Observing Proposals

(Major) components of a proposal

1. Proposal info (abstract, PI, instrument, targets)

2. Scientific justification

3. Experimental design

4. Technical description (+instrument configuration)

Scientific justification

- Read 1-2 scientific justifications from example proposals. Break it down into its components. What are they? How does the progression of ideas work?

Scientific justification

- **First sentence** = can be the hardest part to write
  Generally focused on Bigger Picture
  Should be compelling, bring the audience in
  Be careful of hyperbole!

Danger!
Don't linger!

- **First paragraph:** focused on bigger picture
  Provides a broader context, but stays somewhat focused
  Address the status of current observations, models, theory
  Emphasize open questions, establish need for your program
- **Middle:** focus on your program
  How your program will address open questions
  Don't provide too many details (save them for the TJ)
- **End:** give some direct statements about what your observations will accomplish

Figures

- Look at the figures in several example proposals. What rules can you identify? What is effective?

Figures

- General rules apply.
  Large enough, good resolution, no clutter, etc.
  Axes should be clearly labeled and defined.
  They should be accessible (e.g., colorblind friendly)
- You can use figures from other publications, but they should be cited.
- Captions are a good way to include information that you couldn’t include in the main text.
- The figures should be cited in the main text.

Experimental Design/Technical Justification

- Just explain:
  Why this measurement? How does it reach stated goals?
  Why these targets?
  Chosen instrument configuration.
  S/N and exposure times.
  Observing conditions.

Examples

A

In conclusion, spectroscopy of these targets will provide the first spectroscopic characterization of these objects, identifying targets for follow-up high resolution observation and providing insight into the host galaxy.

B

This program will achieve three specific observational goals:

1. Radial velocity that will establish galaxy membership.
2. Metallicities of confirmed members that will demonstrate the chemical enrichment history of the galaxy.
3. Numbers of confirmed clusters that will establish the cluster formation efficiency of the host galaxy.

Examples

C

These observations of isolated galaxies will test models in new regions of parameter space that have not yet been explored.

D

These observations will provide the first tests of the ΛCDM model of the Universe by extrapolating Milky Way results into new regimes of parameter space.

Examples

E

It is well established that low-mass dwarfs have larger and more active spots than stars like the Sun. We request time to monitor a set of M dwarfs to detect spots and flares.

F

Observations and modeling have demonstrated that M dwarfs appear to have larger and more active spots than the Sun (e.g., PI et al. 2012; 2020). Co-I et al. (2017) have also used models to demonstrate that these spots have a characteristic timescale of X units covering Y% of the surface with duplicate spots in the north and south. We request time to monitor more M dwarfs to detect additional spots and flares.

Examples

G

We propose radial velocity monitoring of 68 stellar systems to identify possible exoplanet hosts. These systems are all young and have known debris disks. With detection or non-detections in ~50 systems, we will be able to perform statistical tests of the occurrence rate of giant exoplanets.

H

We ask for time to monitor a handful fo bright stars in the Galactic center to see if any posses exoplanets. The presence of exoplanets in such a complex region could have important implications for the orbits of the stars.

Improve this statement

This program will investigate the composition of interstellar gas in a sample of low-redshift galaxies. With a sufficiently large sample, we hope to be able to see differences between galaxies in different environments. These results could be crucial for revolutionizing our understand if galaxy and star formation.

Technical examples

A

Exposure time have been calculated to achieve S/N ratios >100 for all targets. Fig. 3 demonstrates that this resolution and S/N are sufficient to detect and measure the strengths of spectral lines from Na and Mg with typical random uncertainty <0.1 dex for an individual Mg line.

B

Exposure times are selected to achieve S/N ratios of at least 100, which is necessary to achieve our program goals.

Improve this statement

Our proposed target will transit on October 31 at 00:00 hours, which is bright time. We expect that the high sky background will not affect our observations. We also expect that we can observe even with poor seeing.