NOAO Observing Proposal *Longterm proposal* **Panel:** *For office use.*
Date: September 20, 2001 **Category:** Star Clusters

A Sample NOAO Telescope Proposal

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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	HET	LRS	2	grey	Mar - Apr	Feb - Jul
2	MMT	BCHAN	3x0.5	dark	Feb - May	Feb - Jul
3	KP-4m	RCSPM + T2KB	3	grey	Jun - Jul	May - Jul
4	WIYN	HYDRR + T2KC	2	grey	Feb - Jul	Feb - Jul
5	CT-1.5m	CSPEC + L1K	5	grey	Feb - Jul	Feb - Jul
6	GEM-SQ	Phoenix	1.8	bright	Feb - Jul	Feb - Jul

Scheduling constraints and non-usable dates *(up to four 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.
Gemini Phoenix time also requested from UK TAC (10 hours UK, 18 hours US, 28 total).

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.
- 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

Bell, D., Biemesderfer, C. D., Barnes, J., & Massey, P. 1996, in Astronomical Data Analysis Software and Systems V, A.S.P. Conf. Ser., Vol. 101, eds. G. H. Jacoby & J. Barnes (San Francisco: ASP), 451

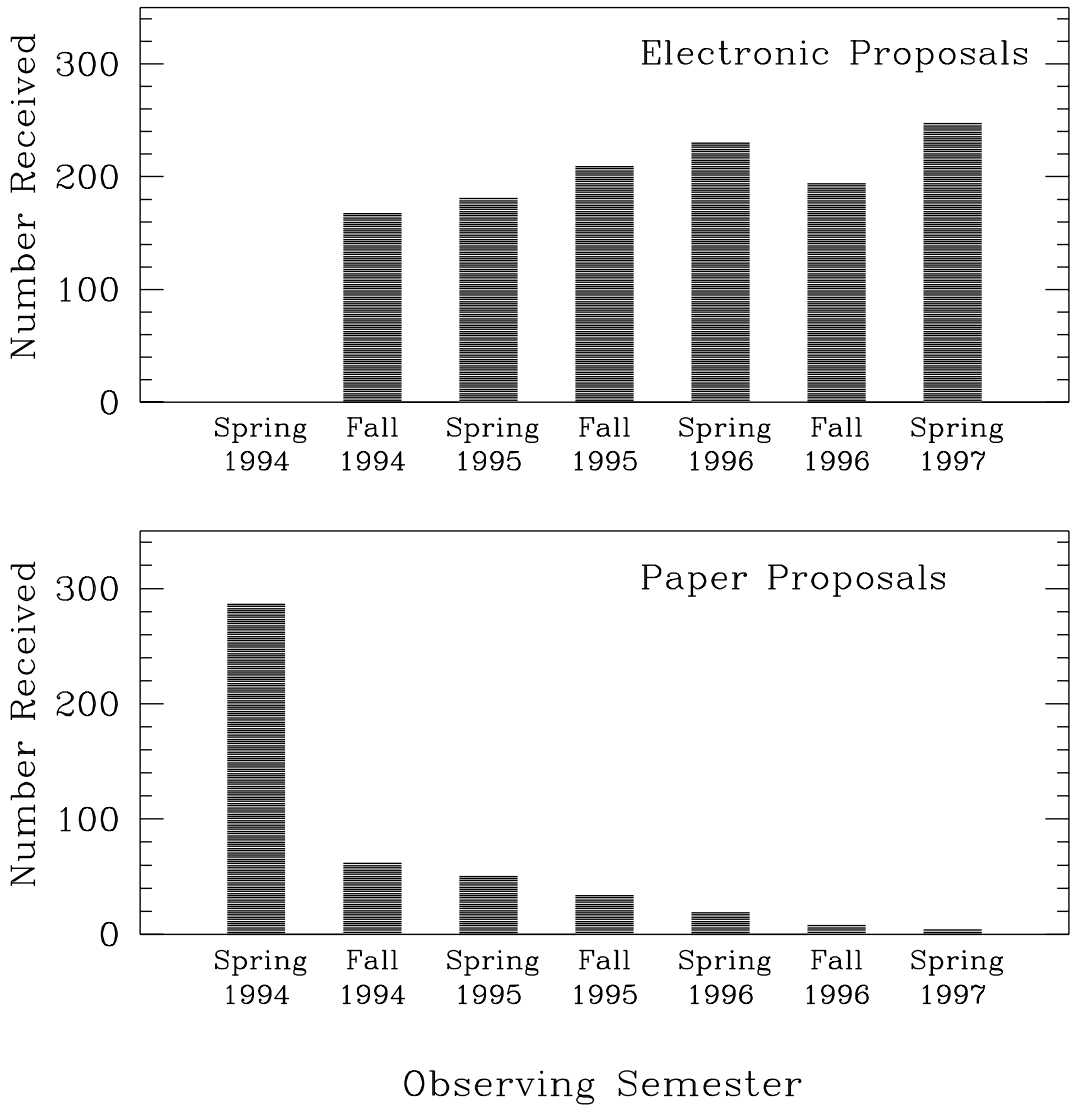

Figure 1: This sample figure shows how quickly electronic proposals for telescope time replaced paper ones.

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?

Use of Other Facilities *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.*

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. Note that long term status is not available for Gemini runs at this time.*

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 past 2 years, 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. If you wish to identify this proposal as a resubmission, include the old proposal ID number and semester.*

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.

If this proposal is a resubmission of a previous proposal and you wish to flag it as such for the TAC (doing so is optional), include a pastid tag with the original proposal ID, including the semester:

Previous ID of this observing proposal: 01A-0123.

Observing Run Details for Run 1: HET/LRS

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 WIYN-2hr, WIYN-SYN, YALO, and Gemini runs).*

HET observations will be taken in queue mode, and target tables are required so that the TAC can understand the scope and complexity of your program. You may use the Web target table facility to prepare your target list, or present them here in a LaTeX tabular environment. If your program is approved, however, you will need to prepare HET Phase II files with the actual details of your observations for the HET staff. The information in this section is provided for the TAC rather than for the HET queue observers.

Instrument Configuration

Filters:	Slit: 2"	Fiber cable:
Grating/grism:	Multislit: yes	Corrector:
Order:	$\lambda_{\rm start}$:	Collimator:
Cross disperser:	$\lambda_{\rm end}$:	Atmos. disp. corr.:

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

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

Target Table for Run 1: HET/LRS

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	GG-475	1000	5	4	phot	1.5-2.0	globular cluster
778	NGC 7078	21:30.1	12:10	2000.0	18.6	GG-475	1000	5	4	phot	1.5-2.0	same cluster
779	NGC 7078	21:30.1	12:10	2000.0	18.6	GG-475	1000	5	4	phot	1.5-2.0	

Observing Run Details for Run 2: MMT/BCHAN

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 WIYN-2hr, WIYN-SYN, YALO, and Gemini runs).*

For this run on the MMT Blue Channel Spectrograph, you may want to explain why you have selected this wavelength region, what velocity resolution and S/N ratio you need and why, and mention any special procedures for calibration and data reduction that you plan to use. Again, justify the amount of time requested in detail. You may also need to justify the specific restriction on days from new moon.

In the instrument configuration table below, you should indicate which grating and order you will use, whether you will use cross dispersed mode with the echellette grating, which slit you expect to use, and the starting and ending wavelengths.

Instrument Configuration

Filters:	Slit: 1”	Fiber cable:
Grating/grism: 300g/mm	Multislit:	Corrector:
Order: 1	$\lambda_{\rm start}$: 4000	Collimator:
Cross disperser: no	$\lambda_{\rm end}$: 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: KP-4m/RCSPM + T2KB

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 WIYN-2hr, WIYN-SYN, YALO, and Gemini runs).*

For this run on KPNO's Mayall 4-m telescope with the RC 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 new "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	$\lambda_{\rm start}$: 5000	Collimator:
Cross disperser:	$\lambda_{\rm end}$: 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: KP-4m/RCSPM + T2KB

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 + T2KC

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 WIYN-2hr, WIYN-SYN, YALO, and Gemini runs).*

For WIYN queue programs (WIYN-2hr and WIYN-SYN), be sure to provide enough technical details that the WIYN queue observers can carry out your program. See http://www.noao.edu/wiyn/obsprog/ for details.

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	$\lambda_{\rm start}$: 4000	Collimator:
Cross disperser:	$\lambda_{\rm end}$: 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 + T2KC

Obj ID	Object	α	δ	Epoch	Mag.	Filter	Exp. time	# of exp.	Lunar 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	

Observing Run Details for Run 5: CT-1.5m/CSPEC + L1K

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 WIYN-2hr, WIYN-SYN, YALO, and Gemini runs).*

For this run with CT-1.5m Cassegrain spectrograph, you may want to explain why you have selected this particular wavelength region, what velocity resolution you need, and why, and any special procedures for calibration and data reductions that you plan to use. Again, justify the amount of time requested in detail. You may also need to justify the specific restriction on days from new moon.

Instrument Configuration

Filters:	Slit:	Fiber cable:
Grating/grism: 9	Multislit:	Corrector:
Order:	$\lambda_{\rm start}$: 3600	Collimator:
Cross disperser:	$\lambda_{\rm end}$: 6500	Atmos. disp. corr.:

R.A. range of principal targets (hours): 9 to 19

Dec. range of principal targets (degrees): -20 to 55

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

If you need non-sidereal tracking, for example, this might be a good place to note that fact.

Observing Run Details for Run 6: GEM-SQ/Phoenix

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 WIYN-2hr, WIYN-SYN, YALO, and Gemini runs).*

Note that specific instrument resources information is needed for Gemini proposals, best entered using the checkboxes on the web form.

For this service observing run, 18 hours are requested and this is entered as "1.8 nights" – this must include overhead time for target and guide star acquisition in addition to target integration time from an exposure time calculator. Details needed to estimate overhead are available on Gemini's web site under the "Performance and Use" section for each instrument.

Gemini targets require guide stars to be included at the time of proposal submission. These can be searched on the web and will be embedded in unprinted tags in the LaTeX proposal. For this reason, all Gemini targets must be entered through the web form.

Instrument Resources

Filters: M2030, M2150, K4132, K4220
Dispersers:
Focal Plane Units: 0.25 arcsec slit

R.A. range of principal targets (hours): 14 to 14

Dec. range of principal targets (degrees): -30 to -35

Target Table for Run 6: GEM-SQ/Phoenix

Obj ID	Object	α	δ	Epoch	Mag.	Obs. time	WFS stars	IQ %	SB %	WV %	CC %	Comment
4001	qq34	14:14:14.4	-33:22:11.0	J2000	13.2J	1080	PP	80	any	any	any	