



Das Institut für Physik

Institutsbereich Geophysik, Astrophysik und Meteorologie

lädt zu folgendem Vortrag

im Rahmen des **Astrophysikalischen Kolloquiums** ein:

**"The role of initial density profiles in MHD-simulations of the interaction between global coronal waves and coronal holes"**

**Dr. Isabell Piantschitsch**<sup>1,2,3</sup>

1 Departament de Física, Universitat de les Illes Balears (UIB), 07122 Palma, Spain

2 Institute of Applied Computing & Community Code (IAC3), UIB, Palma, Spain

3 Institute of Physics, University of Graz, Universitätsplatz 5, 8010 Graz, Austria

Interactions between global coronal waves (CWs) and coronal holes (CHs) reveal many interesting features of reflected waves and coronal boundaries but have fairly been studied so far. Among the reasons for the lack of observational studies are for example the weak signal of the reflected waves and the only limited time cadence which prevents us from analysing the CWs in detail. However, magnetohydrodynamic (MHD) simulations can help us to better understand what is going on during these interaction events, and therefore, to achieve a broader understanding of the parameters involved in these interactions. It is particularly crucial to interpret and understand the observational time-distance plots which give us important information about the dynamical behaviour of the incoming and the reflected waves. By using numerical simulations, we are capable of partially reconstructing the interaction event, and hence, to find out which CW parameters cause certain interaction features. One important result about the reconstruction and the direct comparison to the observations is the fact that, in order to explain the main features of the interaction event, it seems to be necessary to define the incoming wave in the simulations as a composite of a density enhancement and a subsequent depletion instead of considering it as a purely enhanced pulse, as it has been done in many studies so far. This result does not only have implications for the interaction with CHs but also for the interaction with any other obstacle in the corona, such as for example prominences. Therefore, we believe that it is crucial to consider the density profiles of global CWs in future MHD simulations of coronal dynamics.

Zeit: **Wednesday, June 15, 2022 at 15:30 (CEST) SR05.13 + online**  
<https://unigraz.webex.com/meet/manuela.temmer>

assoc.-Prof. Mag.Dr. Manuela Temmer  
✉ Universitätsplatz 5/II, 8010 Graz, Austria

Tel.: +43 (0) 316 / 380-8610  
E-Mail: manuela.temmer@uni-graz.at