

Observational Astrophysics

16. Observing proposals

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1 Introduction

You will hear this many times: writing a proposal is easy, writing a good, successful proposal is hard!

The science that you want to do is the “star” (no pun intended) of the proposal. You will have to convince the panel that your proposed science case is exciting will bring progress in the understanding of the phenomenon that you want to study. You will have to convincingly show that the data you want to acquire has the technical specifications needed to address your question (i.e. the wavelength range, resolution, signal-to-noise, number of targets, selection of targets, observing strategy, etc, all have to be well thought and justified).

Your proposal needs to be self-contained, clear, and well written. A panel member evaluating ESO proposals has to read 50-100 proposals in a few weeks. From my experience, it is hard to give more than 15-30 minutes to each proposal. There is no time to dig into the references to learn more about the topic. If your proposal is confusing and badly written, the referee will have no time to think and wonder about what did you mean. The referee will need to move on to the next proposal and your chance will be lost.

2 Read this text

For a general overview of what is needed to write proposals for ESO telescopes, please read Kervella & Garcia (2007)¹.

You might also want to look at the slides and videos from the “La Silla Paranal Users Workshop - Part II: Optimising Phase 1 proposal planning and submission”, which was organized by ESO in March 2021 and took place on-line. See the program here: <https://eso.org/sci/meetings/2021/Users-Workshop1/program.html>

¹<https://ui.adsabs.harvard.edu/abs/2007NewAR...51..658K/abstract>

3 A few general tips

- The pressure on ESO telescopes/instruments (requested time by available time) is $> 3-5$. Most of the proposals are not going to get observing time.
- Start early, do not leave everything for the last minute. Mistakes happen when doing things in a hurry.
- Follow the instructions. Be sure that you understood when is the deadline (keep an eye for time zone or daylight saving time differences).
- Read the general information sections on the call for proposals. Read about the capabilities of the instrument(s) that you are considering to use.
- Choose the targets carefully. You have to justify why you chose them, why they are adequate for the science you want to do, and what is the number of targets that you really need. Check target visibility, so you are sure they can be observed during that period, with that telescope, for the total amount of time that you need.
- Think about your audience. Most likely, most of the people reading and judging your proposal are non-experts in your field. You need to write a proposal that is clear for non-experts.
- The abstract gives the first impression. Clearly state the question/problem you want to address, tell how you are going to do it, and tell why other people would care about answering that question/solving that problem. Read and your abstract several times during the writing and try to improve it each time.
- Again, be sure to show that your science is exciting and that your observations will provide progress in your field.
- Write in a clear language. If you have doubts about your English, have a colleague read the proposal. Think about what questions the referee might have when reading your proposal and answer them in the text.
- Be concise and be explicit. Do not assume that the referee will know or figure out what you mean. Make sure that the referee can quickly understand what you want to do and why it is important.
- Avoid the use of jargon or acronyms that are very specific to your field. If you need them, then explain what do they mean. Avoid the use of vague and overambitious statements.
- Statements that your data will have additional value for other science cases can be good and bad. Good if there is clear legacy value. Bad because it might seem you are not very convinced about your science case and need to show there are better uses for it than what you plan to do...
- Provide quantitative information to justify the time you requested.
- Do not forget to check the ESO archive to see if the data you want are already available. If there are existing observations, but you still need new data, then clearly justify why the old observations are not adequate.
- Explain the analysis and show simulations or previous data.

- You can add figures and/or tables. Choose them carefully to be relevant and support your case. Make them proper sized and of good quality, they should be readable on the screen of a small laptop and/or when printed in A4 paper.
- You do not need to be afraid to ask a large amount of time, if that is what you really need to address your science case (but clearly justify why you need that amount of time). Good referees will catch that you will not be able to answer the question with a smaller number of targets, or lower quality data.
- If there is a chance of non-detection, justify why that non-detection is still interesting and, for example, how it will allow you to rule out models.
- Many calibrations are taken care by the observatory and not charged to the time you are requesting. But do check the instrument manual. For certain applications, additional calibrations might be needed and those you will have to be include in your proposal.
- If you are resubmitting an unsuccessful proposal, show that you have improved and have taken the previous comments and feedback into account.
- The panel evaluating ESO proposals is clearly instructed to judge the scientific merit of the proposal. Technical feasibility is checked by the observatory staff for proposals that have been well evaluated. Nevertheless, if the panel feels that feedback about the technical feasibility is needed to judge the science, contact can be made with the observatory staff during the evaluation process.

4 Additional reading

Read the call for proposals. Here is a link for one example: <https://www.eso.org/sci/observing/phase1/p109/CfP109.pdf>. There is always important information there, and additional links for other details.

Here is the link for the ESO data archive: <http://archive.eso.org/cms.html>

References

Kervella, P. & Garcia, P. J. V. 2007, *New Astronomy Reviews*, 51, 658