# EP 13 Astrophysik: Interstellares Medium und Sternentstehung

Zeit: Mittwoch 14:45–15:30 Raum: B

## Fachvortrag EP 13.1 Mi 14:45 B

**ISM turbulence and the equation of state** — •Ralf Kissmann and Horst Fichtner — Institut für Theoretische Physik IV Ruhr-Universität Bochum

The properties of the turbulent fluctuations in the different phases of the ISM are of eminent interest for many branches of astrophysical research. Apart from the influence on star formation and the transport of energetic particles, turbulence is also thought to be directly connected to the energy budget of the ISM. This is, however, usually not taken into account when doing numerical simulations to obtain turbulence spectra and structure functions. We would like to present a first study, by which we analyse the change of the structure of ISM turbulence with the change of the equation of state. Is there a principal difference for the turbulence between isothermal, adiababatic or naturally heated ISM plasmas?

## Fachvortrag EP 13.2 Mi 15:00 B

**The rapid and hidden formation of massive stars** — •Jürgen Steinacker[1,2], Rolf Chini[3], Markus Nielbock[3], Vera Hoffmeister[3], and Dieter Nürnberger[4] — [1]Max-Planck-Institut für Astronomie, Königsstuhl 17, D-69117 Heidelberg, Germany — [2]Astronomisches Rechen-Institut, Mönchhofstr. 12-14, D-69120 Heidelberg, Germany — [3]Astronomisches Institut, Ruhr-Universität Bochum. D-44780 Bochum, Germany — [4]European Southern Observatory, Casilla 19001, Santiago 19, Chile

While many observational results support that low-mass stars form via an accretion disk, the formation of massive stars remains to be a mystery. They form on short time scales of some $10^4$ years, remain invisible at most wavelengths until they reach the main sequence, and are low in number compared to stars of smaller mass. The two major scenarios of formation by stellar merger or by an accretion disk are briefly reviewed. We report on the detection of the largest circumstellar disk known so-far being located in the massive star formation region M17. Making use of the rare configuration that the disk is seen in silhouette against the background radiation at $\lambda = 2.2$ $\mu$m, we present results of a detailed structure model applied to the high-resolution NAOS/CONICA image. The mass of the massive disk candidate is discussed depending on the assumed distance and the dust model and ranges between 0.06 and 14.6 $M_{sun}$. Due to the unknown structure of the innermost part of the edge-on circumstellar disk, the observational data are not sufficient to constrain the stellar mass yet. For the stellar and disk mass being equal, we find the disk to be stable against gravitational instabilities.

## Fachvortrag EP 13.3 Mi 15:15 B

**Far-Infrared emission from dust in gas-rich galaxies** — •Cristina C. Popescu and Richard J. Tuffs — Max Planck Institut fuer Kernphysik, Astrophysics Department, Saupfercheckweg 1, 69117 Heidelberg

Following on from IRAS, the ISOPHOT instrument on board the Infrared Space Observatory (ISO) and now the MIPS instrument on board the Spitzer Space Observatory are providing a huge advancement in our knowledge of the phenomenology of the far-infrared (FIR) emission of gas-rich galaxies and the underlying physical processes. Here we review the main observational characteristics of dust emission in galaxies and how these can be understood and quantitatively explained through modelling.