Observational Programs

2001B Gemini Proposals

Bob Schommer

We expect that Gemini will issue a call for proposals for both 8-m telescopes by 1 March 2001 for the 2001B (Aug. 2001–Jan. 2002) observing semester. Current predictions suggest Gemini North will be available for slightly more than 50% community science time, and Gemini South for 25% science time in its first semester. The estimated number of nights available to the US community will be detailed in the call for proposals. Instrument deployments are still uncertain at press time, but those that could possibly be available include NIRI, Hokupa'a/QUIRC, and GMOS or OSCIR in the North, and FLAMINGOS I, Phoenix or OSCIR, and the acquisition camera at Gemini South.

The Gemini National Project Offices, including the US Gemini Program, are likely to run a "QuickStart" queue program on Gemini South during the 2001B semester, and no programs will be scheduled classically. The USGP again plans to run a service-observing "mini-queue" for some fraction of the available time for visitor instruments at Gemini North. Final instrumentation and queue/classical availability details will not be known until late February, so please check our Web site (*http://www.noao.edu/usgp/*) for current information.

When the Gemini call for proposals is released, we will send an announcement to our e-mail distribution list of NOAO proposers and to the AAS Electronic Announcements. If you do not normally receive our direct e-mail announcements and wish to, please send an e-mail to *noaomail@noao.edu* requesting to be added to the list. The last e-mail announcement was sent in early January concerning letters of intent for Survey Programs.

Keck/NIRSPEC Time Going, Going . . .

Tom Geballe and Marianne Takamiya (Gemini)

Six more nights of observing time on the Keck II Telescope with the Near-IR Spectrograph (NIRSPEC) remain available to the US community (and other Gemini partners), three each in semesters 2001A and 2001B. In Semester 2001A the scheduled nights are 11–13 June. Observations will carried out by us in queue mode.

Investigators interested in applying for NIRSPEC time should watch the Gemini Observatory Web site (*http://www.us-gemini.noao.edu/sciops/instruments/nirspec/nirspecIndex.html*) for further information. A call for proposals is expected in mid-March, with a due date in mid-April. Please do not submit proposals for 2001A until advised to do so on the Gemini Web site.

NIRSPEC is a near-infrared (1-5 μm), moderate- to high-resolution, cross-dispersed, echelle and grating spectrometer at the Keck Observatory on Mauna Kea. The instrument has recently been outfitted with a new and improved 1024 × 1024 Aladdin InSb array detector. At any single setting of its grating or

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Keck/NIRSPEC continued

echelle, NIRSPEC covers a fractional wavelength range of approximately 0.18. However, except for the shortest wavelengths the echelle coverage is incomplete at any single setting, with gaps that increase with wavelength, so multiple settings must be employed to obtain a continuous high-resolution spectrum over the wavelength range of 0.18. This and other aspects of NIRSPEC are explained in detail on the Gemini Web pages.

Although the first two observing runs (in 2000) encountered some instrumental problems and some bad weather, excellent data were obtained for many of the highest ranking proposals. We expect that if the weather is good the success rate will increase, and we look forward to providing additional Keck data to the Gemini community from the final six nights of this program.

The Status of the Hobby–Eberly Telescope

Thomas Barnes (McDonald Observatory)

The HET resumed science operations November 18 and has been operated in science mode with the Low-Resolution Spectrograph (LRS) for two runs since then: Nov. 18–Dec. 2 and Dec. 18–Jan 1. Researchers have commented that HET is now producing better S/N spectra, for a given integration time, than it had in any previous science run. Additional near-term science runs are scheduled for Jan. 17–29, Feb. 14–Mar. 2, Mar. 18–Apr. 1, and Apr. 16–30. These dates are subject to change to accommodate engineering and commissioning tasks.

During the 2001B semester, we estimate that 50 hours of observing time will be available to the national community, with the Low Resolution Spectrometer and the High Resolution Spectrometer available. The Medium Resolution Spectrometer is likely to enter commissioning in this semester. The 50-hour estimate is based upon an assumed 50–75% time assigned to science. A significant amount of time will be devoted to installation and debugging of the primary mirror edge-sensor system in this semester.

Improving the imaging quality at the HET has been our principal priority since last April. Mean delivered image quality of the telescope for the November and December science runs was 2.55″ EE50%. This is slightly worse than the 2.37″ mean value obtained prior to November, and is likely a result of poorer cold weather seeing. About 16% of the image quality measurements during the November–December period were less than or equal to 2.0″ EE50%. Telescope image quality continues to be limited by dome seeing and misalignment of mirror segments due to temperature gradient effects.

Over the next five months, our image quality improvement plans are the following:

- Characterize and address the observed drift of objects off the LRS slit, despite closed-loop guiding, and check and improve the focus term of the tracker mount model. These two problems are among the highest priority items, as they are believed to be next in importance only to thermal degradation and seeing in establishing the delivered S/N of spectra.
- Complete insulation of one half of the primary mirror truss and test imaging performance. If significant improvement in image quality is observed for the insulated half, the other half of the truss will be similarly insulated.
- Complete design, begin purchase and fabrication of new acquisition camera and guider camera optics.
- Recalibrate the tracker mount model using the new laser alignment system and new focus data.
- Improve tracking and guiding accuracy by moving the rotation point of PFIP to the uncorrected prime focus in software.
- Purchase a glycol chiller and begin design, fabrication, and installation of assemblies for cooling in-dome electronics to improve dome seeing.

HET High-Resolution Spectrograph Status Report

Bob Tull (McDonald Observatory)

The installation and commissioning of the High Resolution Spectrograph (HRS) is proceeding as this article is being written, and we can expect to see the instrument in full operation very soon.

- The Fiber Instrument Feed has been installed, with the input end of the HRS fiber-optic cable in place on the tracker module.
- Daytime skylight illuminating the HET was used to carry out a rough check of focal-ratio degradation of one of the 600-μm fibers. A visual check showed that the focal ratio was at least as good as f/3.7 (the goal is f/4.2).
- With a photomultiplier in place at the output end of the fibers, a bright star was successively centered on each of three 600-μm fibers. The three fiber ends were, as intended, in a row with 10″ separations as seen on the sky.
- True 'First Light' for HRS was observed on the night of 5/6 December. The light of a bright star (Rigel) passed through the entire system and its spectrum was observed visually through the refractive camera.
- The HRS CCD system is now fully assembled and undergoing cryogenic testing and characterization in the Austin CCD laboratory. The cryostat fully meets its specifications.

Installation at the HET is scheduled for late January 2001, with commissioning to begin on-sky January 30. We anticipate starting science with HET-HRS in the late February science run.

Community Access Program Continues on the MMT

Todd Boroson

About 27 classically-scheduled nights per year of observing time on the MMT Observatory 6.5-m telescope are available to the astronomical community through the NOAO proposal process, under an agreement with the National Science Foundation. Proposals for the NOAO 2001B observing semester (1 Aug. 2001–31 Jan. 2002) are due on 31 March 2001 (note that the month of August is traditionally reserved for major telescope maintenance projects). Proposals will be reviewed by the NOAO TAC, and those approved will be forwarded to the MMT for scheduling (approximately 20% more proposals will be forwarded than can be scheduled to allow for block scheduling, conflicts in dates, etc.). Because of the limited support provided by the MMTO, access to the telescope will be restricted to experienced observers. For more information, check NOAO's MMT Web page at *http://www.noao.edu/gateway/mmt/* and MMT's public-access instrumentation page at *http://sculptor.as.arizona.edu/foltz/www/public_access.html*.

HET Low-Resolution Spectrograph Status Report

Gary Hill (McDonald Observatory)

The Low Resolution Spectrograph (LRS) continues to be used in queue-scheduled operations and is proving to be robust after refurbishments over summer shutdown. We have recently been characterizing the Multi-Object Spectroscopy (MOS) unit for queue use by the Resident Astronomers/Observers. Another key upgrade was to install the Version 2 CCD controller. The new controller takes only 7 seconds to read an acquisition image, compared to 45 seconds before. This huge decrease in time has led to faster setups (10 minutes typically compared to 20 minutes before) and better data quality because the primary mirror segments have less time to unstack.

General Characterization. The goals of the refurbishment were to improve the stability of the long-slit (LS) unit, to complete the calibration system, and to eliminate internal flexure of the LRS as much as possible. These goals were well met: The LS unit now repeats internally to 0.03″. The MOS and LS insertions repeat to 0.12″. The MOS unit repeats internally to 0.006″. The internal flexure is 0.5 pixels (0.25″) peak-to-peak over ±90° in position angle, which is completely negligible over a track.

Multi-Object Spectroscopy Unit. The unit is a remotely configurable slitlet unit that is set up using a configuration file uploaded before the observation. The unit is described in Wolf et al. (2000, *Proc. SPIE*, **4008**, 216-227). There are 13 slitlets, each about 15″ long by 1.3″ wide on 20″ centers. They can cover 4′ in the cross-dispersion direction (along the slits) by about 3′ in the dispersion direction (perpendicular to the slits).

The MOS unit is now being used routinely in the science queue by the HET Resident Astronomers/Observers. We do not yet have the final mode of operation where the configuration files can be generated beforehand from astrometry, but we are able to reliably configure the MOS, based on pre-images taken for the PI ahead of the spectroscopic observations.

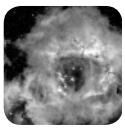
The biggest restriction on the MOS setup is currently the HET's difficulty in holding image quality as the tracker rotates away from the parallactic angle. This forces us to choose position angles for the observations that are close to parallactic, which restricts the setup and often results in non-optimal setups that miss key targets. We will make the MOS unit available in this mode in the upcoming NOAO 2001B semester on a shared-risk basis, with the proviso that objects must be visible in LRS acquisition images (i.e., be continuum objects with magnitudes brighter than m~22). We hope to implement the astrometry-based setup protocol by the end of 2001.

Plans. We have yet to install the SF2 CCD into LRS. This chip has higher QE in the red (1.4× better at 700-800 nm) and much better cosmetics than the chip SF1 now in use. We are currently determining when the 15-day downtime needed for the replacement can be fit into the HET operations schedule.

2001B Proposals for the WIYN-Operated 0.9-m Telescope on Kitt Peak

Richard Green

Proposals for the KPNO Mosaic CCD camera on the 0.9-m telescope on Kitt Peak will be accepted for the 2001B semester on a shared-risk basis. For details, please see the accompanying article in the KPNO section of this newsletter.



Four SIRTF Legacy Proposers Win NOAO Time

Sidney Wolff

Four of the six approved SIRTF Legacy proposals have also been awarded time on telescopes at NOAO during the 2001A–2002B semesters, through a collaboration between NOAO and NASA. These proposals are:

- M. Dickinson et al. (STScI); "*Great Observatories Origins Deep Survey*"
- N. Evans et al. (U. Texas at Austin); "*From Molecular Cores to Planets*"
- R. Kennicutt et al. (U. Arizona); "*SINGS: The SIRTF Nearby Galaxies Survey—Physics of the Star-Forming ISM and Galaxy Evolution*"
- C. Lonsdale et al. (Caltech, IPAC); "*The SIRTF Wide-area InfraRed Extragalactic Survey*"

Similar collaborations between NOAO and both STScI and the Chandra X-Ray Observatory have provided investigators the opportunity to request NOAO time as part of their HST Cycle 10 and Chandra Large proposals.

Coudé Spectrograph Available at DAO

David Bohlender and Jim Hesser (DAO)

Former users of the Kitt Peak coudé feed telescope who are trying to cope with the closure of this facility in February 2001, are reminded that the National Research Council of Canada's Herzberg Institute of Astrophysics welcomes applications for observing time on the 1.2-m McKellar Telescope at the Dominion Astrophysical Observatory (DAO) in Victoria, BC.

The coudé mirror train of the 1.2-m telescope is equipped with high-reflectance coatings to optimize throughput. Three sets of coatings are available: super blue (3500–5300 Å), silver (4500 Å–near IR), and gold (6500 Å–IR). These mirror sets are rapidly interchangeable and self-aligning so that it is possible to change from one set to another in about two minutes, without the need to re-center on the star being observed.

At the coudé focus, an image slicer ensures high throughput to the coudé spectrograph, where one of two optical paths may be selected. A 32-in focal length spectrograph camera can be combined with one of six available diffraction gratings (of 300, 600, 830 and 1200 l/mm) which have various blaze angles, and some of which are efficient in either first or second orders. These yield many possible reciprocal dispersions, of which 6.5, 10, 18, and 41 Å/mm are the most commonly used. Alternatively, the telescope beam can illuminate a mosaiced 830 groove mm^{-1} grating and a 96-in focal length camera to give a spectrum in the red (1st order) at 4.8 Å/mm or in the blue (2nd order) at 2.4 Å/mm.

The corresponding resolution of all these spectrograph configurations ranges from 0.07 to 1.2 Å. Two CCDs with 4096 15-μm pixels along the dispersion direction are available. SITe 4 is a thin, backside-illuminated device suitable for observing at wavelengths less than approximately 7000 Å, while the thick, frontside-illuminated UBC detector is used for longer wavelengths where fringing with the thin device can be problematic. Note that the DAO spectrographs are *not* echelles so that wavelength coverage ranges from

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Coudé at DAO continued

a rather modest 140 Å with the long camera and the 830 groove mm^{-1} grating operating in second order, to approximately 2400 Å with the short camera and 300 groove mm^{-1} grating. Wavelength calibrations for the spectrographs are provided by Fe-Ar, Cd-Ar, or Th-Ar hollow cathode discharge lamps.

The DAO welcomes long-term, well thought out science programs that have the potential for high impact (basically, what are sometimes thought of as "key projects"). Every attempt is also made to try to assign time in blocks that recognize the weather factor in the British Columbia climate. Moreover, the availability of contract service observing greatly reduces the risk that busy academics face in travelling to carry out their own observing. Similarly, for thesis work we try to ensure that adequate time is assigned to facilitate completion of programs.

More detailed information about the DAO 1.2-m telescope (as well as contract service observing, and the imaging and spectroscopy capabilities of the 1.8-m Plaskett Telescope) can be found on the Web at *http://www.hia.nrc.ca/facilities/dao/*, and questions can be emailed to *DAO_Telescopes@hia.nrc.ca*. Both telescopes are scheduled on a quarterly basis, with application deadlines just one month before the start of the quarter. For example, for the April-June 2001 quarter the deadline is 1 March 2001. Observing forms can be submitted by e-mail or via the WWW. See *http://www.hia.nrc.ca/facilities/dao/observing/forms/* for more information.

NOAO Nighttime Proposals Due for 2001B

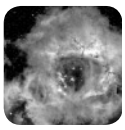
The NOAO Proposal Team

Proposals for observing time for Semester 2001B (August 2001–January 2002) at the Gemini North and South telescopes, the Cerro Tololo Inter-American Observatory, the Kitt Peak National Observatory, and for community access time at the Hobby-Eberly Telescope and MMT Observatory 6.5-m telescope are due by Saturday evening, 31 March 2001, midnight MST.

Proposal materials and information are available on our Web page (*http://www.noao.edu/noaoprop/*). Investigators should use the Web form to initiate all proposals. Although the Web form is the starting point for all proposals, we do provide both e-mail and Web options for submission.

- **Web submissions.** The Web form may be used to complete and submit proposals. The information provided on the Web form is formatted and submitted as a LaTeX file, including figures that are "attached" to the Web proposal as Encapsulated PostScript files.
- **E-mail submissions.** If you prefer to prepare your proposal locally as a LaTeX file and then submit it by e-mail, that option is still available. Investigators using the Web form are requested to fill out certain information on the general information, investigator information, and run information pages (what is required through the Web form varies with each facility, so read the instructions carefully). After these pages have been completed, a "customized" LaTeX file can be downloaded or returned to you by e-mail for completion and submission by e-mail. Follow the instructions in the LaTeX template for submitting proposals and figures.

The addresses on the next page will help with proposal preparation and submission:



Nighttime Proposals continued

Web proposal materials and information.	http://www.noao.edu/noaoprop/
Request help for proposal preparation.	noaoprop-help@noao.edu
Address for thesis and visitor instrument letters, as well as consent letters, for use of PI instruments on the MMT.	noaoprop-letter@noao.edu
Address for submitting LaTeX proposals by e-mail.	noaoprop-submit@noao.edu
Gemini related questions relating to operations or instrumentation.	usgemini@noao.edu and http://www.noao.edu/gateway/gemini/support.html
CTIO-specific questions related to an observing run.	ctio@noao.edu
KPNO-specific questions related to an observing run.	kpno@noao.edu
HET-specific questions related to an observing run.	het@noao.edu
MMT-specific questions related to an observing run.	mmt@noao.edu

The tables on tbe following pages summarize instruments available (or expected to be available) in the 2001B semester at the Gemini North and South Telescopes, the Cerro Tololo Inter-American Observatory, the Kitt Peak National Observatory, the Hobby-Eberly Telescope, and the MMT Observatory 6.5-m Telescope. For further information about the capabilities and performance of these instruments, and links to instrument manuals, check the NOAO Facilities Web page *http://www.noao.edu/gateway/facilities.html*.