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The New ESO Phase 1 System

ESO Phase 1 Project Team[1]

[1] ESO

ESO announces the forthcoming deployment of its new tool for the preparation and submission of observing proposals. This represents the first part of a broader overhaul of the ESO Phase 1 system (p1) that, in the near future, will also entail a significant modernisation of the Observing Programmes Committee (OPC) refereeing process and related tools.

The new p1 system is web-based, resembling the new p2 tool. This system includes many new features including: allowing the Principal Investigator and Co-Investigators (CoIs) to edit proposals in a collaborative way; graphically plotting target visibilities and the probability of realising the requested observing conditions; retrieving target information directly from Simbad[1]; and updating a submitted proposal (before the deadline). There are also some practical implications: each of the CoIs will need to have an ESO User Portal account[2], and it will no longer be possible to directly resubmit existing LaTeX proposals into the new system. Finally, the ESOFORM package — which served the community for decades — will be retired.

Please stay tuned, as there will be further announcements related to the new p1 system and its rollout via the usual ESO communication channels.

Links

[1] Simbad: simbad.u-strasbg.fr/simbad
[2] ESO User Portal: www.eso.org/UserPortal

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Fellows at ESO

Elyar Sedaghati

Growing up in 1980s Iran during the war, looking up at the night sky was the only thing that gave me some form of comfort and hope. You see, quite often electricity supplies of entire cities were cut for whole nights to give enemy bombers minimal visibility; a small win for my curious eyes during an otherwise desperate situation. Observing with my toy telescope, looking up at the Moon and the planets, served as a form of escapism from the ugliness of the reality unfolding around me. It is hence fair to say that I owe a lot to astronomy for carrying me through such difficult times. Fast forward a couple of decades, and fortunate enough to have escaped with my life, I found myself studying Natural Sciences at Cambridge University in the UK. While, by now, the figurative scars of war had been healed, fascination and curiosity with the heavens had very much made a permanent impression on me.

After obtaining my Bachelor's degree, with a specialisation in astronomy, I had to leave science and work in industry, both in order to deal with the financial burdens resulting from being a foreign student in the UK, and to handle the endless complications associated with staying in the UK with my passport. Fast forward a few years; having obtained enough pieces of paper to be allowed to live in the EU, I finally went back to university and obtained my Master's degree in physics from the Freie Universität Berlin, with a thesis on the detection of exoplanetary atmospheres using ground-based facilities. It was during this thesis that I had the chance to work on some Very Large Telescope (VLT) data using the FOcal Reducer/low dispersion Spectrograph (FORS2) instrument, and I got to know ESO and Paranal through my interactions with my then long-distance supervisor, Petr Kabath, who was working at Paranal.

After that, it was only natural to continue with doctoral studies in the same field of research, which I managed to start under the supervision of Heike Rauer, the Principal Investigator for the ESA mission PLAnetary Transits and Oscillations of stars (PLATO) at the German Space Agency (DLR), in Berlin. Having previously worked on FORS2 exoplanet transmission spectroscopy data — obtaining observations tracing minute variations in

Elyar Sedaghati

exoplanet transit depths that can reveal the presence of exoplanet atmospheres — I had the perfect platform to apply for an ESO studentship here in Chile. The then instrument scientist of FORS2, Henri Boffin, was planning an intervention in the optical path precisely for the purpose of improving such observations. So I applied to work with him here at ESO for a two-year project. This turned out to be the best decision I have ever made in my life, not taking for granted the gravity of such a statement.

During those two years at ESO, under Henri's supervision, I worked intensely on a number of FORS2 transmission spectroscopy datasets rigorously testing, analysing and validating the improvements that the interventions had made to the aforementioned science with this instrument. As a consequence of this we published a number of results in various journals, including the first-ever detection of a long sought-after metal oxide in the atmosphere of a giant and hot exoplanet. It was due to the efficiency with which Henri guided me through my work that I managed to fulfill the German universities' requirement for a cumulative thesis (i.e., the requisite number of first-author papers), which I defended within just over two years; much to the annoyance of the bureaucrats at DLR, who had difficulty re-routing the funding I had already secured for the third year of my PhD back in Germany.

Naturally, there was no doubt in my mind what my next step would be: an ESO Fellowship, which I started exactly a month after the day I defended my thesis. I have now been working at Unit Telescope 1 (UT1; also known as *Antu*) for over a year as the FORS2 fellow. During this time, I have loved operating and improving its instruments. I feel very privileged to be at Paranal just now; these are exciting times for the research field of exoplanetary science. The Echelle SPectrograph for Rocky Exoplanet and Stable Spectroscopic Observations (ESPRESSO) has recently started operation in single-UT mode, giving us unprecedented and unparalleled precision and accuracy in radial velocity measurements of exoplanets. Soon atmospheric results will follow. Furthermore, soon the CRyogenic InfraRed Echelle Spectrometer instrument will be back after its upgrade (CRIRES+), which will open a further channel towards the infrared for us, enabling us to probe exoplanetary atmospheres for heavier molecular species.

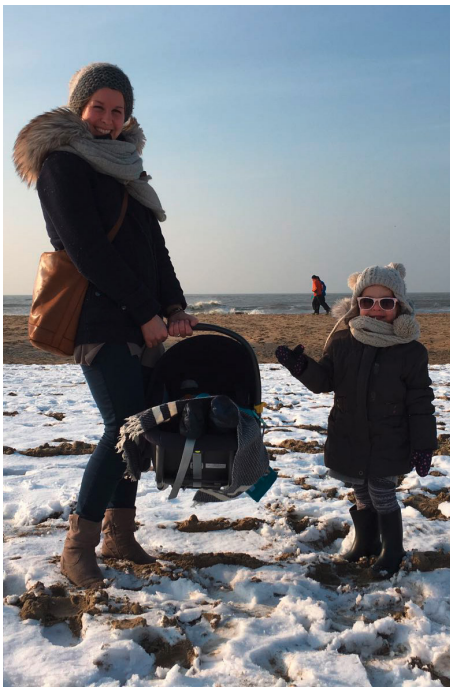
I have so far absolutely loved the experience of the fellowship, where I have learned so much about the operational and technical aspects of astronomy, being at the forefront of research in other areas of astronomy, and having the freedom to explore different and new ways to detect exoplanetary atmospheres. It is this freedom in research, as well as the operational duties at Paranal, that attracted me to ESO, and I have yet to be disappointed. And this is not even mentioning having the chance to go skiing and surfing on the same day from Santiago!

So if I can summarise this piece in two short points, they would be: one, try not to be born in the Middle East (!); and two, if you have the chance to work with Henri Boffin, take it.

Anna Miotello

If you ask my daughter what my job is, she will surely say "the stars". Actually, in the kind of data I usually handle the stars do not shine, but you can clearly see the cold gas and dust emitting at (sub-) millimetre wavelengths surrounding them while they form. I study protoplanetary discs in order to understand how planets such as our Earth and her fellow Solar System planets formed. The discs I am interested in can also be observed during the day using interferometers such as the Atacama Large Millimeter/submillimeter Array (ALMA).

At school I liked everything, ranging from philosophy to maths, from sport to art. I got interested in physics during my last year of high school, after meeting a young teacher who taught us about Einstein's special relativity theory and after visiting an exhibition about the Milky Way. There was so much I did not know about this and that I could learn, so I decided to study physics at the Universitá degli Studi di Milano. Towards the end of my Bachelor's degree it was clear that my interest was mainly in astrophysics



Anna Miotello

and, under the supervision of Marco Potenza (Milano) and Massimo Robberto (Space Telescope Science Institute, STScI), I carried out a thesis project on Hubble Space Telescope (HST) observations of a protoplanetary disc in the Orion star forming region to study its dust particle properties. Marco Potenza is an experimental physicist in the field of optics. His expertise on dust scattering and absorption properties was key and gave an interesting angle to our HST study. The following summer I completed this project as part of the 2011 summer program at STScI. Massimo's mentoring, together with such a high-profile international research experience — so different from anything I had previously seen in Italy — was probably the turning point that made me decide I wanted to become an astronomer. The project, in particular, was very exciting and led me to very interesting results which were then published in 2012.

After the summer, I presented these results in a poster at an ESO workshop, "Formation and Early Evolution of Very Low Mass Stars and Brown Dwarfs". There, I met Leonardo Testi, who offered me the opportunity to carry out my Master's degree thesis at ESO in Garching.

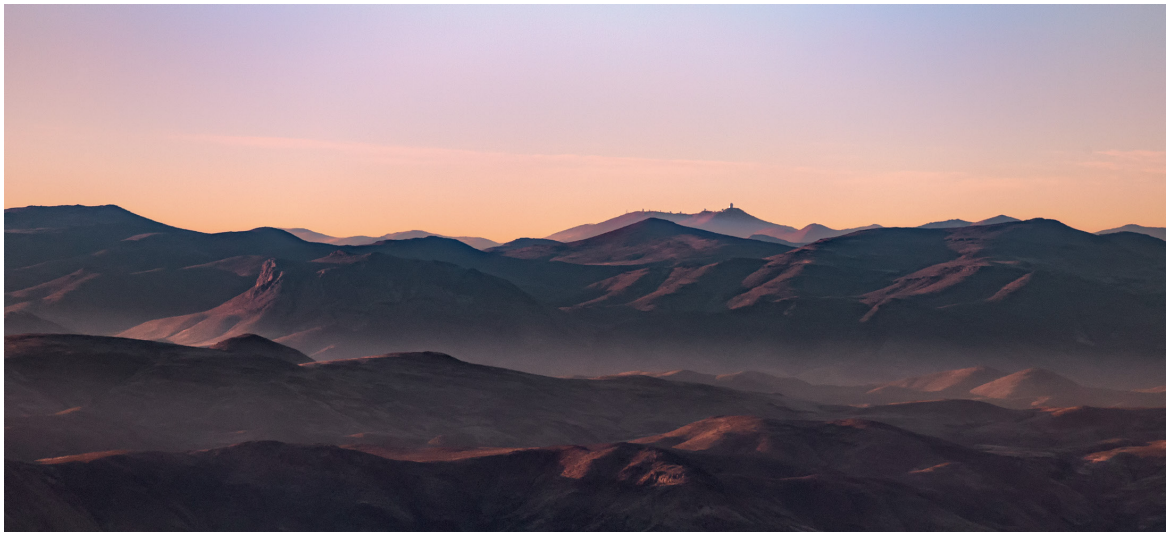
That was the chance to work in (sub-)millimetre interferometry, a totally new technique for me, and to continue working on discs, but at a younger and still embedded phase. The goal was to understand whether dust grains, which will eventually coagulate to form planets, already start growing to millimetre sizes in the envelopes of extremely young protostars. I enthusiastically accepted and started working on that project from the theoretical point of view in Milan in 2013, under the supervision of Giuseppe Lodato. In September of the same year I moved to Garching where I learned to calibrate and image Australia Telescope Compact Array (ATCA) observations, analyse the data and model them using a radiative transfer code. This pre-ALMA experience was extremely formative as I saw with my own eyes some aspects of interferometric data that are essentially hidden to ALMA users nowadays. Also, Leonardo's experience in interferometric data and his didactic abilities helped me to concretely understand interferometry, which otherwise would have been only a set of equations.

One thing was clear: ESO was a unique place and I was really tempted to continue my education there as a PhD student through the IMPRS programme. I was, however, also offered a PhD position at Leiden Observatory by Ewine van Dishoeck, one of the world leaders in astrochemistry, specifically in the field of star and planet formation. I accepted that position and started my PhD in June 2013, as that was the best opportunity to learn about the gas content in protoplanetary discs, very complementary to the knowledge I had already acquired on dust. I spent my first year at the Max-Planck-Institut für Extraterrestrische Physik in Garching, where I learned to carry out physical-chemical models of discs with the physical/chemical model Dust And LInes (DALI), under the supervision of its developer Simon Bruderer. In 2014 I moved to Leiden, where I continued augmenting the DALI code. The goal of my thesis was to solve "The puzzle of protoplanetary disc masses", as its title reads, by employing observations of CO isotopologues, which needed to be carefully modelled. After four years and four papers, comparing models to ALMA observations, the puzzle is not solved yet. In fact, I now understand that getting disc masses right is an even more complicated riddle than expected. Nevertheless, it is an extremely important question to answer if one wants to understand how planet formation really happens. All this work established the basis of my current research, where the interplay between gas and dust seems to be key.

In Leiden I really enjoyed the combination of high-level research and care for the students. Between the start of my PhD and the beginning of my fellowship at ESO, I have had three children. I can never thank my supervisor, Ewine, the Leiden Observatory and ESO enough for the support they gave me. They allowed me to carry out and fully enjoy high-level research, without obliterating my personal life. In my experience, support, flexibility, trust and encouragement are key to truly enable full inclusion of women — more specifically, mothers — in astronomy.

I concluded my PhD thesis in September 2017 and I joined ESO Garching as a fellow in October that same year. It felt like coming back home. On top of enjoying the great scientific environment, as a fellow I can concretely support the observatory, and share the load — as you do in a family — with "functional work" for up to 25% of my time. Joining the ALMA Regional Centre (ARC) and working on reducing data was a natural choice. However, I decided to combine this duty with a less usual one, that is to join the editorial team of The Messenger. I find both activities enrich my scientific career and are unique opportunities to learn new skills.

Astronomy was born out of the astonishment of people who stared at the starry sky and asked themselves what was the link between their existence and such immensity. Visiting the ESO telescopes, one sees how far this amazement and curiosity have brought us. I feel privileged to be an astronomer and to be at ESO, and I hope that I will always be as astonished and curious as those first astronomers.



G. Lombardi/ESO

La Silla and the surrounding mountains seen at dusk.