Retirement party

A retirement party for Gert was held at ESO Headquarters on 1 February 2016, attended by his friends and colleagues; the party included some remote appreciations by detector physicists from the USA. In recognition of Gert's tremendous achievements, which have also substantially contributed to ESO's programme and reputation, he was awarded the official status of Emeritus Physicist at ESO.

The introduction of the Emeritus Physicist position, of which Gert is the first recipient, is a way of recognising and honouring individuals who have played a major role in the development of ESO during their career. Emeritus Physicists are able to continue with their research activities, for example by participating in meetings in their areas of expertise, or giving presentations at conferences. The similar position of Emeritus Astronomer has existed for some five years at ESO (see Primas et al., 2010). However, since ESO is made up of people doing many other jobs in addition to astronomers, the Emeritus roles have now been extended to include both Emeritus Physicists and Emeritus Engineers.

Acknowledgements

The expert help and reminiscences of Frank Eisenhauer, Ulli Kaufl, Katjuscha Lockhart, Sandro D'Odorico and Jeremy Walsh are greatly appreciated.

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Fellows at ESO

Melissa McClure

I grew up in the university town of Ithaca, NY in the USA, which provided a great atmosphere for promoting my curiosity about science. However, my particular interest in astronomy got off to a somewhat bumpy start. In elementary school, our science teacher's attempt to encourage my interest in the Solar System backfired when describing how the rubble left over from the tidal disruption of a protoplanet by Jupiter may have formed the Asteroid Belt. Having recently been chastised on the topic of sharing with other children, I felt that Jupiter had clearly cheated the rules and informed the teacher that "I don't like grabby people, and I don't like grabby planets!".

Fortunately, the terrestrial planets maintained their charm, and by the time I reached high school I had progressed from reading *The Magic School Bus: Lost in Space* to collecting news clippings about the Earth and Mars. During my first year of high school, testing began on the prototype for the future *Spirit* and *Opportunity* Martian rovers. As part of the mission's outreach programme, each of the four principal US universities selected one of their local area high schools to participate in the field tests of the prototype, *FIDO*. We were the high school selected by Cornell University. This was my first opportunity to see scientists in action and also to see how a large "collaboration" can work to accomplish a huge and complicated task. At the time (1999–2000) it was very exciting just to teleconference over the internet with the three other groups in order to plan out our test mission (driving the rover through the Mojave Desert) and then watch it being executed. I was hooked!

When starting college at the University of Rochester in 2003, I was still unsure about whether to pursue geology or astrophysics. After taking an introductory course with Professor Bill Forrest, I decided to go the astrophysics route, and ended up badgering him to let me work in his research group. My first project was reducing ground-based near-infrared photometry from the NASA InfraRed Telescope Facility (IRTF) in support of a future Spitzer InfraRed Spectrograph (IRS) programme on discs by the Spitzer

Melissa McClure

instrument team. I continued working with Bill on these data, mid-infrared photometry from the United Kindom InfraRed Telescope (UKIRT), and eventually the Spitzer IRS spectra themselves during the academic year and over sum-

mer breaks, culminating in a Bachelor's degree thesis on the physical conditions in low-mass embedded protostars.

By this time, our group had acquired a significant number of IRS spectra, and I spent the two years following my Bachelor degree working for Professor Dan Watson as the primary data reducer for the team. It was a great way to learn about both infrared astronomy and star formation, and by the end of the first year I knew I wanted to apply to graduate school. In 2008, I started the PhD programme at the University of Michigan working with Professor Nuria Calvet on spatial variation in dust composition and distribution in protoplanetary discs. Using the D'Alessio irradiated accretion disc code, I produced detailed disc-structure models with varying dust compositions (silicates and water ice), grain sizes, and radial distributions to compare with medium-resolution infrared spectroscopy from Spitzer, Herschel, and ground-based near-infrared telescopes. There is suggestive evidence for spatial variation in the composition and distribution of these different dust species, particularly water ice, which could affect the composition of planets forming at different locations in these discs. However, all of these observations were spatially unresolved.

During my PhD, I travelled to Chile a few times a year to use the Magellan telescopes at Las Campanas Observatory and became familiar with the other astronomical facilities there, including the ESO sites. When applying for postdocs, ESO stood out as a good place to get involved with high-contrast imaging, which could be used to spatially resolve some of the compositional gradients in the discs in which I was interested, as well as detecting the location of the "grabbiest", i.e. most massive, protoplanets. In particular, I was excited by the next generation Very Large Telescope (VLT) instruments, like the Spectro-Polarimetric High-contrast Exoplanet Research instrument (SPHERE), and upgrades to the VLT Imager and Spectrometer for the mid InfraRed (VISIR). After starting at ESO, I joined the SPHERE instrument team, participating in Science Verification and helping to verify the science quality of products produced by the reduction pipeline. Now I am in the process of consolidating my observing plans into a programme to address a number of research questions during the remainder of my Fellowship.

The whole experience of developing into a professional astronomer has been really rewarding, and I feel privileged to be involved with exciting research at the forefront of planet formation. My opinions about Jupiter, and grabby planets in general, have also shifted over time. Now I can acknowledge that sometimes the grabbiest planets are the most interesting, because they can most easily show us the inner workings of the mechanisms for planet formation in discs!

Julien Milli

I had many interests as a kid, and astronomy was only one of them, along with volcanology, geology, natural sciences and the environment in general. Some holidays spent in the Auvergne, a chain of extinct volcanoes in the centre of France, and many years later at the Piton de la Fournaise, one of the most active volcanos in the world, triggered my interest in Earth sciences. I remember bringing back many samples of basalt and olivine, and I even had the chance to see one eruption when I was there. I was fascinated by these natural phenomena and very curious to understand them at the same time.

I discovered astronomy a little bit earlier, thanks to an evening astronomy class organised by an amateur in his free time. The class was followed by observations with a small telescope. The first thing I remember was how cold it was, standing outside, in a little village in the Alps, at night, in winter, waiting to put an eye to the eyepiece! But then, how rewarding it was to discover for the first time the wonders of the Orion Nebula! This amateur astronomer taught us many tricks to help identify the stars and constellations, and I would later put them into practice whenever I had the opportunity to enjoy a dark night sky.

In high school, I loved mathematics and physics, and I am very grateful to my teachers, who encouraged me a great deal. I kept reading a lot about astronomy and space exploration, but also about

Julien Milli

birds, and the environment and its protection. It was hard to pick one career path with so many interests; I therefore decided to study at a general engineering school, L'Ecole des Mines, in Paris. There, I could keep studying geology, but unfortunately astrophysics classes were scarce, and I had to wait until an Erasmus semester in Dublin to take my very first astrophysics class — on stellar evolution. On the other hand, my knowledge on sustainable development and energy grew. I finally ended up starting my career as an engineer in a plant assembling wind turbines in northwest Germany, and kept astronomy as a hobby. But better late than never, after a year the hobby finally took over — I had missed physics too much and decided to become an astrophysicist for good!

Astronomy has the beauty of encompassing almost all fields of physics, which makes it much more interesting than solving the mechanical issues of a wind turbine, in my opinion. I did not regret it. I spent a wonderful year while studying for a Master's in Astronomy in Paris, I met some of my best friends there, and many teachers passed on to me their enthusiasm for science. Observational astronomy was what I liked most. For one of my Master's projects, I observed Orion with an infrared camera mounted on a 40-centimetre telescope during cold

winter nights in Meudon on the outskirts of Paris! I was however moving in a good direction: the little Newtonian telescope from my first contact with astronomy had turned into a decent 40-centimetre Cassegrain under a dome with a nitrogen-cooled detector. The comfort of a warm control room would come later! I was particularly attracted by high-angular-resolution astronomy and planetary systems, an area that had developed tremendously in the years since the discovery of the first exoplanets by direct imaging in 2008.

I decided to work on a PhD topic closely linked to the development of a future high-contrast instrument SPHERE (Spectro-Polarimetric High-contrast Exoplanet REsearch). At the time, direct imaging of exoplanets was gaining much attention, but imaging of discs at high-angular resolution from the ground was still trailing behind, with new observational challenges to face, but also very interesting disc physics to be unveiled. This topic would become the focus of my research for the next three years. I studied discs around main sequence stars, called debris discs, because they contain asteroid-like objects called planetesimals that collide and generate small dust particles that we can detect through scattered stellar light. I moved to Grenoble, where the SPHERE instrument was being integrated during the first year of my PhD. I then spent the next two years in Chile, thanks to the ESO Studentship programme, participating in the on-sky commissioning. My PhD topic covered simultaneously instrumentation, observations and the physics of discs and light scattering. Understanding the whole life cycle of astrophysical data, from the design of an instrument to the measurements produced and their interpretation is really a plus, and I am very grateful to my two brilliant advisors, David Mouillet and Dimitri Mawet, for providing me with guidance during that time.

I dedicated much effort to two debris discs, β Pictoris, the first disc resolved in imaging in 1984, and HR4796, a narrow dust ring with peculiar geometric and physical properties. From the observations obtained with high-contrast instruments, such as NAOS–CONICA (NaCo) and SPHERE, I tried to constrain the physical and chemical properties of the grains. In other words, I tried to deduce their composition and their shapes and sizes, based on the way they scatter starlight. I also study the overall morphology of the discs, to discover asymmetries or dust enhancements that could hint at the presence of gravitational perturbers, which may be planets that still cannot be detected with the current instrumentation.

I see myself as a geologist of extrasolar systems, combining my two passions for astronomy and Earth sciences. I still frequently bother planetary science colleagues to compare our approaches and results on extrasolar dust on the one hand, and asteroids, comets or Zodiacal dust on the other hand, to better understand exoplanetary systems. During my thesis work in Chile, I liked the scientific environment at ESO and loved observations. In addition, Chile is an amazing country for a mountain lover and geology enthusiast like myself. I spent a lot of my free time climbing mountains or volcanoes and enjoying the landscapes, flora and fauna of the Andes. As a result, when the possibility of staying a bit longer for a Fellowship occurred, I seized the opportunity and signed up for another couple of years at ESO as a Fellow.

I am now part of the Unit Telescope 3 (UT3) team, assigned more specifically to SPHERE. Travelling more regularly to the Paranal Observatory, I am very happy to work with all the Paranal crew — astronomer colleagues, engineers and telescope operators — all the people who make our job possible in this isolated place. The silence of the desert and the wonders of the Paranal night sky are an unforgettable experience. Aside from my observing duties, I keep studying my preferred debris discs by maintaining strong links with my colleagues in Europe and the USA. I recently started a survey with SPHERE to try to understand why debris disc detections are so scarce in scattered light, whereas about 20 % of stars host a debris disc if we believe their infrared excess. The complementarity between my duties on SPHERE and my science is a great strength and the reason why I appreciate working at ESO during this exciting time for exoplanetary science. I think many discoveries will come in the near future, and I am very happy to be part of this team operating this advanced instrument!

Adam Ginsburg

I grew up in Colorado, USA and turned to astrophysics as the result of a high-school science-fair project on modelling planetary orbits to search for their habitable zones. Positive experiences in my high-school physics class led me to study astrophysics at Rice University in Houston, Texas. I became interested in repeatedly exploding stars like Eta Carinae and have since maintained an interest in beautiful, well-resolved astronomical images. The flat terrain in Texas led me back to the mountains, which, along with the desire to make awesome images of the sky, motivated me to become an observer.

After finishing my degree at Rice, I spent a summer in the Research Experience for Undergraduates Program, at the National Radio Astronomy Observatory, looking deeply into Very Large Array (VLA) data. I spent the next year travelling and then working as a researcher at Denver University, identifying post-asymptotic-giant-

Adam Ginsburg

branch stars in the Spitzer Surveying the Agents of a Galaxy's Evolution (SAGE) survey.

In 2007, I began my PhD studies at the University of Colorado. I worked with John Bally on observational studies of molecular outflows and high-mass star-forming regions. I reduced the data for the Bolocam Galactic Plane Survey, the first unbiased survey of the Galactic Plane in the millimetre regime, which drove my thesis. I found the most interesting aspect of this survey work was what we didn't see, which led to the conclusion that the most massive clusters probably do not have a "starless" stage before they form: instead, they grow by consuming material from a large, spread-out molecular cloud or by the merger of smaller subclusters.

One of the recurring themes in my work has been the creation and improvement of the computational tools needed to do astronomical research. As an undergraduate I learned about the Image Reduction and Analysis Facility (IRAF), which is an extremely powerful toolkit with a sometimes clunky interface. While writing a large data reduction pipeline as a student, I became involved in the Astropy Project, which has made a huge suite of tools available and accessible.

After my PhD, I came to ESO in Garching as a Fellow. I am involved in the ALMA Regional Centre, where my duties involve both observing and software development. Working with a small international collaboration, I have developed a suite of tools for use with ALMA data[1]. During the first year of my Fellowship, I dedicated most of my effort to producing a large 300-hour survey of the Central Molecular Zone of the Galaxy with the Atacama Pathfinder EXplorer (APEX) telescope. I used this data to measure the temperature of the Galactic Centre's densest gas, and we found that it was uniformly warmer than observed elsewhere in the Galaxy.

I have continued my observational projects on the study of the structure and properties of high-mass clusters, which are some of the most active regions in the present-day Universe, and of the Galactic Centre. These objects also represent the most visually striking features on the sky, but they can only be observed in the radio. As I will soon move on from ESO, I look forward to continuing my work with ALMA and other radio telescopes to understand the nature of star formation and the origin of high-mass stars.

Links

[1] Software tools for radio astronomy: radio-astro-tools.github.io

Personnel Movements

Arrivals (1 January–31 March 2016)

Europe	
Bouchtita, Sonia (FR)	Accountant
Förster, Andreas (DE)	Optical Engineer
Gonzalez Fernandez, Ariadna Irene (ES)	Student
Kosmalski, Johan Pierre-Dominique (FR)	Optical Engineer
Mroczkowski, Anthony (US)	Astronomer/Submillimetre Instrument Scientist
Tulloch, Simon Mark (UK)	Detector Engineer
Zivkov, Viktor (DE)	Student

Chile	
Guieu, Sylvain (FR)	Optical Physicist
Neumann, Justus (DE)	Student
Ramirez, Jorge (CL)	Electronic Engineer

Departures (1 January–31 March 2016)

Europe	
Finger, Gert (AT)	Applied Physicist
Guerou, Adrien (FR)	Student
Rodón, Javier Adrián (AR)	Fellow

Chile	
Ertel, Steve (DE)	Fellow
Hill, Tracey (AU)	Fellow