz.at/colloquium.html