WRITING OBSERVING PROPOSALS
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Observing proposals

- Goal of writing a proposal
- Parts/components of a proposal
- Be convincing – a good Scientific Justification
- Preparatory work
- Proposal needs to be clear
- Proposal needs to look good
- Learn from failed proposals
Goal of a proposal

- Show you know your stuff
  - You know the field
  - You have, or someone has had, a good idea
  - You know the novelty of what you propose to do
  - You know how to observe with the instrument
  - You know how you will get from data to knowledge
  - You have made good use of previous runs
Components of a proposal

- Title
- Abstract
- Scientific Justification
- Technical details
- Administration
  - Previous runs
    - State of data reduction; publications
Be specific

Be attractive, catch the eye of the committee
- Specific study will address a general question

The title needs to say it all

Examples
- The formation of elliptical galaxies
- Velocity dispersions of ten elliptical galaxies
- Dependence of the Fundamental Plane on age in elliptical galaxies
Abstract

- Say the entire justification here, in 10 lines of text.
- Write it at the start of the proposal writing
- Prepare to REwrite it entirely after the justification
Scientific Justification: function

- Motivation
  - Show there’s a problem that needs solving
    - Be specific. Speak only of the problem your observations will solve
    - Opening sentence!
  - Show what needs to be done to improve knowledge
  - Tell what observations you propose to do
  - Show how the observations will allow progress
- Show you control the subject
  - Choice of telescope, instrument
  - Technical demands of the programme; calibrations; seeing demands, etc.
  - Risks (balanced against potential gains)
- Be numerical throughout. No arm-waving.
Scientific Justification structure
Scientific Justification: structure

- Two main parts
  - Present the astrophysical problem
  - Show how you will address the problem

1. Motivation: a specific astrophysical problem
   - Including literature review; your own previous work

2. Proposed observations
   - The telescope/instrument is the best for the job
   - A few technical details on the observations
   - Explain how the data will help solve the problem described above

- Closing sentence
Now go back to the Abstract

- Compose the abstract from an extract of each important sentence in the scientific justification.
- Include a few numbers to show you will do actual measurements.
Technical details

- Explain details of the sample
- Show one or two examples (images; spectra)
- Be VERY specific with the ETC calculations
- Visibility; Moon requirements
  - Eg Virgo in bright time in March
- Give the total sum of needed time
  - Including calibrations
- One paragraph on the reduction/analysis
Administration section

- Previous observing runs
  - Status (reduction; analysis; publications)

- Backup programme
  - What if seeing/transparency are not good
Preparatory work

- Science definition
  - What others (and you) have done (read!)

- Can the observations to deliver the desired result?
  - S/N; exposure times
  - Spectral resolution needed; instrument setup(s)
  - Defining the sample (!@!)
    - Size of sample; biases; match to telescope aperture

- Takes about **one month** at least
  - Long group discussions
Clarity

- If there is room for doubt the panel will use it: don’t let them!

- Good simple arguments
  - Avoid “... but..., but...”

- Each sentence one argument. Each paragraph one argument.

- Entire SJ is one argument:
  - Close the circle: ‘Here is the problem, here is the solution’

- Typeset details to guide the eye
  - Bold face; underlines to show the structure; to show where the figures are cited in the text {\bf Figure 2}. Highlight the most important sentence (italics).
**Good looks**

- Impecable English
- Impecable figures
  - Line thickness. Colors catch the eye.
  - Clean, clear, complete figure captions.
    - Panel members do read the figure captions
- Impecable LaTeX
  - Learning LaTeX tricks is a good investment
- Needs 1-2 weeks work
Learning from previous proposals

- Keep a classified record of all previous proposals
- Keep copies of TAC feedback
- Believe the TAC feedback
- Don’t get discouraged with failed proposals
  - Submit again
- Understand the TAC constraints
  - Oversubscriptions (RA; moon phase)
  - Aim for easy proposals
- Publish results from previous proposals
A successful proposal

- A simple, well defined problem
- Yields results with a few nights of data
  - Publishable results each semester
- You establish yourself as expert in one field
  - Keep doing the same science for several semesters
- Work with a functional team
  - Mixture of senior, junior
- Shows enthusiasm; YOU KNOW your stuff!

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