

## **Constraining the Love-Number $k_{2,f}$ of Exoplanets**

The Institute of Planetary Research in Berlin explores the origin, evolution and development of planets, their moons, asteroids and comets of our Solar System and other planetary systems. Using spacecraft and earth-based remote sensing techniques, laboratory experiments, in-situ investigations and numerical modelling, the institute is well established within the national and international research community and industry.

At the Department of Extrasolar Planets and Atmospheres photometric time-series data are analyzed to detect and characterize exoplanets (mass, radius etc.) and their atmospheres; also, numerical models are developed to model their light curves and atmospheres.

The measurement of polar flattening of exoplanets and constraints on the Love-number can open a new dimension in the understanding of the planetary interiors.

Matter Under Planetary Interior Conditions (High Pressure, Planetary, and Plasma Physics) is a new Research Unit located in Rostock, Hamburg, Bayreuth and Berlin (Germany) and funded by the German Research Foundation. The scope of the Research Unit is aiming at an improved knowledge of the composition and interior structure of planetary interiors through an interdisciplinary approach, involving experiments, theory and modeling activities.

Here, the focus of this work will be on the construction of numerical light curve modeling code to measure the polar flattening of exoplanets and its applications to publicly available space-photometric light curves (CoRoT, Kepler, K2). The measured flattening quantity is then used to give constraints on the Love-number of the exoplanet. The code can be applied to observational data of future satellite missions such as CHEOPS and PLATO, too. The Research Unit as a whole, will give a particular emphasis on the derivation of scaling laws for exoplanets, relating mass, radius, thermal state, and equilibrium shape as induced by rotational and tidal distortions to each other.

It is expected that this position leads to the completion of a PhD.

Applications should be sent by 20 June 2017. Earliest starting date is 1 September 2017. Please attach up to two letters of reference, CV, motivation letter to your application.

Please see <https://tinyurl.com/DLR-Love-number> for further details