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Letter of Motivation

For the position:
Senior Scientist at the Department of Astrophysics
Reference number: 10863

Dear selection committee,

To begin boldly, if I may, I believe I am uniquely suited for this position. Over the past 5 years I have designed, developed, tested, and documented numerous pieces of astronomical software, covering a large range of instrumentation applications. I have built up a large network of contacts within ESO and the ELT instrument consortia, gained managerial experience, and have brought industry best-practices to these software projects.

SimCADO, the MICADO instrument data simulator, has been widely used both inside and outside the MICADO consortium. Variations based on the core code have been developed for both ELT/METIS (SimMETIS) and MAVIS for the VLT. It has also been adapted for the Figl observatory. I am the lead designer and developer of this code. I am also the lead designer and developer of the ScopeSim framework. This next generation instrument simulator is currently the most likely candidate to become the back-end software for not only the ELT observation preparation tool and advanced ETC, but also a possible back-end for a future ESO ETC 3.0 for all new ESO VLT instruments.

Since joining the consortium as a PhD student, I have been a very pro-active member of the MICADO team. Aside from fulfilling the product and documentation requirements for our work package, I have actively advertised the capabilities of our software. For example, I organised and ran a two-day workshop here in Vienna when SimCADO was first released to the MICADO science team. Over the last three years I have run several half-day sessions with various teams (MICADO science, METIS science, MICADO astrometry, MICADO DFS). Through these interactions I have developed, and continue to maintain, strong working relationships with many of the members of both the MICADO and METIS consortia.

More recently I was appointed leader of the ESO community working group for ELT instrument simulations. This working group aims to provide the specifications for a single piece of software capable of simulating the reduced science grade data from all the ELT instruments. By leading this effort I have gained a good working knowledge of many of the ESO software development procedures, as well as established working relationships with many colleagues inside the ESO

software department. A byproduct of leading this group is that I have also established good connections to both the HARMONI and MOSAIC teams.

Aside from my ESO/ELT-related software activities, I have experience with the control software and data reduction pipelines of several smaller telescopes. I have built two small remotely controlled “observatories” from scratch and installed them on the roof of my parents’ house in Melbourne, Australia. The systems were set up such that I could update both the control and reduction code remotely, and the data from the nightly observation runs were uploaded directly to my server in Vienna. While the Leopold-Figl telescope is obviously much more complex, I expect many of the fundamental systems to be similar in principle.

On the scientific side my interests lie in the process of star formation, and in particular the enigma that is the initial mass function. Given the sheer size of the ELT, and its ability to resolve extraordinarily dense stellar regions, it will be the tool that helps us answer the major open question of variations and environmental dependencies in the IMF. Leading up to ELT first-light, I want to push for part of the MICADO GTO to be allocated towards answering this question, as I believe it to be an easily attainable, yet high impact result.

During my doctoral programme I supervised three Bachelor summer students on projects relating to resolving star formation regions with the ELT. Since beginning my current Post Doc position I have taken on two Master students, whose projects are also centred around the future observation possibilities with the ELT. My current teaching duties involve lecturing at the faculty of Physics (EEA for BSc). Having grown up in Australia, my spoken and written English is native speaker level. Eight years living, working, and teaching in Austria have given me an excellent grasp of the German language as well.

In closing I would like to reiterate my opening statement. Not only would I bring a wealth of experience with regards to managing software projects in the context of large international consortia to the institute, I would also bring the industrial coding practices that I learnt during my brief interlude in the private sector. I have solid working relationships with many colleagues within the ESO software department and the ELT instrument consortia, and I am proactive about seeking new collaborations and connections. I have never simply just done the work, but always keep an eye on the global context of a project.

Thank you for taking time to consider my application. I believe both the department and I would benefit in a myriad of ways, were I to be awarded this position. I very much look forward to hearing from you.

Yours faithfully,

Kieran Leschinski