



Internal Memorandum

To All ESO Science Staff (Scientists, Students and Fellows)

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Subject **Fellowship Programme at ESO - Description and current Status**

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¹ based on Version 13, January 2015 of "The Fellowship Programme" written by É.Emsellem and C.Melo - see https://www.eso.org/intra/org2013/dsc/ofs-garching/docs/FellowshipProgramme_Jan15.pdf

1. Scope

This document describes the ESO fellowship programme and its current status and implementation.

The Fellowship Programme in its current form was proposed to the STC in 2001 (ESO/STC-296, 03.04.2001):

"The aim of the fellowship programme is to provide young astronomers from the ESO member states and Chile with the opportunity to conduct personal research, in particular in areas relevant to VLT science, as well as to be trained in many aspects of the ESO mission, in particular the development of instrumentation, the VLTI and the Atacama Large Millimeter Array as well as data calibration, analysis and archiving, and operations of very large telescopes."

Today, the ESO fellowship programme serves a unique role within the organisation, providing an invaluable training opportunity for the next generation of astronomers and users of ESO facilities.

2. Mission and Vision

An important component of ESO's mission is to support a large astronomical community via the design, construction and operation of ground-based facilities. Having active staff scientists who conduct front-line research is critical to provide the best support to this community by pushing ideas and facilities to their limits. ESO has developed (and continues to develop) a unique set of expertise which must be diffused back into the community to educate the next generation of astronomers and to trigger the next wave of instruments and telescopes. The Fellowship Programme has as core mission to train and prepare this next generation of astronomers by giving them the opportunity to work in a unique environment where they can consolidate their scientific profile and career, have an in-depth experience with state-of-the-art facilities, and return to the scientific community as ESO ambassadors. Since its inception in 1977, hundreds of astronomers have participated in this programme and many have moved on to leading positions at universities, observatories and laboratories, diffusing ESO expertise in the Member States and enhancing the organisation's reputation around the world.

ESO's Fellowship Programme is one of the most recognised and successful such post-doctoral research programmes in the world. Cared for within the Offices for Science in Garching and Santiago, the ESO Fellowship Programme shall remain a benchmark for excellence while adapting to changes in the astronomy marketplace. Fellows are the engine that drives a significant part of the science at ESO and an important bridge with the community that the organisation serves.

3. The Fellowship Programme at ESO

ESO's Fellowship Programme is designed to help young scientists reach the next step of their scientific career, either a post-doctoral position or a more permanent position at a University, research institute or observatory. The programme is designed such that Fellows gain experience

by working in a research and observatory environment. The programme thus aims at helping ESO's Fellows to stretch and learn by

- Developing their scientific profiles and benefiting from a rich and structured scientific environment where they can interact with more senior scientists;
- Becoming mature and independent researchers who can/will develop their own research projects and contribute effectively to collaborative scientific endeavours;
- Getting prepared to take on higher scientific, administrative or managerial responsibilities in future positions.

4. What makes ESO's Fellowship Programme unique and attractive

As the foremost ground-based astronomy organisation and the world's most productive observatory with three cutting-edge observing sites in Chile, ESO is clearly a special place to work and to do astronomy. ESO offers unique opportunities for Fellows that cannot be obtained elsewhere:

- ESO Fellowships are well supported research positions that allow young researchers to blossom as independent scientists.
- ESO provides an innovative and creative environment where Fellows are mentored, valued and empowered to make an individual contribution.
- Working closely with ESO's facilities and staff astronomers provides a unique catalyst for astronomical research, such that ESO Fellows can develop their own independent programmes and engage in fruitful scientific collaborations with the broader astronomical community.
- The Garching campus, with MPE, MPA, TUM and LMU nearby, provides a genuinely world-class science environment in which ESO Fellows can learn and contribute.
- The Santiago/Chile university and observatory environment provides a lively scientific domain hosting the operations of many world-leading ground-based telescopes.
- The inclusion in ESO projects and operations through functional responsibilities opens career options for Fellows who want to explore alternative paths in astronomy, such as working at observatories and combining research and functional duties. Former ESO Fellows have moved on to a wide variety of new positions, including professorships at universities, support astronomer positions at international observatories, science communication and public outreach positions, and senior management positions at national and international scientific organisations.
- ESO Fellows have an opportunity to share a truly international environment where they work closely with people from different cultures and disciplines.
- ESO is an intergovernmental organisation and offers an attractive remuneration and benefits package for Fellows, and relocation support for their families.

In summary, there are very few other post-doctoral programmes in astronomy that offer the unique combination of professional and personal development that ESO's Fellowship Programme does.

5. Where do our fellows stand within the organisation

The Fellowship Programme is one of the main Programmes of the Directorate for Science, recruiting more than 12 new Fellows every year. The Programme is managed by the Offices for Science in Garching and Santiago, with the Office Heads and/or their Deputies as the direct line managers of all ESO Fellows. Most activities (seminars, workshops, discussions) within this Programme are conducted together with other scientists within the Directorate for Science, including the ESO Students, Interns and Visitors, and more broadly all astronomers within ESO and the neighbouring universities and institutes. There are therefore natural and close links between the Fellowship Programme and the Visitor, Workshop, Internship, and Studentship Programmes, as well as the Garching and Santiago research environment.

The Fellowships are first and foremost independent research fellowships and Fellows have ample opportunities to develop new collaborations and projects, and present the result of their work to their peers. ESO Fellows also spend a significant fraction of their working hours contributing to an ESO project or activity. As emphasised above, this is a unique opportunity for them to apply their expertise on state-of-the-art developments at an observatory. It is also a way for them to connect to other sub-groups at ESO, including engineers, technicians, outreach specialists or project managers.

6. How we support our fellows

ESO supports the research, skills and career development of Fellows in many different ways:

- An Induction Programme is provided to all new Fellows to help their smooth integration into the organisation.
- The Offices for Science foster friendly and scientifically stimulating environments in both Garching and Santiago where innovation and creativity are valued ingredients of everyday work. Fellows are encouraged to take ownership of their fellowship as an aid in their career development, to openly express their ideas and to participate fully in their implementation. Both Heads of the Offices for Science maintain 'open door' policies and take a genuine interest in the well-being of Fellows. Fellows can also channel their concerns and opinions more formally through the Fellows contacts who serves as a liaison between the Fellows and management.
- Fellows receive mentoring from ESO Astronomers concerning their research, development of their technical skills, and their career development.
- ESO has a Development Programme for Fellows to help them prepare for the next steps in their careers. The programme includes trainings such as: communication and presentation skills, project management, basic people management skills, writing skills etc. Specific training and advice are also offered on crafting effective job applications and interview skills (see details in the Appendix).
- ESO also offers opportunities to Fellows to participate in or lead teams in different projects and serve as mentors for Students. This gives ESO Fellows an advantage in an increasingly competitive job market.
- Fellows are encouraged to trigger, lead or contribute to the organisation of ESO workshops and conferences, which are funded by specific budget lines and supported

locally. Additionally, Fellows have opportunities to work in, or lead the creation of, science groups, organise lunch talks and Astronomy colloquium, science coffees, etc. and have access to the Science Support Discretionary Funds

- Observing and science trips are well supported, allowing Fellows to obtain new data to advance their research, disseminate their results, network with other astronomers around the world, and serve as ambassadors for the organisation - winning arrangement for both the Fellows and for ESO.
- The Offices for Science strongly encourage ESO Fellows to visit the other ESO sites (Garching for the Chile-based Fellows, Vitacura for the German-based Fellows). This should be done, when possible, within the first year of the fellowship to make sure the benefit comes at an early stage in this process.

7. What we expect from our fellows

Fellows at ESO are expected to fully engage in, and contribute to, ESO's scientific and social environment while developing their own profiles as researchers. They should be key actors in shaping ESO's culture and the organisation's development and participate actively in the projects that further ESO's mission.

Fellows are expected to foster collaborations with ESO faculty and students and to actively contribute to the science-driven nature of the organisation.

ESO Fellows are ambassadors for the organisation when attending conferences, workshops, meetings and other professional or public events. They are encouraged to behave ethically, to promote ESO externally and to provide feedback internally to help improve ESO's programmes.

Last but not least, our Fellows serve as a role model for younger scientists (especially Students) and support their development.

8. Implementation of the Fellowship Programme

8.1 Duration and frame of the programme

In order to render the ESO Fellowship Programme more competitive, the duration of the fellowships is set to 3 years for Garching positions, and 4 years for Santiago positions. For the latter, the fourth year has very favourable research conditions to balance the functional work of the Fellows in Chile. This was acknowledged by former Fellows as an important ingredient of the attractiveness of the programme in Chile.

8.2 Garching Fellowships

During their fellowships, the Fellows conduct their own independent research for at least 75% of their time and participate in the scientific life of the organisation. Each Fellow names a staff astronomer to be their scientific mentor for the duration of their ESO Fellowship. The choice of

their science mentor may be motivated (but not necessarily or exclusively) by common scientific interests. In all cases, Fellows are free to choose their mentor from within the ESO science staff, with the goal for such a link to be a mutual agreement. The science contact reports briefly (on the science contribution and activities of the Fellow) at the time of contract renewal. During the remaining 25% of their time, Fellows are trained in crucial areas of high-level technology and/or actively participate and contribute to ESO projects which they select from activities proposed by different Divisions/Offices/Directorates. The list of potential duty tasks is gathered by the Head of the Office for Science, should contain a broad variety of topics and tasks (with typically 2-3 times as many tasks as fellows), and validated with the Directors. Fellows in Garching may also select to conduct their functional activities in the Science Operations Department at the Paranal Observatory, with 4 stays of 2 weeks each per year, or partly (or fully) at the ALMA site.

All Fellows are evaluated by the Head of the Office for Science on an annual basis: the second and third year of the Fellowship are granted after a review of the Fellow's performance that takes into consideration scientific and functional aspects. A one-to-one discussion takes place between the Fellow and Head of the Office for Science to give feedback and discuss possible areas of improvement. Based on the recommendations of the Fellow's science contacts and functional supervisors, and the one-to-one discussion, the Head of the Office for Science takes a decision regarding the Fellow's contract extension.

The functional work, after being approved by the Head of the Office for Science, is a commitment and contribution to an ESO project or task. In Garching, the guideline is (a maximum of) 25% for each Fellow. Garching Fellows are welcome to spend more time on their functional work, although this should be carefully discussed with the Head of the Office and project manager in the context of the project itself, and more importantly regarding the career development of the Fellow. The nominal 25% is an average which can in principle also be spread over the full Fellowship if relevant. The detailed scheduling of the functional work should be agreed with the project manager and can be further discussed with the Head of the Office if relevant. Change of duty project for a specific Garching Fellow is allowed although any such change has to be approved by the Head of the Office for Science. The time fraction spent on science and duties is monitored via the ESO Timelog Tool within the Office for Science: this is done on a monthly basis by all ESO Fellows having a commitment with functional work. This is meant as a record of the time spent by the Fellow who contributes to an ESO project or task. The functional work in Garching provides extra resources for the ESO projects and operations. Assigning Garching Fellows to critical tasks for the organisation is thus done with great caution.

8.3 Chile Fellowships

During the first 3 years, the Fellows conduct their personal research at the Vitacura Office in Santiago for 50% of their time and participate in the scientific life of the organisation. As in Garching, each Fellow has a scientific contact among the ESO science staff. For the remaining 50% of their time, the Fellows are assigned either to the Paranal Science Operations Group (with 80 nights within a 12 months period at the Paranal Observatory) or to ALMA operations. Contracts are granted on a yearly basis by the Head of the Office for Science upon evaluation of the Fellow's scientific performance and recommendation of the Fellow's functional supervisor. During the fourth year several options are provided. The Fellow may be hosted by a Chilean institution where she/he will be eligible to apply for time on all telescopes in Chile through competition for Chilean observing time. Alternatively, the Fellow may choose to spend the fourth year either at ESO's

astronomy centre in Santiago, at the ESO Headquarters in Garching or at any astronomy/astrophysics institutes in an ESO member state. There are no functional duties during the fourth year, except in the case that the fourth year is spent at ESO/ Chile where fellows have to carry out functional work up to 25% of their time (i.e., up to 40 nights).

The fellow communicates his/her option for the 4th year during her/his 3rd year. In particular, if the Fellow chooses to be hosted by a Chilean institution, this has to be communicated to the Head of the Office for Science by May of the Fellow's 3rd year. This is necessary to allow the Chilean host to get ready to receive the fellow.

As in Garching, Fellows record their time spent on science and duties via the Timelog Tool. Considering that Fellows in Chile have a critical role in the operational aspects of the ESO facilities, these are also automatically included in the ESO staff effort planning tool.

8.4 Recruitment Process

One recruitment cycle takes place per site and per calendar year. ESO recruits 6 Fellows per year in Garching, and 5 to 7 Fellows per year in Santiago. An announcement is published in various media including the Messenger in June/July each year.

Timeline

The deadline for applications is currently October 15, each year. Offers are expected to be made in January with the request for a prompt reply, no later than February 15.

The future Fellows are expected to take up duty during the year following the application deadline, usually in the period from September to December of that year.

Selection committee

The recruitment process for ESO Fellows is done via a dedicated selection committee appointed annually by the respective Chair of the Faculty in consultation with the Director for Science. There is one selection committee per site/Office (one for Garching, one for Santiago). The committees are chaired by Faculty Astronomers and composed of typically five Faculty members, plus one Fellow representative. Committee members serve for no more than 3 years.

Selection criteria for the fellows

Scientific excellence of the applicant and of their proposed research programmes are the prime selection criteria used to constitute a 'long list'. Those on the long list are interviewed by telephone.

The committee then selects candidates highly motivated by ESO's mission, i.e. applicants that will benefit from being at ESO and whose presence ESO will profit from. These candidates constitute the 'short list'.

Ranking of the short list takes into account gender balance, variety of science topics, variety of nationalities (with a preference for Member State nationals).

In Chile, a specific emphasis is put on making sure that a potential fellow is ready to engage in duty work on the mountain as prescribed by the contract. In Germany, a check is made that potential fellows are enthusiastic about contributing to functional work in general. Beyond this, the selection for Garching Fellows itself does not depend on specific profiles or skills, unless an exceptional situation has been flagged by the Director for Science: the choice of the duty work is mostly in the hands of the Fellows and needs to be approved by the Head of the Office for Science in Garching.

Biases and Conflicts of Interest

Awareness of biases is developed prior and at the kick-off meeting following the guidelines issued by and with the help of Human Resources. Conflict of interests are declared up front by any members of the committee who has any connection with an applicant and the committee member must leave the room when that applicant's file is discussed.

Confidentiality

All discussions, exchanges, interviews are strictly confidential. Any information associated with the process and applicants is kept strictly within the committee.

Approval and offers

The Director for Science reviews and approves the ranked list of candidates. The FSSC's chair sends out the contract offers and prepares matching candidates on the short list in case of rejections, aiming to maintain gender balance, the variety of science topics and nationalities across the programme.

8.5 Fellows Development Programme

Having traced the development of many former and current ESO Fellows, we know that being an effective and successful scientist in the area of professional astronomy requires more than just technical and scientific knowledge in a specific field. We therefore aim at supporting the personal development of ESO Fellows to complement the current scientific part of the programme. The aim of the Fellows Development Programme is to deliver a programme over a defined period of time which results in the Fellows preparedness for employment in academia, international organisations or even industry.

The training programme takes advantage of the fact that Fellows stay between 3 and 4 years at ESO. The training itself aims at starting early after the Fellow's take-up-duty and allows them to go rapidly through the main modules so that the programmes benefits materialise as quickly as possible at this critical stage of their careers.

Most of the programme is delivered by an external provider. Partly, internal senior scientists and/or Human Resources participate at parts of the modules to support the learning.

The Fellows Development Programme covers the following aspects:

- Time and Priority management: refreshing basic skills to organise the work-life balance of the fellows and to structure their work effectively
- Project management and Management of People: many ESO Fellows will take multiple responsibilities in ambitious projects or lead a team after leaving the organisation. It is therefore important for them to have a basic understanding of people and project related skills.
- Scientific writing and Presentation skills: both are critical in a researcher's career and foster their communication skills. Communication skills are essential, not only for the research itself but also to develop a good network, be successful in the competition for grants, and get own projects selected.
- Effective networking: today's professional astronomers are increasingly benefiting from techniques developed in marketing strategies. Networking skills are a critical asset for modern scientists.
- Career Coaching: this module is delivered every year and covers the following aspects:
 - Creating winning CVs and Cover letters
 - Interview skills

Sessions are organised by the Office for Science and Human Resources and are delivered jointly by experienced science staff and Human Resources.