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Fellows at ESO

Zdenek Prudil

As I read the profiles of other ESO fellows for inspiration, I realised how different each of our paths to ESO has been. Mine was no exception. I was born into a blue-collar family in a small city in the Czech Republic, and as a child, I often wondered what kind of profession I would enjoy for the rest of my life. For a long time, I had no answer. At one point, I wanted to be a fighter jet pilot, but my practical nature prevailed, and by the age of 22, I was on the verge of becoming a 3D CAD designer. However, for the first time, I decided to follow my gut and enrolled in the undergraduate astrophysics program at Masaryk University in Brno.

To give some perspective, while I always enjoyed maths during school, I never particularly liked physics. I was fascinated by astronomy, but only as a hobby, often through movies and TV shows, and never truly considered it a career option. In retrospect, the decision to study astrophysics was rather reckless.

What now appears to be one of the best decisions I ever made was not clear at the time. During my undergraduate studies, I was an okay student, not great, but not terrible either. More importantly, I was one of only four students in my class to complete the programme out of the 40 who started in the first year. The programme was not for the faint-hearted, but it had the best community of students across all cohorts, many of whom I am still in contact with today. Looking back, those three years were the hardest but also the most fun; everything that came afterward felt like a walk in the park.

During my undergraduate studies, I met Marek Skarka, then a PhD student, who introduced me to RR Lyrae stars, a class of classical pulsators commonly used in Galactic archaeology. Since then, RR Lyrae stars have been at the core of my research. When I began my master's studies, I chose Marek as my supervisor. My thesis involved analysing a large photometric dataset of RR Lyrae stars to search for period modulations in their light curves, a straightforward task requiring consistency and diligence over two years owing to the sample size. I absolutely loved the work. I enjoyed the project so much that, during the summer break when I was supposed to take a summer job to save for my final year, I quit my coding job to focus fully on my thesis, a gamble that later paid off. I thought, “If this is the last thesis I will write, I should make it a great one,” a mindset I carried into my PhD. Around this time, I fully decided to pursue a career in astronomy.

For my PhD, I applied to Heidelberg University, which had a history of research on RR Lyrae stars, allowing me to continue in the same field. I did not apply elsewhere, mainly because Heidelberg required only two reference letters, while other places (like Munich) required three. From the interview, I mostly remember talking non-stop about my master’s thesis and how much I had enjoyed working on it. In any case, I got the position, and suddenly, I was being paid for what I considered my hobby, which was awesome. I had the freedom to pursue projects that interested me, as long as they related to Galactic archaeology. I found studying the formation history of the Milky Way using RR Lyrae stars fascinating, and I may have stretched the boundaries of “sticking to my field” a bit, but a paper is a paper.

Fortunately for me, the Gaia mission released its first data during the early stages of my PhD. Looking back, I didn't fully appreciate at the time how Gaia would transform our understanding of the Galaxy or how much it would shape my work. I spent four wonderful years in Heidelberg, during which I also met my future wife.

Although only around a third of my PhD cohort pursued postdoctoral positions, my commitment to research made it clear to me that I wanted to continue in academia after completing my doctorate. For my first postdoc, I decided to stay at the same institute, working with Andreas Koch-Hansen. I valued the research freedom and the stability of not having to move cities or countries. Unlike during my PhD, I embarked on a large-scale project during my first postdoc — understanding the Milky Way's inner region, the Galactic bulge, a project that continues to occupy me now at ESO.

Working at ESO has been, in many ways, an eye-opening experience and different from what I expected. I appreciate the freedom to pursue research questions that interest me, but what I value most are the unique opportunities ESO provides, often in ways that are not immediately obvious. The presence of excellent scientists across various fields, always willing to help with scientific questions, is reassuring. The accessibility and helpfulness of experts with deep knowledge of ESO instruments are invaluable and not something I take for granted. During my fellowship, I also experienced an important personal milestone, the birth of my daughter, which gave me a new perspective on balance and priorities. Perhaps what I appreciate the most is the opportunity to participate, even as an observer, in various committees and meetings at ESO. These experiences have profoundly transformed the way I write papers, proposals, and job applications, in ways that I could not have gained elsewhere.

Martina Baratella

When I was a child, I wanted to discover dinosaurs, be a journalist or become an astronaut. I was about eight when, in school, we studied the Solar System and its planets. One night, my mom brought me to an outreach event in my hometown to observe the Moon, Jupiter, and its satellites with a small telescope. I was amazed by the vastness of what was in front of my eyes, the sense of emptiness behind that big, white ball, and I started to wonder: what more is out there? This is when my love story with astronomy began.

During the last year of high school, I attended an extracurricular course, 'The Sky as Laboratory', in which the professor explained the basics of astrophysics to us: what fuels stars, what galaxies are made of, how the Universe is expanding, and so on. At the very beginning of the lectures, she showed this quotation: "It's so wonderful to gaze at the sky and realize that it's nothing less than a vast physics laboratory unfolding above our heads". The person who said this was Margherita Hack, one of the greatest Italian astrophysicists and first female director of the Astronomical Observatory of Trieste. Her words moved me deeply and I've decided to be an astronomer like her.

I chose to study astronomy at the University of Padova, but some of my relatives were not amazed by this choice. I am the first-born daughter and first cousin in a relatively large family living near Venice in northern Italy. Being the first means you must 'lead the way' and 'be the example', so deciding to be an astronomer was not the most socially accepted choice (I was supposed to be a doctor or a lawyer). Luckily, my parents have always been extremely supportive and pushed me to pursue my dream.

During some university courses, we attended on-site lectures at the Asiago Observatory. It was my first time seeing an observatory, a telescope with a 122-centimetre aperture (the largest I had seen so far), the spectrographs, and learning about life at the observatory. At the same time, I listened to the lectures by Professor Paola Marigo (who sadly passed away in 2024) on stellar evolution and nucleosynthesis, learning how almost all elements in the periodic table are produced inside stars. That was the moment I decided to focus on studying stars and to work for an observatory.

After being accepted into the PhD programme at the University of Padova, I began my collaboration with Valentina D'Orazi, who taught me how to derive the chemical composition of stars using high-resolution spectroscopy. My thesis focused on understanding how stellar activity in young stars can alter the information obtained when using classical analysis techniques. Thanks to her support and supervision, I began many collaborations, and learnt how to be a researcher and a fine stellar spectroscopist, and she was the one who suggested I apply for the ESO Fellowship in Chile.

However, I was afraid I was not sufficiently qualified for that position, so I applied for a two-year postdoctoral position at AIP in Potsdam, Germany, to gain more experience as a researcher. In March 2022 I went to La Palma for an observing run with the NOT telescope at Roque de Los Muchachos. My first hands-on experience in an observatory, just slightly bigger than Asiago! There, the visiting astronomer is left alone; they are trained to operate the telescope and instrument autonomously. I was so proud and relieved that, at the end of those four days, the telescope was still intact and functioning.

I applied for the ESO Fellowship in Chile in October of the same year and got the offer in December: a great Christmas present! After completing my last year of contract at AIP, I left for Santiago in November 2023 and started this amazing journey. My duties are at the Paranal Observatory, where I support night operations on the UT1 and UT2 telescopes, and I work as Instrument Fellow for ESPRESSO and 4MOST. Moreover, I am currently one of the Fellow Representatives and helped organise a successful Fellow Retreat in ALMA where we discussed several aspects of the Fellowship Program together with management.

Today, as I am entering my third year of the Fellowship, I am more than convinced that this is the right path for my career and my future (looking with heart-shaped eyes at ELT). Working at ESO has given me the opportunity to learn a great deal as an observer, to meet many different people from all around the world, while strengthening my expertise in stellar spectroscopy.

Being at ESO is a dream come true, and I am happy that the astonishment and enthusiasm I had at the beginning of my journey are now stronger than ever. Every time I am on the mountain, I enjoying drinking my coffee on the platform before the start of my day (or night) while looking at my babies... the telescopes. I hope that my experience can be inspiring for others, especially young girls, like one of the many amazing women who have inspired me throughout my career.

Amelia Fraser-McKelvie

My astronomy journey has taken me all around the world. I spent my childhood and university years in Melbourne, Australia, a place that I expected to live my entire life. Then, three months into my PhD at Monash University, my supervisor sat me and his other students down and told us in a very sombre tone that he was moving to the UK. I think he expected us to mourn his loss; instead, we were all excited at the prospect of a free trip to Europe.

After spending the middle year of my PhD in a town called Hull (right up in the North of England), I realised that travel and living in new and exciting places was for me. Upon completing my PhD, I moved to Nottingham, back in the UK, for my first postdoc. I worked as part of the MaNGA galaxy survey team, who at the time had set themselves the ambitious goal of observing 10 000 galaxies with integral field spectroscopy! (They eventually achieved, and even exceeded this goal, with 10 010 galaxies observed).

Keen for some sun, I took up my next postdoc position in Perth, Australia, as part of the International Centre for Radio Astronomy Research (ICRAR), and despite not being a radio astronomer. I continued to work on resolved spectroscopy of galaxies, but this time with the Australian-led SAMI galaxy survey. Despite Covid, and a couple of years of lockdown meaning that Western Australia was separated from the rest of the world for the majority of my time there, I did manage to get to Siding Spring Observatory for a Hector galaxy survey (SAMI's successor) commissioning run. I never felt more of an adrenaline rush than trying to plug delicate optical fibre hexabundles into an observing plate in temperatures just above freezing and under the watchful eye of the survey leader... at 3am... and with the ever-present prospect of a hairy huntsman spider sliding out from its hiding spot just to give me a fright!

These days, my personal research is in the field of galaxy evolution, trying to understand how galaxy internal structures such as bars, bulges, and spiral arms, impact the life of their host galaxy. To do so, I use the world's biggest telescopes. However, many of the galaxies that I study are visible with a backyard telescope and some well-adjusted night vision. While in Perth, I also joined the Perth Observatory volunteers group, a bunch of people from all walks of life who took it upon themselves to show the public the night sky every weekend. While I was a 'professional' astronomer volunteering with 'amateurs', I learnt an incredible amount about the night sky, using hobby telescopes, and celestial navigation. If you ever need someone to find you Omega Centauri in a 30-inch Dobsonian telescope, I'm your person! One of my favourite things about my job is the opportunity to speak about space to the general public. Watching someone's eyes light up when you explain to them that the photons from a distant galaxy that they are viewing through an eyepiece tonight left said galaxy back when dinosaurs were roaming the Earth is always special.

I always liked space growing up, but I had no idea that someone could be a professional astronomer until embarrassingly far into my university career. During my final year of school, I'd had a friend's mother tell me that there was no point in doing a science degree unless I wanted to become a teacher. As the daughter of high school maths and physics teachers, the one thing that had been imparted upon me my whole life was to never be a high school teacher! So, I decided on a double degree: science and engineering, majoring in astrophysics, applied mathematics, and aerospace engineering (I liked aeroplanes, so I reasoned that it might be fun to work with them). The engineering side wasn't for me, but I quickly found a love for astronomy during my undergraduate years. Sadly, back in those days, Australia wasn't involved in ESO, and so my knowledge of cool telescopes was limited to Coonabarabran's Anglo-Australian Telescope (3.9-metre mirror) and the Parkes' Murriyang Radio telescope (made famous by the movie The Dish).

ESO was never really on my radar; unlike many Fellows, I hadn't visited as a student, nor had I ever been to Germany. However, Australia's strategic partnership with ESO coincided with my postdoc in Perth. This, and working at ICRAR with

two ex-ESO Fellows soon rose its profile in my mind. Then in 2022, came a turning point for me: I was involved in not one, but two successful ESO large programmes on MUSE: the GECKOS and MAUVE surveys! Suddenly I was thrown into all things MUSE-related (and loving every second of it!) As an aside, I'll note that most Australian observing campaigns have contrived Australian animal acronyms for names (GECKOS, MAGPI, WALLABY, EMU, TAIPAN, DINGO, GALAH, DEVILS…) you'd be surprised at how much time is spent coming up with these during proposal periods! I decided to apply for the ESO Fellowship, reasoning that since I was now using their telescopes frequently, it might be a good place for me to spend some time.

These days, I'm loving my time at ESO, relishing the independence that a fellowship gives me, enjoying the technical aspect that comes with my duty time, and taking every opportunity I can to see big telescopes, meet new people, and hear about cool science. I'm excited to see what comes next!