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Applying for ESO Time – OPC Perspective

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With thanks to Nando Patat (ESO/OPO) and Emily Wisnioski (ANU/ASTRO-3D)



Overview



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- Life-Cycle of an ESO observing proposal
- What is the OPC?
- The OPC review process
- What makes a good proposal?
- Considerations specific for Large Programs
- Life on the OPC
- Questions?

What is the OPC?

(Observing Programmes Committee)



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■ 13 panels in 4 science categories

- A: Cosmology and Intergalactic Medium (2 panels)
- B: Galaxies (3 panels)
- C: ISM, star formation and planetary systems (4 panels)
- D: Stellar evolution (4 panels)

■ 6 members per panel

- 1 panel chair
- 1 panel co-chair

■ OPC:

- 13 panel chairs
- 3 panel co-chairs (2 in A, 1 in B)
- 1 OPC chair (not a panel member)

■ Total:

- 17 OPC members
- 72 panel members

Category Sub-Panels

- Typically 1-year term
- 2 days meeting only
 - Only sub-panel proposals and category LPs

“OPC”

- Typically 2-year term
 - 3.5 days meeting
- All LPs, Calib. Progs
- Feedback coordination & sign-off
- Chairs and Co-Chairs

What is the OPC?

Category Descriptions



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A - COSMOLOGY

- A1 Surveys of AGNs and high-z galaxies
- A2 Identification studies of extragalactic surveys
- A3 Large scale structure and evolution
- A4 Distance scale
- A5 Groups and clusters of galaxies
- A6 Gravitational lensing
- A7 Intervening absorption line systems
- A8 High redshift galaxies (star formation and ISM)

What is the OPC?

Category Descriptions



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B - GALAXIES AND GALACTIC NUCLEI

- B1 Morphology and galactic structure
- B2 Stellar populations: unresolved and resolved
- B3 Chemical evolution
- B4 Galaxy dynamics
- B5 Peculiar/interacting galaxies
- B6 Non-thermal processes in galactic nuclei (incl. QSRs, QSOs, blazars, Seyfert galaxies, BALs, radio galaxies, and LINERS)
- B7 Thermal processes in galactic nuclei and starburst galaxies (incl. ultraluminous IR galaxies, outflows, emission lines, and spectral energy distributions)
- B8 Central supermassive objects
- B9 AGN host galaxies

What is the OPC?

Category Descriptions



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C - INTERSTELLAR MEDIUM, STAR FORMATION and PLANETARY SYSTEMS

- C1 Gas and dust, giant molecular clouds, cool and hot gas, diffuse and translucent clouds
- C2 Chemical processes in the interstellar medium
- C3 Star forming regions, globules, protostars, HII regions
- C4 Pre-main-sequence stars (massive PMS stars, Herbig Ae/Be stars and T Tauri stars)
- C5 Outflows, stellar jets, HH objects
- C6 Main-sequence stars with circumstellar matter, early evolution
- C7 Young binaries, brown dwarfs, exosolar planet searches
- C8 Solar system (planets, comets, small bodies)

What is the OPC?

Category Descriptions



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D - STELLAR EVOLUTION

- D1 Main-sequence stars
- D2 Post-main-sequence stars, giants, supergiants, AGB stars, post-AGB stars
- D3 Pulsating stars and stellar activity
- D4 Mass loss and winds
- D5 Supernovae, pulsars
- D6 Planetary nebulae, nova remnants and supernova remnants
- D7 Pre-white dwarfs and white dwarfs, neutron stars
- D8 Evolved binaries, black-hole candidates, novae, X-ray binaries, CVs
- D9 Gamma-ray and X-ray bursters
- D10 OB associations, open and globular clusters, extragalactic star clusters
- D11 Individual stars in external galaxies, resolved stellar populations
- D12 Distance Scale - stars

OPC Terms of Reference



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“It is the function of the OPC to review, evaluate on scientific merit, and rank all proposals submitted in response to a call for the use of ESO observing facilities, and thereby advise the Director General on the distribution of observing time taking account of ESO's scientific policy.”

OPC Composition



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- OPC and panel members are selected on the basis of their scientific competence
 - Some allowance for gender balance and for distribution across member states (but not on a rigid basis)
 - Non-member state scientists of sufficient scientific stature can be OPC or panel members
 - ESO staff members cannot be OPC or panel members
- Candidates are proposed to the OPC Nominating Committee
 - Advisory to the DG
 - 5 members “of notable accomplishment in astronomy”
 - ESO Director for Science (Rob Ivison)
 - 4 astronomers from the community (including former OPC Chair)
 - [The nominations come mainly from the User Committee \(+\)](#)
- Term of service:
 - OPC members: 2 years (4 periods)
 - Panel members: 1 year (2 periods)
 - A fraction of the panel members are invited to serve an extended, 3rd term, to ensure sufficient continuity
 - High turnover ensures that, with time, a significant fraction of the community gains experience of the process from inside
 - Every semester about 30 members are replaced

OPC Composition



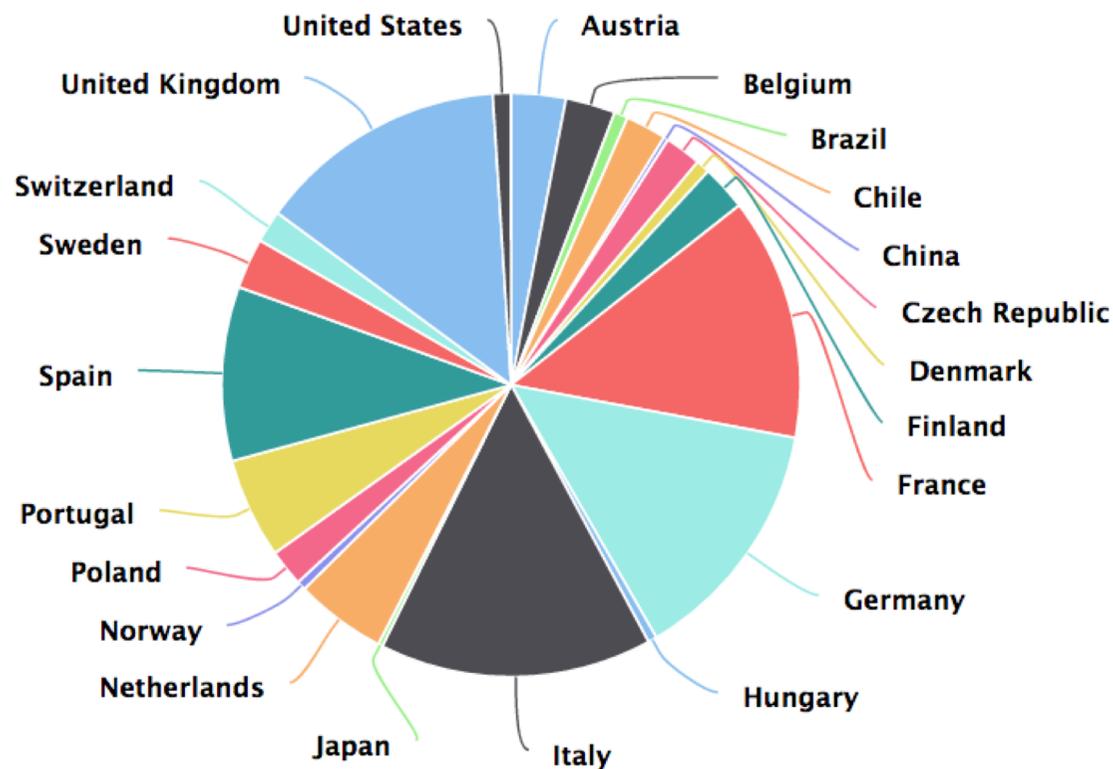
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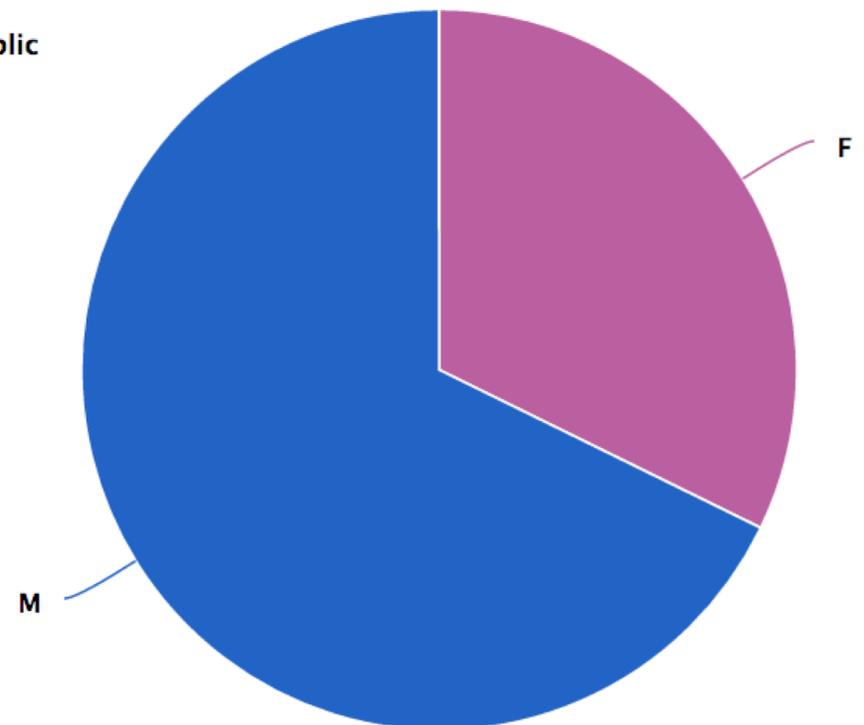
Committee Member Affiliations

For P97 to P101



Committee Member Genders

For P97 to P101



OPC Review Process

Applies to each sub-panel



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STEP 1: PRE-GRADING

- All proposals are 'pre-graded' by 3 panel members: one lead, two secondary
- Pre-grades are collected in advance of the meeting, and used to rank all proposals
- Proposals are **TRIAGED**:
 - Bottom ~third of proposals (but avoiding under-subscription) are removed from further discussion
 - Can be 'revived' by any panel member for discussion at meeting, e.g. based on large dispersion of grades
 - All panelists read the remaining proposals in advance of meeting
- Triage process reduces total number of proposals to be read and discussed by each panel
- Conflicts of Interest are mostly avoided in allocations to panels, but otherwise panelist removes themselves from discussion or grading

OPC Review Process

Applies to each sub-panel



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STEP 2: LIVE MEETING

- All sub-panels meet in-person for two days in Munich to discuss non-triaged proposals (~50)
- Usually around 10-15 minutes per proposal
- Lead reviewer presents (~5 min) followed by full panel discussion (~5 min) and 'secret' vote
- Average grades and St.Dev. are recorded
- Different 'runs' of a proposal (e.g. different instrument, config, conditions) can receive a separate grade (not common).
- Panels may review their final ranked list, re-discuss proposals etc., but changes are uncommon
- Technical questions can be raised and answered by OPO during the meeting

OPC Review Process

Grading Guidelines



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The grade scale to be used is defined as follows:

- 1.0** outstanding: breakthrough science
- 1.5** excellent: definitely above average
- 2.0** very good: no significant weaknesses
- 2.5** good: minor deficiencies do not detract from strong scientific case
- 3.0** fair: good scientific case, but with definite weaknesses
- 3.5** rather weak: limited science return prospects
- 4.0** weak: little scientific value and/or questionable scientific strategy
- 4.5** very weak: deficiencies outweigh strengths
- 5.0** unsuitable

The full grade scale should be used so as to ensure that the resulting ranking of the proposals is as meaningful as possible. Grades assigned by individual referees can and should be specified with one decimal digit (e.g. 2.7).

OPC Review Process

Grading Guidelines



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The following questions should be considered for the grading:

- Is there sufficient background/context for the non-expert (i.e., someone not specialized in this particular sub-field)?
- Are previous results (either by proposers themselves or in the published literature) clearly presented?
- Are the proposed observations and the Immediate Objectives pertinent to the background description?
- Is the sample selection clearly described, or, if a single target, is its choice justified?
- Are the instrument modes, and target location(s) (e.g., cosmology fields) specified clearly?
- Will the proposed observations add significantly to the knowledge of this particular field?

OPC Review Process

Applies to each sub-panel



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STEP 3: FEEDBACK

- The primary referee is responsible for writing feedback
 - He/she must make sure that he/she gathers all the necessary information during the panel meetings
 - Feedback comments are based on the discussion of the proposal at the meeting
 - For triaged proposals, they should be based on pre-OPC pre-grade reports

- Panel members send suggestions/corrections to primary referee
- Primary referees submit their comments within one week of the meeting
- Panel Chair reviews and 'approves' feedback
- Feedback is written without knowledge of scheduling*

- Guidelines for feedback:
 - Identify the **strengths** and the **weaknesses** of the proposal
 - Make suggestions regarding possible **improvements**

- OPO will add quartile, oversubscription, feasibility comments, etc.:

OPC Review Process

LARGE PROGRAMS



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Large Programs are treated differently

- Relevant sub-panels read all Large Programs
- An OPC member is assigned as lead reviewer
- Category sub-panels jointly meet to discuss LPs
- Vote Yes or No on whether LP should be considered by OPC – simple majority to pass
- All passed LPs are discussed on 3rd day by OPC
- Yes/No/Abstain vote, ranked by fraction ‘Yes’
- Ranked list is given as recommendation to DG (as all programs)

Proposal Writing

What makes a strong proposal?



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- Make the significance of your proposal clear
 - We often focus on ‘What?’ and ‘How?’ rather than ‘Why?’
 - For proposers, the ‘Why?’ is self-evident, and all the justification is in the details
 - For a reviewer, the main question is “**WHY is this important?**”
 - Make the General Motivation clear in the first paragraph
 - Make the current Big Problems clear in the second
 - Make the Big Questions you will attack clear in the third
 - Even ‘niche’ science should be able to connect to some bigger picture that the proposal will contribute to

Proposal Writing

What makes a strong proposal?



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■ Make your science understandable

- Make it as simple as possible for the panel to understand your science and proposal
 - remember there are broad topical panels
- Get to the point immediately
- Be explicit, do not assume that the panel will work out what you meant
- Avoid jargon, acronyms, complex language or arguments
- Be specific – vague statements raise suspicion and don't add value
- Reviewer will not track down crucial references, unless they are worried – give all necessary details up-front
- It is most likely that your proposal will be the 20th proposal to be read during that day...

Proposal Writing

What makes a strong proposal?



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■ Justify every aspect as fully as possible

➤ **Feasibility**

- Will you have small enough errors to make a firm conclusion?
- S/N estimations, mock simulations, experience?

➤ **Instrument**

- Could this be done with a different/smaller facility?
- Are there better instrument choices, or alternative (less subscribed) ones?
- Do you REALLY need MUSE to do this science...?

➤ **Sample Size**

- Could this be done with a smaller sample?
- What is the key driving argument for your sample size?

➤ **Timing**

- Why do you need this right now? Urgent? Timely?
- Why do you need ToO, X epochs, etc.

➤ **Observing Conditions**

- Do you really need these conditions? Can you use worse? RA distribution?

Proposal Writing

What makes a strong proposal?



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■ Write a consistent proposal

- Keep track of sample size, exposure times, overheads, total request etc.
- Make sure the goals match the requested observations
- Make sure numbers are consistent throughout, also with figures / captions
- There is a good chance one referee will pick up on any inconsistencies
 - **Easy way to criticize a proposal or raise doubts!**
- Helps to give yourself time, not be rushed, have time for feedback from Co-Is

Proposal Writing

What makes a strong proposal?



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- Use formatting to make your proposal readable
 - **Bold Fonts** act as space-effective headings to structure your text
 - White Space is a Good Thing – dense text is off-putting and tiring to read – Less is More
 - Figures should be legible, simple, annotated to show the main point of how the proposed observations will help
 - Captions should be used effectively
 - Target list captions can be used to give additional justification and show you did your homework

Proposal Writing

What makes a strong proposal?



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■ Take *all* the proposal sections seriously

- Every proposal section is an opportunity to show your competence
- Skipped or poorly-completed information discredits your proposal
- E.g. “Box 9a. *Are the data in the archive?*” – Take this one very seriously! Not just target overlap to consider. Can the science already be done with existing data, even if targets are different?
- “Box 9. *Previous use of ESO*” – This is your chance to show you have been productive. Not a strong science-ranking driver, but demonstrates credibility. Becomes important for larger requests, or long-running programs

Large Programs



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-
- Large Programs are defined as >100 hours spanning 1-4 periods
 - Up to 30% of VLT can be used for LPs
 - Must demonstrate potential to lead to a **major advance or breakthrough** in the field of study
 - **This is crucial**
 - Demonstrate that the science cannot be done any other way
 - A good organisational structure of the proposing team
 - Availability of resources and relevant expertise must be demonstrated
 - Must convince full OPC (mostly NOT from your field!) that it is worth recommending to DG

Life on the OPC

What does it involve?



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- Sub-panel members should expect 2-3 periods, reviewing ~50 proposals each time
- Time to review a proposal changes with experience, topic, etc. but on average will take you ~3-5 days to read, review, grade, comment proposals before meeting
- Meeting takes 1 week with travel included
 - = Overall, around 2 weeks of effort, per period
- OPC Chair has more proposals (esp. all LPs), and additional tasks - more like 2.5-3 weeks
- First time is a bit overwhelming – many documents to read, rules, policies, interfaces, proposals....
- Future periods are much smoother

Life on the OPC

Reasons to put yourself forward

(via User Committee Rep. Caroline Foster)



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- You learn a LOT from reading the proposals, including how to write a good proposal!
- You will meet people from across your field, so opportunity to network, meet collaborators, etc.
- Lets you see what is going on around the broader scientific community, how ESO works, etc.
- Valuable opportunity to demonstrate professional service, recognition of your expertise, etc.
- Exciting to be part of the process of science.
Many proposals are genuinely very inspiring!



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Questions?

Richard McDermid, Macquarie University

With thanks to Nando Patat (ESO/OPO) and Emily Wisnioski (ANU/ASTRO-3D)