Tips for Writing ALMA Proposals

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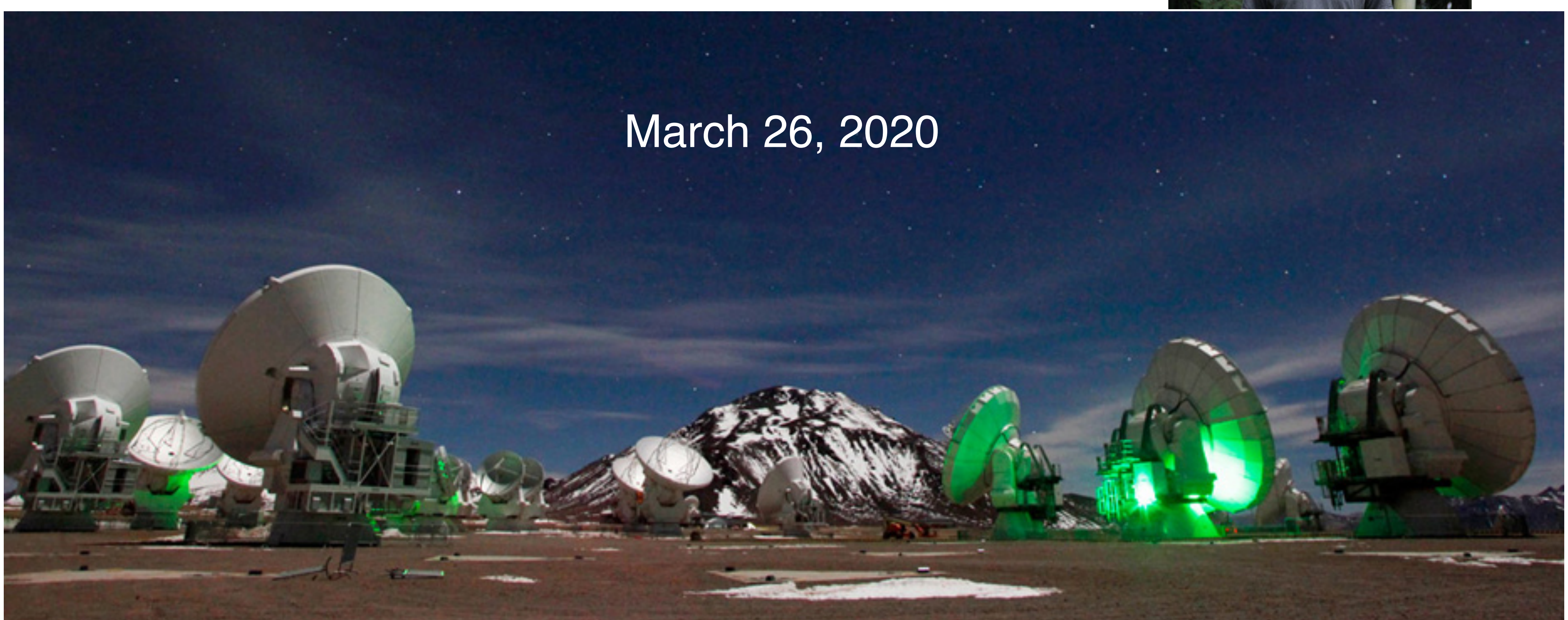

As a user, I would expect:

- Proposals are selected for their scientific merit and potential contribution to science
- Probably we all think our own proposals are great, but there are too many great proposals…
- Competition is very high!

My personal view of how to increase your chances of obtaining ALMA time

I will provide 10 hints on how to improve your proposals, based on my own personal experience as an ALMA user.

My personal view of how to increase your chances of obtaining ALMA time

1.- Start early (~2 months)

- Thinking in the idea for a long time and discussing with collaborators about it (before writing the proposal) really helped me.

- This gives me time to be up to date with bibliography as well.

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2.- Write the first draft as soon as you have a concrete idea (~1 month)

- Thus, collaborators will read the proposal with time to give useful comments (a week before the deadline most of comments will be superficial)

- If you do Galactic astronomy, ask a friend that works on extragalactic astronomy to read the proposal, and vice versa. The proposal needs to be clear for astronomers not familiar with the topic, but at least one TAC member will be an expert that will point out the very small details that you may miss…

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3.- Clarity (English proficiency)

- Very important problem if you are not an English native speaker. The proposal needs to be a coherent story.

- Proposal with low quality English can give a bad impression… e.g., it may looks like it was quickly written in the very last moment.

- If you cannot express yourself clearly, it may look you don't know about the topic you are proposing.

- Reviewers have to read ~100 proposals! This means that 20 min per proposal would results in a total of ~35 hrs, 5 hrs (no rest) per day during 7 days…if your proposal is unclear…. you will get a bad score (reviewers may not like to read proposals twice to understand what you want to do).

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4.- Big picture science

- We very often find an interesting source and want to keep studying it as much as we can. However, it may not call the attention from anyone else.

- It is important to find a strong motivation and convince other people that the study we have in mind is worth doing.

So, it is very important to put our project/idea in broader context to motivate other scientists (and be awarded observing time)

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5.- Direct Abstract

- Hopefully short: what is the problem and how to solve it (not a long abstract that can sound as an introduction). The abstract will give the first (hopefully good) impression to the referees.

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6.- Introduction

- Short introduction on the general topic and quickly go to the introduction necessary to understand the scientific questions (scientific motivation). Delineate here which have been the problems that keep the research questions unsolved and motivate how ALMA can overcome these problems.

- Make the scientific motivation clear by numbering 2-3 question that **MUST BE** addressed later in the proposal. e.g.:

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What I think is a good (focused) question:

a) *Is the magnetic field dynamically important compared to turbulence and gravity?*
- Later in the proposal: The magnetic field strength will be estimated by using… and the different energies will be compared by doing…

What I think would be a bad (vague) question:

b.) What are the initial conditions of high-mass star formation?

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7.- Source selection strategy

- One target? why one is enough? why 20? Survey? Clearly state the number of targets. Justify why the selected sources and why the number of sources.

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8.- Immediate objectives

- What exactly will be done to answer the questions mentioned in the introduction

- Demonstrate that the team is strong to carry out the project

- What can be done in the case of negative results

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9.- Proposed observations, strategy, and feasibility

- Feasibility: running models and CASA simulations
- Justify angular resolution
- Justify maximum recoverable scale
- Justify frequency setup (continuum and lines)
- Justify mosaic
- Justify ACA (7m and TP)
- Justify the sensitivity
- Why ALMA?

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10.- Proposal style

- Make the proposal as short as you can (including everything you need, of course)

- Use bold or underline text for key information and heading to organize ideas, e.g.:

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5. Immediate objectives

1.) Alignment of the B-field at different size scales. If the B-field is dynamically important compared to turbulence during the gas accumulation process in HMSF, the ambient field direction derived by NIR polarization should be preserved at the core scales. Our observations will provide the first detections of the B-field morphology toward high-mass prestellar cores.

2.) B-field strength. Both cores have virial parameters of $\sim$0.3. The core accretion model is inconsistent with this observational result, unless B-fields of 1.5 mG are included in the virial analysis. The CF method requires measurements of the density, velocity dispersion, and PA dispersion. The density and velocity dispersion are already known from SMA-EVLA observations. To determine the PA dispersion, we will follow the prescription for interferometric observations given by Houde et al. (2016), who use a statistical approach to determine the angular dispersion function.

3.) RATs. The detection of the predicted polarized emission in a starless core can add further confirmation to dust alignment via radiative torques at a much higher density regimen than previously done. Using the observed B-field morphology-strength and the degree of polarization, we will put firm constraints on our simulations and the feasibility of RATs in high-mass prestellar cores. A *non–detection* of polarized

Good luck!