



Das Institut für Physik

Institutsbereich Geophysik, Astrophysik und Meteorologie

lädt zu folgendem Vortrag

im Rahmen des **Astrophysikalischen Kolloquiums** ein:

## "Using hot subdwarf binaries to constrain binary interaction theories"

Dr. Joris Vos

Humboldt-Fellow at University of Potsdam

Hot subdwarf B (sdB) stars are evolved core helium burning stars that have lost most of their hydrogen envelope due to binary interaction on the red giant branch. As sdB stars in wide binary systems can only be created by stable Roche lobe overflow, they are a great test sample to constrain the theoretical models for stable mass loss on the red giant branch.

An important advantage of using wide sdB binaries in these studies is that all of them are double lined binaries, and the GAIA data shows that it is a uniform population of canonical sdB stars. This way the sdB+MS binaries provide much stronger constraints on theoretical models than many other systems.

The first results of our observing program are now available. We found two main features in the orbital parameters. The majority of the systems have eccentric orbits with systems on longer orbital period having a higher eccentricity. As these systems have undergone mass loss near the tip of the RGB, tidal circularisation theory predicts them to be circularized. Our observations suggest that efficient eccentricity pumping mechanisms are active during the mass loss phase.

Secondly we find a strong correlation between the mass ratio and the orbital period. Using binary evolution models, this relation is used to derive both an upper and lower limit on the initial mass ratio at which RLOF will be stable. The limits found for wide sdB binaries can be extrapolated to other systems, and will help to improve binary evolution models.

Zeit: **Montag, 16. September 2019 um 15:00 Uhr s.t.**

Ort: **Seminarraum 05.11** (1. Stock), Universitätsplatz 5, 8010 Graz

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