

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

# **Dynamics of the Interstellar Medium & Star Formation**

**September 21<sup>th</sup> - 25<sup>th</sup>, 2015**

organized by the

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

**Invited Lecturers:** **Mordecai-Mark Mac Low** ( American Museum of Natural History)  
**Peter Schilke** (University of Cologne)  
**Alexander Tielens** (Leiden University)  
**Stefanie Walch** (University of Cologne)

**SOC:** Ralf Klessen, Simon Glover (ITA, Heidelberg)

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

## **School program**

### ***Monday, September 21<sup>th</sup>, 2015***

08:30 - 13:30 Registration  
10:00 - 10:30 Welcome address, organisational remarks  
10:30 - 11:30 **Basic parameters of the ISM (Walch)**  
11:30 - 12:30 **Large and small scale observations of star formation (Mac Low)**  
12:30 - 14:00 Lunch  
14:00 - 15:00 **The fundamentals of gas phase chemical reactions (Tielens)**  
15:00 - 15:30 Coffee break  
15:30 - 16:30 **Heating and cooling processes in the ISM (Walch)**  
16:30 - 17:30 **Practicals: Download / installation of software & data**

### ***Tuesday, September 22<sup>th</sup>, 2015***

09:00 - 10:00 **Turbulence I – basic introduction / observational results (Walch)**  
10:00 - 11:00 **The fundamentals of grain surface chemical reactions (Tielens)**  
11:00 - 11:30 Coffee break  
11:30 - 12:30 **Gravity and its opponents: molecular cloud formation (Mac Low)**  
12:30 - 14:00 Lunch  
14:00 - 15:00 **Characterizing the ISM – line and dust radiation fundamentals (Schilke)**  
15:00 - 15:30 Coffee break

15:30 - 17:30 **Practicals**

17:30 - 18:30 Social dinner (catering)

18:30 – 21:00 **Discussion of first practical's results** (*Mac Low, Walch, Klessen*)

### ***Wednesday, September 23<sup>th</sup>, 2015***

09:00 - 10:00 **Science talk: High-Redshift ISM and Star Formation** (*Walter*)

10:00 - 11:00 **Molecular tracers – which molecule traces what?** (*Schilke*)

11:00 - 11:30 Coffee break

11:30 - 12:30 **Gravity and its opponents: star and star cluster formation** (*Mac Low*)

13:00 - 13:30 Departure to Neckarsteinach, Burg Schadeck

14:00 - 15:30 **Job opportunities in ISM science** (*Mac Low, Schilke*)

15:30 - 16:30 **Computational needs for ISM simulations & data reduction** (*Mac Low, Schilke*)

16:30 - 18:00 Departure to Heidelberg

### ***Thursday, September 24<sup>th</sup>, 2015***

09:00 - 10:00 **The molecular physics of interstellar PAHs** (*Tielens*)

10:00 - 11:00 **Determining physical parameters using molecular tracers** (*Schilke*)

10:30 - 11:00 Coffee break

11:30 - 12:30 **Feedback into the ISM** (*Mac Low*)

12:30 - 14:00 Lunch

14:00 - 15:00 **Advanced topics in radiative transfer modelling & linking to chemical models**  
(*Schilke*)

15:00 - 15:30 Coffee break

16:30 - 18:30 **Practicals**

19:30 - 22:00 Pub evening

### ***Friday, September 25<sup>th</sup>, 2015***

09:00 - 10:00 **The chemical structure of molecular clouds, including PDRs** (*Tielens*)

10:00 - 11:00 **Science talk: The ISM in nearby normal galaxies** (*Schinnerer*)

11:00 - 11:30 Coffee break

11:30 - 12:30 **Science talk: ISM properties & star formation in low-metallicity dwarf galaxies**  
(*Cormier*)

12:30 - 14:00 Lunch

14:00 - 15:00 **Turbulence II – turbulence driving and decay** (*Walch*)

15:00 – 16:00 **Tying it all together: global theories** (*Mac Low*)

16:00 - 16:15 Farewell, departure