



@ambrozona

# *How to write an ALMA proposal?*

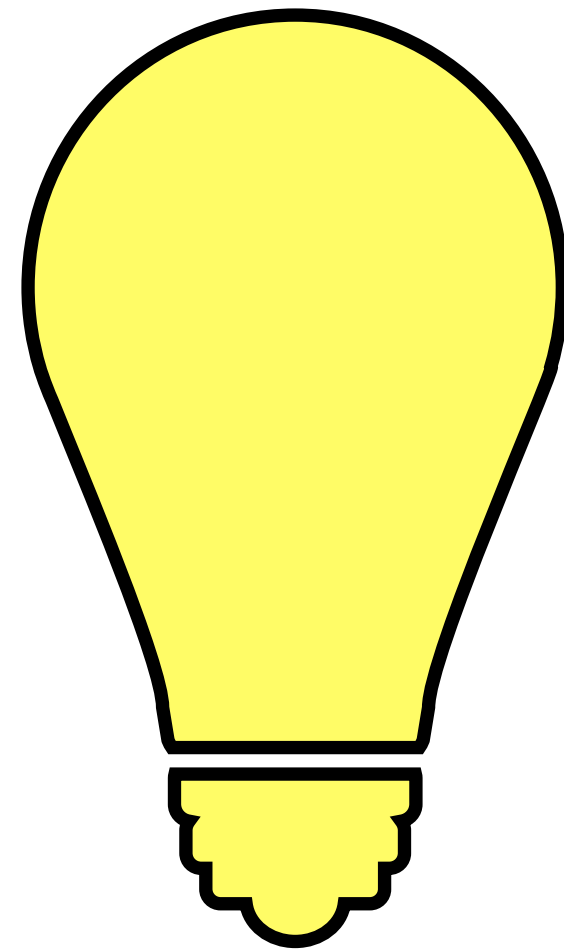
## **Łukasz Tychoniec**

*ALMA Local Expertise GROup - ALLEGRO*



EUROPEAN ARC  
ALMA Regional Centre || Allegro

# 1. Idea



## 1. Idea

- **new**
  - *Are you trying to make progress?*
- **compelling**
  - *Is it clear to you?*
- **exciting**
  - *Why should others care?*

## 2. Strategy



## 2. Strategy

- **feasible**
  - *Is the science achievable with ALMA?*
  - *Is my target observable with ALMA?*
- **reasonable**
  - *Is this doable in finite time?*
- **necessary**
  - *Can the archival data answer your question?*
  - *Is ALMA the best telescope for this particular question?*

# 3. Narrative



## 3. Narrative

- **background**
  - *Is the subject well-researched?*
- **impact**
  - *How will the field be affected?*
- **urgency**
  - *Why now?*

# The main components of the proposal

1. Abstract
2. Scientific Justification
3. Observing Tool setup and Technical Justification

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## **1. Abstract**

2. Scientific Justification

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# Abstract structure example

Proposal 2019.1.00061.S, PI: Richard Ellis

Determining the period when the first galaxies emerged from a dark intergalactic medium represents a fundamental milestone in assembling a coherent picture of cosmic history. Recent surveys of  $z \sim 7-9$  galaxies have revealed a population whose red Spitzer IRAC colours either indicate contamination from intense optical emission lines or the presence of a Balmer break due to a mature stellar population. Accurate redshifts are needed to distinguish between these two hypotheses. One example was confirmed via [O III] emission with ALMA at  $z=9.11$  whose Balmer break indicates the onset of star formation occurred as early as  $z \sim 15 \pm 2$ . We propose to follow up the only further similar  $z \sim 9$  candidate accessible with ALMA to determine if this initial result is a representative indicator of when galaxies first emerged from the Dark Ages.

Background

Problem

Objective

Strategy

Significance

[https://almascience.eso.org/euarcdata/itrain13/HowToWriteReview\\_ITRAIN.pdf](https://almascience.eso.org/euarcdata/itrain13/HowToWriteReview_ITRAIN.pdf)

# Abstract considerations

- It should be enough to understand **what, how,** and **why** you want to observe with an abstract alone
- It is the **first impression** that often sets the mood with which the reviewer will read the proposal
- Convey: **excitement, urgency, clarity**

# The main components of the proposal

1. Abstract
- 2. Scientific Justification**
3. Observing Tool setup and Technical Justification

# Scientific justification: recommended structure

## 1. Introduction (~1 page)

- big picture
- identifies the problem, open question
- key references
- summary of the proposed solution to the problem

**Overall:**  
~ 2 pages of text  
~ 2 pages of figures/tables

## 2. Methodology (~2.5 pages)

- What will be observed? Target(s) description/sample selection
- What specific data (lines/continuum/polarization) is required and why
- What analysis techniques will be used (models/simulations), and what is the path to science?
- What is the plan for interpretation and the expected impact? Significance of non-detections.

## 3. Description of observations (~0.5 pages)

- Essential points only, extensive description can be left for Technical Justification