

6<sup>th</sup> Heidelberg Astronomy Summer School:

# Characterizing exoplanets - from formation to atmospheres

August 1<sup>st</sup> - 5<sup>th</sup>, 2011

organized by the

*International Max Planck Research School (IMPRS) for  
Astronomy and Cosmic Physics at the University of Heidelberg*

**Invited Lecturers:** **Willy Benz** (Bern): *From Planetesimals to planets*  
**Peter Hauschildt** (Hamburg): *Extrasolar Giant Planet Atmospheres*  
**Anders Johansen** (Lund): *From Dust to Planetesimals*  
**Lisa Kaltenegger** (Heidelberg): *Rocky planets and Biomarkers*  
**Stephane Udry** (Geneva): *Exoplanet Detections*

**Location:** Max Planck conference center ("Max-Planck-Haus"),  
Gerhard-Hauptmann-Str. 36, 69120 Heidelberg, Germany

## School program (as of August 1<sup>st</sup>, 2011):

### *Monday, August 1<sup>st</sup>, 2011*

- 10:00 - 13:30 Registration
- 13:30 - 13:40 *Welcome address* (Kees Dullemond)
- 13:40 - 13:50 *LOC announcements* (Christian Fendt)
- 14:00 - 15:00 *What we learn from detection techniques of exoplanets, and associated detection limits* (Stephane Udry)
- 15:00 - 15:30 Coffee break
- 15:30 - 16:30 *Protoplanetary discs: Setting the conditions of planet formation* (Anders Johansen)
- 16:30 - 17:30 *Dust growth in turbulent discs: The first steps towards planets* (Anders Johansen)
- 17:30 - 18:00 Science talk: *Building planets in Heidelberg* (Kees Dullemond)

### *Tuesday, August 2<sup>nd</sup>, 2011*

- 09:00 - 10:00 *Planetesimal formation by self-gravity: Pressure bumps and streaming instabilities* (Anders Johansen)
- 10:00 - 11:00 *From planetesimals to planets* (Willy Benz)
- 11:00 - 11:30 Coffee break
- 11:30 - 12:30 *Introduction to model atmospheres of stars & planets* (Peter Hauschildt)
- 12:30 - 14:00 Lunch
- 14:00 - 14:30 Science talk: *CARMENES - Searching for habitable planets around M dwarfs* (Andreas Quirrenbach)
- 14:30 - 15:00 Science talk: *Imaging & spectroscopy of exoplanet systems* (Wolfgang Brandner)
- 15:00 - 15:30 Coffee break

15:30 - 17:30 *Exercises-I* (Christoph Mordasini)

17:30 - 23:00 Excursion: BBQ / dinner

***Wednesday, August 3<sup>rd</sup>, 2011 (at the Old Auditorium)***

09:00 - 10:00 *Giant impacts* (Willy Benz)

10:00 - 11:00 *Properties of giant planets (and planet host stars) as constraints for planet formation* (Stephane Udry)

11:00 - 11:30 Coffee break

11:30 - 12:30 *Numerical radiative transfer: 1D + 3D* (Peter Hauschildt)

12:30 - 14:00 Lunch

14:00 - 18:00 Excursion: Boat trip on the Neckar River

***Thursday, August 4<sup>th</sup>, 2011***

09:00 - 10:00 *The new population of super-Earths & the road towards Earth twins* (Stephane Udry)

10:00 - 11:00 *Population synthesis* (Willy Benz)

11:00 - 11:30 Coffee break

11:30 - 12:30 *From big to small: Giant to rocky planet models* (Lisa Kaltenegger)

12:30 - 14:00 Lunch

14:00 - 14:30 Science talk: *Geology of an exoplanet* (Mario Trieloff)

14:30 - 15:00 Science talk: *From star formation to exoplanets - the MPIA /PSF department* (Thomas Henning)

15:00 - 15:30 Coffee break

15:30 - 18:30 *Exercises-II* (Rosemary Mardling)

20:00 - 24:00 Pub evening

***Friday, August 5<sup>th</sup>, 2011***

09:00 - 10:00 *CSI for exoplanets: How to characterize a habitable planet* (Lisa Kaltenegger)

10:00 - 11:00 *Exercises-III* (Roy van Boekel)

11:00 - 11:30 Coffee break

11:30 - 12:30 *Exercises-III, continued*

12:30 - 14:00 Lunch

14:00 - 15:00 *Irradiated atmospheres of planets* (Peter Hauschildt)

15:00 - 15:30 Science talk: *Searching for extrasolar planets with gravitational microlensing* (Joachim Wambsganss)

15:30 - 16:30 *Closing the arch: From detection & planetary spectra to formation, and back* (Lisa Kaltenegger)

16:30 - 16:40 *Farewell address* (Stefan Wagner)

16:40 - 17:30 Departure