

## Social Engagement at ESO

**Michael Böcker**  
ESO

In 2007 a presentation was made to the Lebenshilfe Freising e.V. ([www.lebenshilfe-fs.de](http://www.lebenshilfe-fs.de)) on the scientific, as well as technical, challenges facing staff working at the ESO observatories in Chile. The non-profit organisation Lebenshilfe e.V. is a social establishment with the organisational goal to promote the development of people with disabilities. This year seven students and two lecturers from the Lebenshilfe e.V. were invited to a presentation at ESO headquarters about the Solar System given by Martin Kümmel (from ST-ECF). As a practical highlight for the students, Gerardo Avila from the ESO Instrumentation Division offered a view of the Sun through the telescope of the AGAPE amateur astronomer's association at ESO headquarters. The young

Photo: E. Janssen, ESO



A group of young people from the Lebenshilfe Freising e.V., together with Michael Böcker and Martin Kümmel from ESO, in front of the AGAPE telescope in Garching.

adults, pictured in the figure above, very much appreciated the informative and interesting afternoon organised by ESO for the end of their school education.

## New Staff at ESO



**Antoine Mérand**

I grew up in France, where clouds and light pollution rule the sky. My native region (Vendée) in the west, by the Atlantic Ocean, is no exception. I was led

to astronomy at a young age by an uncle who always dreamt about being an astronomer. I received books from him and I clearly remember not seeing Halley's comet through his telescope, in 1986. I was seven years old.

Nevertheless, I bought a telescope as a teenager, and enjoyed too few clear nights, star hopping for the brightest celestial wonders. As a result of the cloudy skies, I started to develop a strong interest in the telescope itself: how it works, how it forms an image, how to align it in order to get the nicest image. I ended up mostly using my telescope to look at non-celestial sources (including street lights).

After high school, I mostly studied mathematics, theoretical physics and computer science. What I enjoyed most were optics and computer science classes,

and whatever in maths and physics that related to optics and computers. I moved to Paris, to attend the physics school *École Normale Supérieure* (ENS). There, I had my first astronomy class, taught at that time by the renowned astrophysicist Pierre Léna. Part of the curriculum at the ENS involved a research project lasting six months. Mine was suggested by Pierre Léna: to work with Steve Ridgway in Tucson (Arizona) on the interpretation of optical interferometry observations of Mira stars. That was my first contact with astronomy, and I was hooked. Everything was enchanting: optical interferometry is complicated and intricate, but I was working first-hand on data very few understood, and the people I worked with were kind, stimulating and challenged me like never before. Arizona was also one of the best places for astronomy and for an amateur the skies were splendid. Using binoculars I saw more globular

clusters or galaxies than I ever saw with my 15-cm telescope in France.

The next step was my PhD project. During my stay in Arizona, I visited an optical interferometer with Steve, the CHARA Array, atop Mount Wilson, in California. My project was to install at CHARA a fibre-fed optical beam combiner named FLUOR, developed at Paris Observatory by Vincent Coudé du Foresto and Guy Perrin. Between 2002 and 2005, I indeed installed the beam combiner (which had previously been at the IOTA interferometer in Arizona) and observed Cepheid variable stars in order to measure their diameter change during pulsation. Using the parallax of pulsation method, I was able to obtain one of the most precise distances to a Cepheid (to about 1%). In 2006 I moved from Paris to Pasadena, California, to work full time at the CHARA Array, as a research associate. There, I supported FLUOR observations and participated in the instrumental developments. In particular, with Michael Ireland (from Caltech, now at Sydney University in Australia), we built a three-telescope visible beam combiner, PAVO. I also continued my observations of Cepheids, and extended my interests to the close environments of stars, to stellar companions and rotation.

Always in search of challenges (and new horizons), I joined ESO in 2008, as an operations astronomer for the VLTI, the interferometric mode of the VLT. I am very excited by the VLT, whose level of organisation and efficiency are entirely new to me. I have already started to get deeply involved with the VLTI, taking the freshly vacant AMBER instrument scientist position. I am looking forward to developing the VLTI, especially the forthcoming astrometric mode (using PRIMA) and the second-generation instruments, which will offer possibilities never seen before in interferometry.



Martin Zwaan

Not entirely new to ESO, I took up my position as astronomer in the ALMA Regional Centre (ARC) in February this year. As a fellow I had been enjoying working at ESO for several years already. During that time I got involved in ALMA and saw the project developing from the ground-breaking in late 2003 to construction being well underway now, with nine antennas in Chile. I am very pleased to continue working on ALMA, as one of the first staff in the ARC.

The ARC is part of the Data Management and Operations division and therefore builds on ESO's long history of operating large facilities. In many ways, our tasks are comparable to those of the User Support Department, with the important difference that ALMA is not yet a fully functioning telescope. In the near future my tasks will concentrate on maximising the scientific return of ALMA. In practice, this will entail helping ALMA users with their proposal preparation and the execution of their projects, and assisting with their data reduction. In the operations stage I will also travel to Chile on a regular basis to serve as astronomer on duty. Of course, all ARC tasks will be executed in collaboration with our colleagues in the US, East Asia and Chile. While only a small department at present, the ARC will continue to grow consistently over the next few years.

At present, in the pre-operations stage, we are not just waiting idly for ALMA to start working. One of our main tasks is ensuring the user software will be ready for ALMA operations. For example, the software package CASA, which will be the data reduction system for all ALMA data and will also form the backbone of ALMA's data reduction pipeline, is currently being extensively tested. To build up experience and identify missing functionality, I have also been using CASA for my personal research, reducing data from different radio telescopes. As of next year, I will be spending time at the ALMA site in northern Chile helping with commissioning and science verification.

My personal research concentrates on the role of gas in galaxy evolution. I am interested in studying how the Universe's neutral gas content evolves over time. Specifically, I try to reconcile what we know from radio emission in the present-day Universe with results from absorption lines originating in the much younger Universe. Of course, ALMA will produce data allowing tremendous advances in the study of neutral gas in galaxies at high- and low-redshifts, and I am very much looking forward to seeing the instrument delivering these data.