NOAO Observing Proposal
Date: October 16, 2017

Panel: *For office use.*
Category: Star Clusters

A Sample NOAO Telescope Proposal

Abstract of Scientific Justification *(will be made publicly available for accepted proposals)***:**
This sample proposal offers tips on how to prepare your telescope proposal for observing on facilities available through NOAO. With the NOAO Proposal Form, you can apply for time on the Gemini North and South Telescopes, the Hobby-Eberly Telescope, the 6.5-m telescope of the MMT Observatory, and the telescopes at the Cerro Tololo Inter-American Observatory and the Kitt Peak National Observatory.

Your abstract is the review panel's window into your proposal: the abstract provides an initial impression about your proposal and it is also what panel members refer to at the review meeting to remind themselves about the content of your proposal. Take advantage of the opportunity to give the panel members an understandable and concise summary of what you want to do, and why. Write your abstract so that non-specialists can quickly understand why the observations you want to make are important.

Summary of observing runs requested for this project

Run	Telescope	Instrument	No. Nights	Moon	Optimal months	Accept. months
1	CT-4m	DECam	2	grey	Mar - Apr	Feb - Jul
2	AAT	AAOmega + 2dF	3x0.5	dark	Feb - May	Feb - Jul
3	CT-4m	COSMOS	3	grey	Jun - Jul	May - Jul
4	WIYN	HYDRR + STA1	2	grey	Feb - Feb	Feb - Feb
5						
6						

Scheduling constraints and non-usable dates *(up to six lines).*

Please avoid Nov. 7 (Election Day)
The MMT run should follow the KP-4m run by at least a week.
The CT-1.5m run must be scheduled May 28 - Jun 1 to catch the eclipse.

Investigators *List the name, status, and current affiliation for all investigators. The status code of "P" should be used for all investigators with a Ph.D. or equivalent degree. For graduate students, use "T" if this proposal is a significant part of their thesis project, otherwise use "G".*

PI: George W. Bush **Status:** O **Affil.:** Office of the President
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Email: president@whitehouse.gov Phone: (202) 456-1414 FAX: (202) 456-2883

CoI: Condoleeza Rice **Status:** P **Affil.:** Dept. of State
CoI: Nancy Pelosi **Status:** O **Affil.:** U.S. House of Representatives

Scientific Justification *Be sure to include overall significance to astronomy. For standard proposals limit text to one page with figures, captions and references on no more than two additional pages.*

The scientific justification should explain the overall goals of your program in the context of your field, as well as the importance of your program to astronomy. Writing a good scientific justification is an art. It takes skill and practice. And it requires a good scientific idea. This last you must supply but a few general guidelines about proposal writing might still be helpful...

- State succinctly and clearly the problem you are trying to solve and the progress that will be made toward doing so if the proposed observations are successful. If the review panel members have to work hard even to understand what you want to do, they are unlikely to be sympathetic to your proposal.
- Explain clearly why the project is important and how it relates to the broad context and important issues in your field. Many proposals focus too tightly on a specific observational goal (e.g. "measure the velocity dispersion of this cluster of galaxies") without explaining why it is important or how it relates to a significant question about the Universe.
- Be specific. If your observations will "constrain theoretical models," then discuss what will be constrained and why those constraints matter. Make sure the review panel understands exactly why the observations you propose will make a difference in your field, and exactly how the observations will refine or require changes in the theory.
- Keep it simple. Try to focus on the central idea of your proposal. Complex arguments are hard to explain and hard for the panel members to follow. Distracting tangential arguments obscure the theme of your proposal.
- Include a figure to help explain what you want to do. Sample data or model predictions shown in a figure often help clarify complex arguments for the panel members. A sample figure is included below with this proposal.
- Keep it short. Never exceed a page for the text of the scientific justification, and never reduce the font size. It may even help to be a little under a page, and increase the font size a little! Organize your presentation with paragraphs, headings, and bullets so it is easy to read.
- Include and check references as appropriate [Bell et al., 1996].
- Print out the proposal to be sure your LaTeX is correct. Proofread it. Make sure the proposal is correct scientifically, technically, and grammatically. Run a spellchecker.

Finally, when an opportunity arises, volunteer to serve on a TAC or review panel. The experience is a great help in learning how to write a good scientific justification.

References

D. J. Bell, C. D. Biemesderfer, J. Barnes, and P. Massey. An Automated System for Receiving KPNO Proposals by Electronic Mail. In G. H. Jacoby and J. Barnes, editors, *Astronomical Data Analysis Software and Systems V*, volume 101 of *Astronomical Society of the Pacific Conference Series*, page 451, 1996.

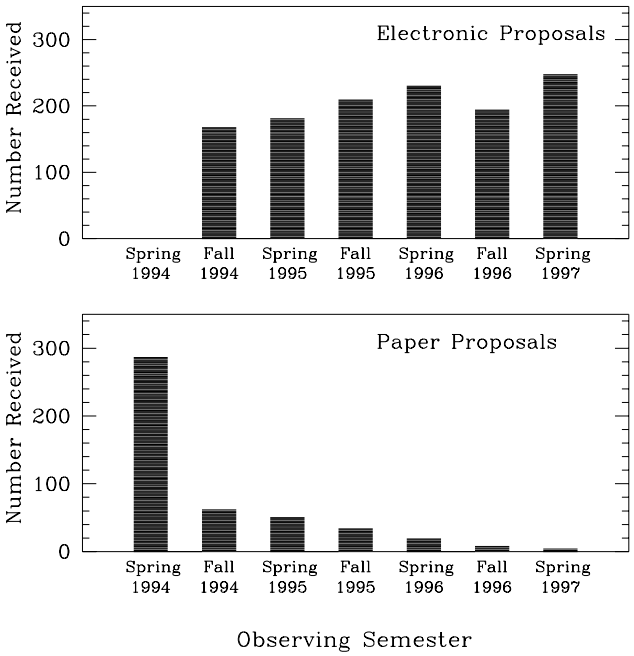

Figure 1: This sample figure shows how quickly electronic proposals for telescope time replaced paper ones.

Experimental Design *Describe your overall observational program. How will these observations contribute toward the accomplishment of the goals outlined in the science justification? If you've requested long-term status, justify why this is necessary for successful completion of the science. (limit text to one page)*

The review panel looks to this section to find out about the overall strategy of your observational program. Why do you need the telescopes and instruments you request? How are your targets selected? Why do you need spectroscopy or imaging, and what measurements will you make from the data? Why is your approach to be preferred over some other approach, what must the minimum sample size be to achieve your scientific goals (and why), and why are your observations likely to be better than previous work in the field?

Proprietary Period: 18 months

Use of Other Facilities or Resources *(1) Describe how the proposed observations complement data from non-NOAO facilities. For each of these other facilities, indicate the nature of the observations (yours or those of others), and describe the importance of the observations proposed here in the context of the entire program. (2) Do you currently have a grant that would provide resources to support the data processing, analysis, and publication of the observations proposed here?"*

We are interested in understanding how observations made through NOAO observing opportunities complement or support data from other facilities both on the ground and in space. We will use this information to guide the evolution of the NOAO program; it will not affect the success of your proposal in the evaluation process.

Please describe how the proposed observations complement data from other facilities, including private observatories and both ground- and space-based telescopes. In addressing this question, take a broad view of your research program. Are the data to be obtained through this proposal going to help select samples for detailed observations using larger telescopes or from space observatories? Are these data going to be directly combined with data obtained elsewhere to test a hypothesis? Will these observations have relevance to other observations, even though the proposal stands on its own? For each of these other facilities, indicate the nature of the observations (yours or those of others), and describe the importance of the observations proposed here in the context of the entire program.

Long-term Details *If you are requesting long term status, list the observing runs (telescope, instrument, number of nights) requested in subsequent semesters to complete the project.*

We request longterm status on the CT-1.5m and Cassegrain spectrograph with 5 nights each semester for 3 additional semesters.

Previous Use of NOAO Facilities *List allocations of telescope time on facilities available through NOAO to the PI during the last 2 years for regular proposals, and at any time in the past for survey proposals (including participation of the PI as a Co-I on previous NOAO surveys), together with the current status of the data (cite publications where appropriate). Mark with an asterisk those allocations of time related to the current proposal. Please include original proposal semesters and ID numbers when available.*

In this section, you should simply list the PI's recent telescope allocations at any facilities available through NOAO, what's been done with the data, and what publications have resulted or are in progress. It is, of course, helpful if the panel members can see that you do publish the results from previous observing runs in a timely way.

This is also a good place to highlight important results from previous runs with a sentence or two.

Observing Run Details for Run 1: CT-4m/DECam

Technical Description *Describe the observations to be made during this observing run. Justify the specific telescope, the number of nights, the instrument, and the lunar phase. List objects, coordinates, and magnitudes (or surface brightness, if appropriate) in the Target Tables section below (required for queue and Gemini runs).*

Create a separate "run" page for each telescope/instrument combination being used for your project.

Instrument Configuration

Filters: ugriz'	Slit:	Fiber cable:
Grating/grism:	Multislit: no	Corrector:
Order:	λ_{start}:	Collimator:
Cross disperser:	λ_{end}:	Atmos. disp. corr.:

R.A. range of principal targets (hours): 12 to 13

Dec. range of principal targets (degrees): 10 to 15

Special Instrument Requirements *Describe briefly any special or non-standard usage of instrumentation.*

Target Table for Run 1: DECam

Obj ID	Object	α	δ	Epoch	Mag.	Filter	Exp. time	# of exp.	Lunar days	Sky	Seeing	Comment
777	**NGC 7078**	**21:30.1**	**12:10**	**2000.0**	**18.6**	**g**	**1000**	**5**	**4**	**phot**	**1.5-2.0**	**globular cluster**
778	**NGC 7078**	**21:30.1**	**12:10**	**2000.0**	**18.6**	**r**	**1000**	**5**	**4**	**phot**	**1.5-2.0**	**same cluster**
779	**NGC 7078**	**21:30.1**	**12:10**	**2000.0**	**18.6**	**i**	**1000**	**5**	**4**	**phot**	**1.5-2.0**	

Observing Run Details for Run 2: AAT/AAOmega + 2dF

Technical Description *Describe the observations to be made during this observing run. Justify the specific telescope, the number of nights, the instrument, and the lunar phase. List objects, coordinates, and magnitudes (or surface brightness, if appropriate) in the Target Tables section below (required for queue and Gemini runs).*

A small number of nights are available each semester with AAT and CHARA through exchange and public access programs. Please see http://www.noao.edu/gateway/aat/ and http://www.naoo.edu/gateway/chara/ and the linked pages at these observatories for additional information. Since these resources tend to be highly oversubscribed, it can be helpful to mention in the proposal if your program could benefit from a smaller partial allocation or make use of brighter time than requested.

Instrument Configuration

Filters:	Slit: 1”	Fiber cable:
Grating/grism: 300g/mm	Multislit:	Corrector:
Order: 1	λ_{start}: 4000	Collimator:
Cross disperser: no	λ_{end}: 9000	Atmos. disp. corr.:

R.A. range of principal targets (hours): 12 to 17

Dec. range of principal targets (degrees): 40 to 50

Special Instrument Requirements *Describe briefly any special or non-standard usage of instrumentation.*

Observing Run Details for Run 3: CT-4m/COSMOS

Technical Description *Describe the observations to be made during this observing run. Justify the specific telescope, the number of nights, the instrument, and the lunar phase. List objects, coordinates, and magnitudes (or surface brightness, if appropriate) in the Target Tables section below (required for queue and Gemini runs).*

For this run on KPNO's Mayall 4-m telescope with the KOSMOS spectrograph plus multislits, you might want to explain why you have chosen the indicated grating and wavelength region, what your S/N ratio and resolution requirements are, how many multi-slit plates you will need, where the coordinates will come from, what you estimate the exposure times will be, and why you need the amount of time requested to complete the program.

The "Range of RA/Dec of Principal Targets" fields should be filled in even if you'll also be listing specific coordinates in a target table. This information is used to constrain the scheduling process, so rounding is fine.

Instrument Configuration

Filters: GG-495	Slit:	Fiber cable:
Grating/grism: BL-450	Multislit: yes	Corrector:
Order: 2	λ_{start}: 5000	Collimator:
Cross disperser:	λ_{end}: 6000	Atmos. disp. corr.:

R.A. range of principal targets (hours): 19 to 20

Dec. range of principal targets (degrees): 10 to 20

Special Instrument Requirements *Describe briefly any special or non-standard usage of instrumentation.*

Target Table for Run 3: CT-4m/COSMOS

Obj ID	Object	α	δ	Epoch	Mag.	Filter	Exp. time	# of exp.	Lunar days	Sky	Seeing	Comment
	NGC 6205	**19:45:12.8**	**13:30:40.3**	**1950.0**	**16-19**				**12**		**0.7**	
	NGC 6205	**19:45:12.8**	**13:30:40.3**	**1950.0**	**16-19**				**12**		**0.7**	
	NGC 6205	**19:45:12.8**	**13:30:40.3**	**1950.0**	**16-19**				**12**		**0.7**	

Observing Run Details for Run 4: WIYN/HYDRR + STA1

Technical Description *Describe the observations to be made during this observing run. Justify the specific telescope, the number of nights, the instrument, and the lunar phase. List objects, coordinates, and magnitudes (or surface brightness, if appropriate) in the Target Tables section below (required for queue and Gemini runs).*

For this run with the red camera on Hydra, you may want to explain why you select a particular grating/wavelength region/resolution. For WIYN queue observations, you should describe in detail a per-exposure figure of merit that the queue observers can use to determine if an individual observation is adequate for your needs. You should describe any special calibration requirements (e.g. do you need a daylight sky spectrum? Twilight flats?).

Instrument Configuration

Filters:	Slit:	Fiber cable: red
Grating/grism: 316 l/mm	Multislit:	Corrector:
Order: 1	λ_{start}: 4000	Collimator:
Cross disperser:	λ_{end}: 8000	Atmos. disp. corr.:

R.A. range of principal targets (hours): 8 to 20

Dec. range of principal targets (degrees): -10 to 45

Special Instrument Requirements *Describe briefly any special or non-standard usage of instrumentation.*

Target Table for Run 4: WIYN/HYDRR + STA1

Obj ID	Object	α	δ	Epoch	Mag.	Filter	Exp. time	# of Lunar exp.	days	Sky	Seeing	Comment
777	**NGC 6205**	**19:45:12.8**	**13:30:40.3**	**1950.0**	**16-19**	**GC-495**	**1000**	**5**	**4**	**phot**	**0.7**	**globular cluster**
778	**NGC 6205**	**19:45:12.8**	**13:30:40.3**	**1950.0**	**16-19**	**GC-495**	**1000**	**5**	**4**	**phot**	**0.7**	**same cluster**
779	**NGC 6205**	**19:45:12.8**	**13:30:40.3**	**1950.0**	**16-19**	**GC-495**	**1000**	**5**	**4**	**phot**	**0.7**	