ALMA Cycle 12:
Distributed Peer Review

Proposal Handling Team
May 2025

Overview

ALMA strives to conduct a fair, competitive, and transparent review process.

You play a crucial role to ensure a fair review process.

- peer review allows a broad community to bring a wide range of perspectives
- your reviews make the process fair, transparent, and community driver
- your contribution matters, and we thank you for it!

Goal of presentation

- outline the review process
- provide tips and strategies to write clear and constructive reviews

Basics of the proposal review process

One member of each proposal team* commits to participate in the review process

Each reviewer reviews 10 proposals (Proposal Set) for each submitted proposal

Two-stage process

Stage 1

- Reviewers identify conflicts of interest
- Reviewers rank proposals from 1 to 10 (best to weakest) and write comments

Stage 2

- Access anonymized reviews from other reviewers
- Ranks and comments can be modified

* Excluding Large Programs

Peer Review: A Critical but Challenging Task

Reviewing proposals requires significant time and attention

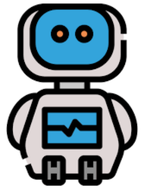
High-quality reviews require thoughtful analysis and clear communication

Biases can influence evaluations — we must strive to minimize them

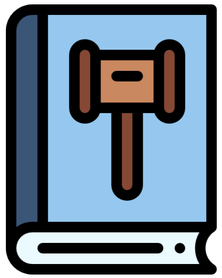
Key policies for reviewers

Ensuring Fairness, Confidentiality, and Integrity

Dual anonymous



Use of Artificial Intelligence



Code of Conduct

ALMA's Dual-anonymous Review Policy

Your responsibilities

- evaluate proposals based solely on the proposals scientific merit
- do not actively seek to identify the proposal team
- if a proposal breaks anonymity significantly, notify PHT in the Reviewer Tool
  - continue to evaluate the proposal based on scientific merit

How it helps

- reduces biases related to proposer identity

Using Artificial Intelligence in Proposal Review

Allowed

- minor edits to improve grammar or readability of your written reviews

Prohibited

- Relaying on AI to substantially revise or replace the content of your reviews
- Using AI to evaluate or rank the proposals
- Uploading **any portion of the proposal** to an AI tool (confidentiality risk)

Remember

- you are fully responsible for your review's accuracy
- AI cannot replace human scientific judgement

Complete policy at https://almascience.org/documents-and-tools/cycle12/alma-user-policies

Code of conduct

Judge fairly
- base evaluations only on scientific merit and actively mitigate biases

Confidentiality
- never share, discuss, or retain proposal materials

Provide constructive feedback
- be specific, professional, and avoid personal critiques

Declare conflicts on proposal assignments

Complete policy at https://almascience.org/proposing/alma-proposal-review/guidelines-for-reviewers

Reviewer timeline for Cycle 12

April 24
Proposal deadline

1) Proposal PI designates the reviewer in Observing Tool (OT)

April 29
Expertise & conflicts

1) Reviewer specify scientific expertise in Preferences
2) Reviewer provide list of conflicts of interest in Preferences
3) Deadline to provide alternative reviewer, if necessary

May 7 - June 4
Stage 1

1) Plenary sessions May 8-13
2) Declare any conflicts of interest in assigned proposals by May 14
3) Complete reviews by June 4 @ 15 UT **(MANDATORY!)**

June 5 - June 19
Stage 2

1) Read reviews from other reviewers
2) Modify your ranks and comments as needed

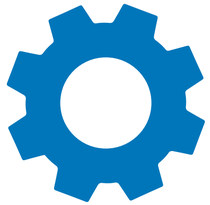
Stage 1: Conflicts of Interest

May 7 - June 4
Stage 1

1) Declare any conflicts of interest in assigned proposals by May 14
2) Complete reviews by June 4 @ 15 UT **(MANDATORY!)**

General guideline

- A conflict exists when your personal or professional interests could benefit from the acceptance or rejection of a proposal.



Conflicts flagged by JAO

- Your are PI or co-I on the proposal
- You have a conflict listed in the conflict list provided through the Science Portal

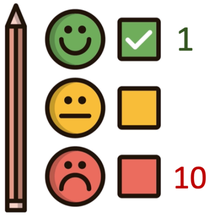
Conflicts you must declare

- You are proposing similar science on the same target
- You gave significant feedback to the proposal team during development
- Other reasons you believe there is a strong conflict of interest

Stage 1: Review assigned proposals

May 7 - June 4
Stage 1

1) Declare any conflicts of interest in assigned proposals by May 14
2) Complete reviews by June 4 @ 15 UT **(MANDATORY!)**



Rank the proposals from 1 (strongest) to 10 (weakest) based on scientific merit.

Write comments that summarize the strengths and weaknesses of the proposal

- comments will be sent to the PI verbatim.

Proposal associated with the Designated Reviewer will be canceled if the reviews are not submitted on time!

- extensions cannot be granted since Stage 2 starts on June 5.

The reviewer can be changed in exceptional circumstances by contacting the PHT via Helpdesk.
The Stage 1 deadline though remains the same.

Stage 2: Finalize the ranks and reviews

June 5 - June 19
Stage 2

1) Read reviews from other reviewers
2) Modify your ranks and comments as needed

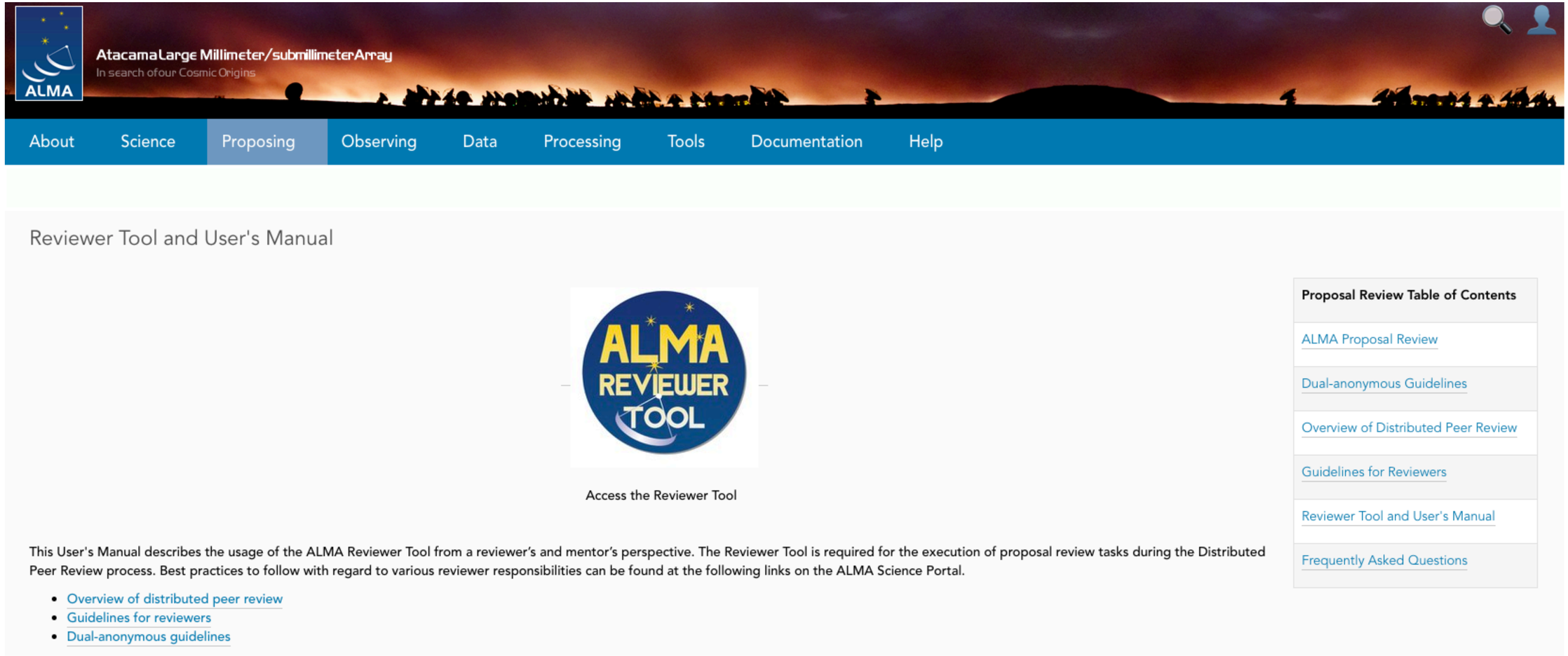
Read comments from other reviewers to see if you overlooked critical strengths or weaknesses.

Update your ranks and comments as needed.

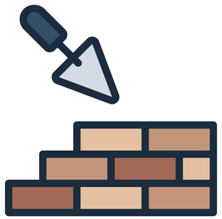
Take advantage of Stage 2, and learn from other reviewers!
If a reviewer does not complete Stage 2, the Stage 1 ranks/comments are considered final.

The Reviewer Tool

https://almascience.org/proposing/alma-proposal-review/how-to-use-the-reviewer-tool



The Importance of Reviews



Cornerstone of transparency

- your reviews are vital for ensuring a fair and open evaluation process.

Constructive feedback to proposers

- they help proposers refine future submissions and improve scientific outcomes

Share your insights with reviewers

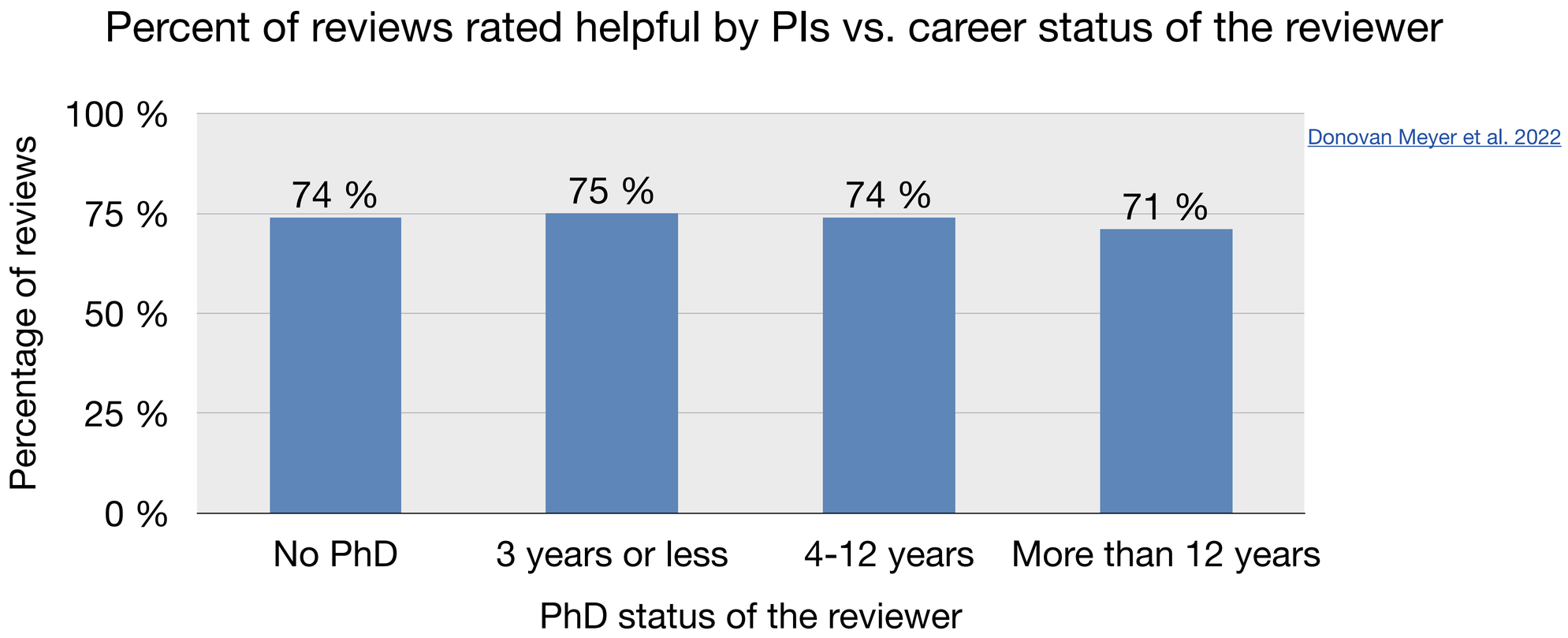
- your perspective adds value in Stage 2 by offering alternative viewpoints.

Impact on proposal selection

- every rank and review contributes to selecting the most compelling science

In distributed review, your words *are* the discussion. Make them count!

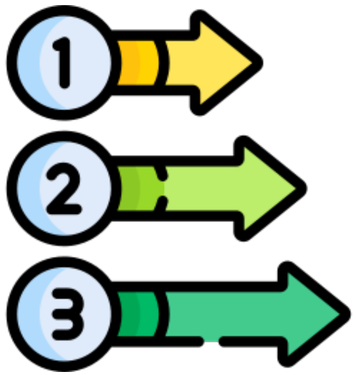
Everyone can write helpful reviews!



Donovan Meyer et al. 2022

Students and postdocs write just as helpful reviews as experienced astronomers.

Recommended steps for an effective review



Preparation

1. Allocate sufficient time
2. Mitigate unconscious bias
3. Understand the review criteria

Review proposals

4. Read the proposal thoroughly
5. Write constructive and clear reviews

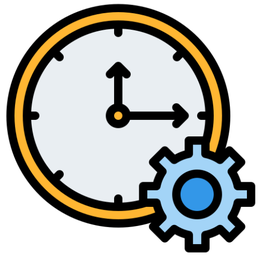
Prioritize proposals

6. Rank proposals against the criteria

Learn from other reviewers

7. Use Stage 2 to refine your review/ranks

Step 1: Allocate sufficient time



Allocate enough time to read the proposals and write the reviews

Reflect on your initial judgements before finalizing ranking

Re-read draft reviews to ensure clarity and accuracy

Expect to need 2-3 days to thoroughly review a Proposal Set

Step 2: Mitigating bias

Unconscious bias

- favoring or disavowing a proposal for reasons unrelated to its scientific merit, often without awareness

Common types of bias

- cultural or language bias
  - judging based on the proposer's writing style or language proficiency
- institutional bias
  - favoring proposals from prestigious institutions
- confirmation bias
  - giving undue weight to information that aligns with preconceived notions
- anchor bias
  - rely heavily on initial impression and neglect subsequent information

Why it matters

- bias undermines the fairness and integrity of the review process

Tips to mitigate bias

Awareness

- recognize that everyone is susceptible to bias
- however, awareness alone is not sufficient

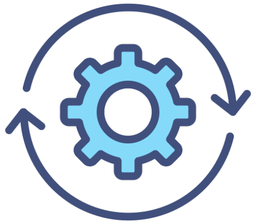
Practical strategies

- take your time
  - avoid snap judgements
  - review proposals carefully and revisit your initial impressions
- play devil's advocate
  - if you lean strongly in one direction, challenge yourself to consider the other perspective
- follow dual-anonymous guidelines
  - do not speculate on the identity or affiliation of the proposers

Step 3: Review Criteria

Familiarize yourself with ALMA's review criteria

- overall scientific merit and
- suitability of observations to achieve the goal



Apply criteria consistently across all proposals

Focus on scientific impact and the justification for the observations requested

- do not introduce additional criteria

Review criteria

Overall scientific merit

- Does the proposal clearly indicate which important, outstanding questions will be addressed?
- Will the proposed observations have a high scientific impact on this particular field and address the specific science goals of the proposal?
- Does the proposal clearly describe how the data will be analyzed in order to achieve the science goals?

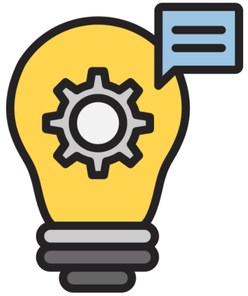
Suitability of the observations to achieve the scientific goals

- Is the choice of target (or targets) clearly described and well justified?
- Are the requested signal-to-noise ratio, angular resolution, largest angular scale, and spectral setup sufficient to achieve the science goals?
- Does the proposal justify why new observations are needed to achieve the goals?
- For Joint Proposals, does the proposal clearly describe why observations from multiple observatories are required to achieve the science goals?

Step 4: Read the proposal thoroughly

Carefully read all sections of the proposal

Highlight key points and take notes for easy reference during review writing



Ensure you understand the proposal’s science goals and methodology

Proposal Components

Abstract

Scientific Justification

Technical Justification

All three components are important and should be read by reviewers.

Technical Justification

ALMA Observing Tool

Observing Tool performs (most) technical validations

➡ reviewers can assume requested sensitivity, angular resolution, largest angular scale, and correlator setup are valid and can be achieved technically.

Reviewers should evaluate if setup is efficient to achieve science goals.

- Sensitivity
- Correlator setup
- Largest angular scale
- Angular resolution

The proposal should clearly justify the observational setup with references as appropriate.

Step 5: Write constructive and clear reviews

Be objective

- base your evaluation solely on the scientific and technical merit of the proposal, avoiding biases or external influences

Be constructive

- provide actionable feedback to help proposers improve future submissions

Be specific

- offer detailed comments supported by examples from the proposal

Structuring your review

Jets and outflows have been shown to be a common phenomenon during the protostellar phase, but details about the exact mechanism in the type of source proposed here are not fully known.

Strengths

The target is exceptionally well-justified, with its proximity providing excellent spatial resolution and its young age, high mass-loss rate, and clear outflow structure making it an ideal candidate for probing jet physics. The observations and proposed analysis will shed light on the physics of jet launching and accretion, leading to a better understanding of the evolution of this type of source.

Weaknesses

The proposal did not adequately explain how the proposed observations will test whether the observed phenomenon is a result of the particular outflow launching mechanism or other scenarios discussed in the proposal. For example, the proposers could include a more detailed discussion of the expected observational signatures that would distinguish between different mechanisms. Also, the proposal did not adequately explain why the requested number of molecular transitions are needed for the proposed excitation analysis, compared with the pros and cons of instead of observing fewer or different transitions.

A brief (~ 1 sentence) summary of the proposal is OK
- however, a proposal review is NOT a summary of the proposal
- focus on evaluation

Highlight specific strengths that justify the proposal's merit

Highlight weaknesses and offer suggestions for improvement
- ensure balance of strengths/weaknesses aligns with ranking

Avoid these common review pitfalls

Structure and focus

❌ **Don’t** : Overly summarize the proposal

✅ **Do** : Focus your review on strengths / weaknesses (1 sentence max for summary)

Specificity

❌ **Don’t** : “The methods are questionable.”

✅ **Do** : “The proposal should justify why Method A was chosen over Method B, given [specific drawback].”

Professional tone

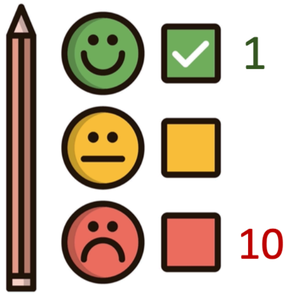
❌ **Don’t** : The proposal failed to address X.

✅ **Do** : The proposal could better address X by [suggestion].

Pitfall example: Before & After

DON'T	DO
"The observing strategy is poor."	Be specific on what is poor about the strategy. "Since this is a detection experiment, coarse angular resolution would be better to avoid resolving the source."
"It is unclear why these targets were chosen."	Indicate what you felt was missing from the description.. "The proposal should better justify why the selected targets are optimal compared to closer targets that would provide better spatial resolution."
"It is unclear how the data will be analyzed."	Indicate what aspects were unclear. "The proposal should better justify the number of spectral lines needed to estimate the excitation temperature and how accurately this constrains the temperature."
"The requested observing frequency could have been better justified."	Explain what could have been better. "Given the low expected gas temperatures, the proposal should better justify observing the higher rotational transitions over the lower transitions."

Step 6: Rank proposals against criteria



Use ALMA's review criteria to rank proposals based on

- scientific merit
- feasibility and alignment with stated goals

Ensure strengths/weaknesses are consistent with the rankings

- if you give a proposal a poor ranking but indicate no weaknesses, the PI will not understand the basis for the ranking

Review all proposals following the same criteria

Resubmissions

- **Policy** : if accepted, previously observed science goals will be descoped
- **Reviewer action** : focus on the new/unobserved science goals.

High-risk/high-impact

- **Policy** : reward well-designed proposals even if success is uncertain.
- **Reviewer action** : prioritize potential impact

Proposal size

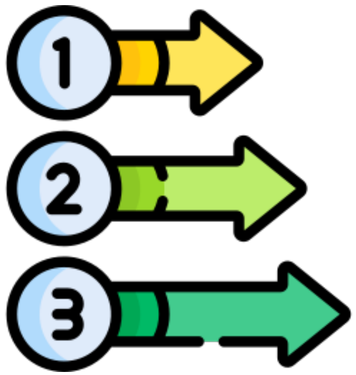
- **Policy** : do not adjust ranks based solely on time requested
- **Reviewer action** : judge whether the time is justified by the science

Step 7: Learn from others in Stage 2!

Read the strengths and weaknesses identified by other reviewers

If other reviewers identified significant strengths or weaknesses that you missed, you can modify your review and/or rank

Summary checklist



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7. Participate in Stage 2

We appreciate you for sharing your expertise and your time with us.

Thank you for contributing to ALMA's success!

Questions?