

OBSERVATIONAL PROGRAMS



Public Access Observing Time on the Hobby-Eberly Telescope

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Beginning in June 2000, the 9.2-meter Hobby-Eberly Telescope (HET) at McDonald Observatory will be available to the astronomical community for queue-scheduled observing. This time is made available under an agreement with the National Science Foundation administered through NOAO. The HET is a unique, queue-scheduled, segmented-primary telescope optimized for spectroscopic observations. The agreed amount of time is 101 nights of queue-scheduled observing time over six years. This community access time will be distributed over the phases of the moon and the seasons of the year in the same proportion as the scientific observations scheduled for the members of the HET consortium (The University of Texas at Austin, Pennsylvania State University, Stanford University, Ludwig-Maximilians-Universitaet Muenchen, and Georg-August-Universitaet Goettingen).

Access to HET through the Public Access Program will begin in June 2000. Researchers should be aware that a month of summer shutdown of the HET is a possibility (July or August), with a decision in Spring 2000. Proposals for the period from 1 June 2000 through 31 January 2001 will be due on 31 March 2000. Proposals should be submitted through NOAO using the standard NOAO proposal form. Proposals will be reviewed by the NOAO

TAC, and those approved will be forwarded to the HET for queue-scheduling (approximately 20% more proposals will be forwarded than can be scheduled to permit a deep queue).

The unique nature of the HET makes it absolutely essential that potential users of the HET become thoroughly familiar with its capabilities and restrictions. Descriptions of the salient features of the HET may be found in eleven papers in the March 1998 SPIE conferences at Kona, Hawaii. Researchers are especially urged to read Ramsey et al. (SPIE, 3352-06, 1998), Booth et al. (SPIE, 3351-20, 1998), and Gaffney & Cornell (SPIE, 3349-17, 1998). Potential PIs are also strongly urged to become familiar with the HET scheduling tools available on the Web at <http://www.noao.edu/gateway/het/>.

Among the most important differences between the HET and other NOAO telescopes are the following:

- HET is fully queue-scheduled using a Phase I, Phase II proposal process similar to that of the HST. Approved research programs resulting from Phase I proposals are required to complete a Phase II proposal prior to the commencement of observations. These proposals are described at <http://www.noao.edu/gateway/het/>.

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Observational Programs

- As a queue-scheduled telescope, there is no provision for the researcher to come to the HET. Data and calibrations acquired for a researcher are made available by *ftp* with notification to the researcher shortly after the observation is received at NOAO.
 - The design of the HET permits observation only in a torus centered on the zenith. Time critical and synoptic observations must be considered very carefully with this observing constraint. The central circle of the torus is offset 35° from the zenith, permitting observations from approximately 71° to -10° declination (see Figure 8 of Ramsey et al. SPIE, 3352-06, 1998).
 - Target tracking is accomplished with a prime focus tracker and is limited in duration to the time it takes the target to transit the torus (12°). This varies from about 0.75 hour at the southern declination limit to 2.5 hours at the northern limit.
 - The HET has a roving pupil on the primary mirror. This changes the effective aperture (through a maximum of 9.2 m) over the course of an integration.
- Investigators will be able to request telescope time on any or all nighttime facilities available through NOAO, including the HET, in a single proposal. Because the HET is queue-scheduled, approved community access programs will be entered into the queue rapidly upon receipt from NOAO of the completed Phase II proposal. Procedures and forms for applying for telescope time will be available on the Web at <http://www.noao.edu/noaoprop/noaoprop.html> after 1 February 2000. More detailed information about HET access can be found on the Web at <http://www.noao.edu/gateway/het/>.

Status of the Hobby-Eberly Telescope

Tom Barnes, University of Texas and McDonald Observatory

The Hobby-Eberly Telescope has reached the end of its Commissioning phase and has entered 'Early Operations'. The Early Operations phase emphasizes research operation of the HET 50% of each lunation, with instrument commissioning and facility improvements occupying the remainder of the time. Observing time is approximately centered on the date of the new moon. Early Operations will continue at least until June 2000 and may continue into the period of first public access.

In October 1999 the HET is operating at or near specification in pointing, sidereal tracking, autoguiding, and all other essential electromechanical functions. The primary mirror is in operation with a full array of 91 segments (9.2-m aperture on axis). The array is aligned using the Center of Curvature Alignment System (CCAS, a shearing interferometer) in about 15 minutes to a median-delivered primary mirror quality better than 1.1" (50% encircled energy, EE50). An intensive

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program to improve primary mirror quality to specification, $EE(50) = 0.6''$, is continuing.

In the presence of typical seeing and immediately after a mirror alignment, the image quality is currently about $EE50 = 1.8''$. During the course of typical on-object tracks, the primary mirror stack degrades as a function of the ambient thermal gradient. The typical degradation in image quality leads to a delivered image quality for 30 minute tracks between $2.0''$ and $2.5''$. Imaging performance is expected to improve modestly before June 2000, but major improvement is not expected until installation of the Segment Alignment and

Maintenance System (SAMS) on the primary mirror array (an edge-sensor system). The SAMS will provide closed-loop control of the 91 segments and their global radius of curvature. We expect SAMS to reduce the need to align the segments using the CCAS from hourly to twice monthly. With SAMS, we expect the HET to be seeing-limited most of the time. The nominal schedule for SAMS calls for completion in January 2001 and for minimal impact upon research operation during installation.

The community will be kept informed of the status of the HET through frequent updates of the NOAO web site: <http://www.noao.edu/gateway/het/>.

Hobby-Eberly Telescope Instrumentation

Tom Barnes, University of Texas and McDonald Observatory

The instrumentation suite of the HET will ultimately include a prime focus Low Resolution Spectrometer (LRS PI Gary Hill, CCD PI Phillip MacQueen, McDonald Observatory), a fiber-fed High Resolution Spectrometer (HRS PI Robert Tull, CCD PI Phillip MacQueen, McDonald Observatory), and a fiber-fed Medium Resolution Spectrometer (MRS PI Larry Ramsey, Pennsylvania State; CCD PI to be determined). During this first Public Access period, the LRS and HRS will be available. The MRS is expected to be commissioned after this initial Public Access period and will then be available under this program.

The LRS is described by Hill et al. (SPIE, 3355-20, 1998), Cobos D. et al. (SPIE, 3355-71, 1998) and Hill et al. (SPIE, 3355-74, 1998). It is a grism spectrometer with imaging, long-slit, and multi-

object capability. (Multi-object capability will not be available in this first Public Access period.) The field of view is $4'$ in diameter. Two grisms are currently available—grism 1 covers 410 to 1000 nm at $R \sim 600$ and grism 2 covers 430 to 740 nm at $R \sim 1300$. Resolutions are quoted for a $1.0''$ wide slit. Slit widths of $1.0''$, $1.5''$, $2.0''$, $3.0''$, and $10.0''$ by $4'$ long are available. The CCD is a Ford Aerospace 3072×1024 device with $15 \mu\text{m}$ pixels, and the image scale is $\sim 0.25''$ per pixel. The LRS entered instrument commissioning in April 1999; it is now in research operation. Initial performance characteristics of the LRS are available at <http://www.noao.edu/gateway/het/>. These will be updated as they are refined.

The HRS is a single channel adaptation of the ESO UVES spectrometer as described by Tull (SPIE,

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3355-21, 1998). It uses an R-4 echelle mosaic with cross-dispersing gratings to separate spectral orders. An all-refracting camera images onto a mosaic of two thinned and anti-reflection coated 2K×4K CCDs with 15 μm pixels. The CCDs are abutted along their 4K side with an ~69 pixel dead space between them. This dead space is approximately parallel to the spectral orders. Resolving powers of $R \sim 30,000$, 60,000, and 120,000 will be available by means of three effective slit widths. Spectral coverage is 420–1100 nm. The HRS is expected to enter instrument commissioning in March 2000. Potential researchers should take note that instruments occasionally slip schedule and that there is some risk of this for HRS in the summer of 2000. Projected performance characteristics of the HRS are available at <http://www.noao.edu/gateway/het>. These will be updated as instrument commissioning proceeds.

MMT Proposals Flood In

Todd Boroson and Craig Foltz

In the September *Newsletter*, NOAO and the MMT Observatory jointly announced a call for proposals for public access time on the new 6.5-m telescope of the MMT Observatory. Beginning in March 2000, 162 nights of observing time over 6 years are being made available to the astronomical community under an agreement with the National Science Foundation. Twenty-six proposals requesting 75 nights were received by 30 September for time during the period from March–July, 2000. Since only 11 nights are available to the community during this period, the oversubscription factor is a huge 6.8 (see Observing Request Statistics at the end of this section). The proposals are being reviewed by

the NOAO TAC along with all of the CTIO and KPNO proposals also received, and investigators will be notified of the status of their proposals in early December. Successful proposals will be forwarded to the MMT for scheduling, but investigators should note that approximately 20% more proposals will be forwarded than can be scheduled to allow for block scheduling, conflicts in dates, etc. Craig Foltz, the Director of the MMT Observatory, will notify investigators of the dates of their observing runs. Runs early in the semester will be scheduled quickly, but the schedule for the second part of the semester won't be written until the spring.

Keck Time for the Gemini Community

Todd Boroson

In return for the long-term loan of one of Gemini's Aladdin InSb arrays to the Wm. S. Keck Observatory for use in the 1–5 μm infrared spectrograph, NIRSPEC, the Keck Observatory has agreed to provide 12 nights of telescope time on the Keck II telescope with NIRSPEC to the Gemini community over the next 2 years. The observations will be taken as a "service" program by Gemini staff.

The International Gemini Observatory (IGO) will call for an initial round of proposals for this time early in 2000. Watch for an announcement of an application form and information regarding instrument capabilities, contact information, application rules and deadlines, and observing dates from NOAO.

Round 2: NOAO Survey Proposals Due March 15

Todd Boroson

In 1999 NOAO initiated the first round of Survey Proposals for large programs to be carried out at its CTIO and KPNO facilities. Such programs allow the identification of complete, well defined samples of objects that can yield both conclusions based on statistical analysis of the survey data itself and also provide important subsets for more detailed observations with larger telescopes. Twenty-one Survey Proposals were received, and 5 were accepted. The accepted programs are:

- *Deep Imaging Survey of Nearby Star-Forming Clouds* (PI Bally, Colorado)
- *In Search of Nearby Stars: A Parallax Program at CTIO* (PI Henry, JHU)
- *The NOAO Deep Wide-Field Survey* (PI Jannuzi and Dey, NOAO)
- *Deep Lens Survey* (PI Tyson, Lucent)
- *A Fundamental Plane Peculiar Velocity Survey of Rich Clusters within 200 h^{-1} Mpc* (PI Willick, Stanford)

Proposals for the second round of the NOAO Survey Program are due 15 March 2000. Investigators interested in applying for time under the Survey Program MUST submit by 31 January 2000 a letter of intent to propose a survey program describing the broad scientific goals of the program, the membership of the survey team, the telescopes and instruments to be requested, the approximate amount of time that will be requested, and the duration of the proposed survey. Up to 20% of the telescope time at CTIO and KPNO may be awarded through the Survey Program. About half of this time was awarded in the first round of Survey proposals, and a comparable amount is available for the second round.

A more detailed description of the Survey Program requirements and guidelines is available at <http://www.noao.edu/gateway/surveys/>. Proposals must be initiated using the NOAO Web Proposal form (<http://www.noao.edu/naoaprop/naoaprop.html>), which will be available approximately 15 February 2000.



NSF Provides Travel Support for Observing at Major Foreign Optical Telescopes

David S. De Young

For several years the National Science Foundation has provided funding, administered by NOAO, to support travel to large or unique foreign optical telescopes. The telescopes normally covered by this policy include:

Anglo-Australian Telescope (Australia)
Canada-France-Hawaii Telescope (Hawaii)
European Southern Observatory (Chile)
Las Campanas Observatory (Chile)
La Palma Observatory (Spain)
Special Astrophysical Observatory (Russia)
United Kingdom Infrared Telescope (Hawaii)

To qualify for travel support, the applicant must be the PI on the proposal for foreign telescope time, and must be based in the United States. In addition, the PI should give evidence that his/her presence is essential for the successful pursuit of the research program. Graduate students are encouraged to apply if they meet the above criteria. These funds are not available to staff employed at national observatories. Reimbursement covers round-trip intercontinental airfare only; intra-country travel, subsistence and incidental expenses are not covered. Normally, only one trip per fiscal year per investigator can be supported (our fiscal year begins 1 October).

To apply, send a letter explaining why your presence is essential at the foreign telescope, together with a copy of your proposal and the letter or observing schedule that indicates you have been granted observing time. Please mail this to me at the following address:

David S. DeYoung
NOAO
P. O. Box 26732
Tucson, AZ 85726-6732

Requests should be received at least one month before travel commences. Please note that travel must be on a US carrier if available.



2000A KPNO Observing Request Statistics February 2000 - July 2000

Summary

	4m	WIYN	2.1m	CF	0.9m	W2HR
No. of requests	112	44	68	21	28	7
No. of nights requested	375.60	103.98	311.20	166.00	157.50	1.75
No. of nights available*	140	62	120	143	156	
Oversubscription	5.62	1.68	2.59	1.16	3.10	
Average request	3.38	2.36	4.58	7.90	5.63	0.25

*The number of nights available is approximate until engineering time assignments have been allocated.

Requests by Telescope:

4m Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
CRSP	0	1	0.00	4.00	4.00	1.1%
CRYOL	1	1	3.00	2.00	5.00	1.3%
CRYOM	3	0	13.00	0.00	13.00	3.4%
ECHLB	0	1	0.00	3.00	3.00	0.8%
ECHLR	0	6	0.00	17.00	17.00	4.5%
ECHUV	0	1	0.00	4.00	4.00	1.1%
IRIM	0	4	0.00	15.00	15.00	3.9%
MOSA	38	5	129.00	17.00	146.00	39.7%
ONIS	0	7	0.00	14.60	14.60	3.8%
PFIM	5	3	20.00	9.00	29.00	7.6%
PHX	0	9	0.00	29.00	29.00	7.6%
RCSPL	15	8	54.00	26.00	80.00	21.0%
RCSPM	1	0	3.00	0.00	3.00	0.8%
VIS	1	1	4.00	9.00	13.00	3.4%
	64	47	226.00	149.60	375.60	100.0%

WIYN Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
DSPKB	0	0	0.00	0.00	0.00	0.0%
DSPKR	0	3	0.00	6.00	6.00	5.8%
HYDRB	3	5	10.40	15.00	25.40	24.4%
HYDRR	6	7	13.50	18.50	32.00	30.8%
MIMO	16	4	36.43	4.15	40.58	39.0%
	25	19	60.33	43.65	103.98	100.0%

Observational Programs

2.1m Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
CFIM	17	2	95.00	7.00	102.00	32.8%
CRSP	1	4	4.00	7.00	11.00	3.5%
GCAM	8	10	40.00	36.00	76.00	24.4%
IRIM	1	2	2.00	7.00	9.00	2.9%
ONIS	0	15	0.00	83.20	83.20	26.7%
PHX	0	8	0.00	30.00	30.00	9.6%
SQIID	0	0	0.00	0.00	0.00	0.0%
VIS	0	0	0.00	0.00	0.00	0.0%
	27	41	141.00	170.20	311.20	100.0%

CF Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
CAM5	2	12	28.00	88.00	116.00	69.9%
CAM6	0	7	0.00	50.00	50.00	30.1%
VIS	0	0	0.00	0.00	0.00	0.0%
	2	19	28.00	138.00	166.00	100.0%

0.9m Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
MOSA	18	10	106.50	51.00	157.50	100.0%
VIS	0	0	0.00	0.00	0.00	0.0%
	18	10	106.50	51.00	157.50	100.0%

W2HR Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
DSPKB	0	0	0.00	0.00	0.00	0.0%
DSPKR	0	0	0.00	0.00	0.00	0.0%
HYDRB	2	1	0.50	0.25	0.75	42.9%
HYDRR	3	0	0.75	0.00	0.75	42.9%
MIMO	0	1	0.00	0.25	0.25	14.3%
	5	2	1.25	0.50	1.75	100.0%

2000A CTIO Observing Request Statistics February 2000 - July 2000

Summary

	4m	1.5m	YALO	0.9m	0.9mQ	SCHM
No. of requests	114	50	8	25	13	6
No. of nights requested	363.90	211.50	37.40	207.00	118.50	37.00
No. of nights available*	122	141	22	99	25	79
Oversubscription	5.70	1.50	1.70	3.10	4.74	0.47
Average request	3.19	4.23	4.67	8.28	9.12	6.17

*The number of nights available is approximate until engineering time assignments have been allocated.

Requests by Telescope:

4m Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
CIRIM	0	4	0.00	14.00	14.00	3.8%
ECH	0	13	0.00	52.00	52.00	14.3%
HYDR	5	7	15.00	26.00	41.00	11.3%
IRS	0	7	0.00	19.00	19.00	5.2%
MOSAIC	28	6	82.50	15.00	97.50	26.8%
OSIRIS	0	18	0.00	42.10	47.10	12.9%
RCSP	18	6	60.80	17.50	78.30	21.5%
VIS	1	2	3.00	12.00	15.00	4.1%
	52	63	161.30	197.60	363.90	100.0%

1.5m Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
ASCAP	1	4	6.00	22.50	28.50	13.5%
BME	0	3	0.00	13.00	13.00	6.1%
CFIM14	5	6	15.00	31.00	46.00	21.7%
CFIM8	9	1	38.00	4.00	42.00	19.9%
CIRIM	0	5	0.00	12.00	12.00	5.7%
CSPEC	5	3	23.00	14.00	37.00	17.5%
OSIRIS	1	7	2.00	31.00	33.00	15.6%
VIS	0	0	0.00	0.00	0.00	0.0%
	21	29	84.00	127.50	211.50	100.0%

Observational Programs

YALO Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
ANDICAM	1	7	4.00	33.40	37.40	100.0%
	1	7	4.00	33.40	37.40	100.0%

0.9m Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
CFIM	3	22	28.00	179.00	207.00	100.0%
VIS	0	0	0.00	0.00	0.00	0.0%
	3	22	28.00	179.00	207.00	100.0%

0.9mQ Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
CFIM	2	11	5.00	113.50	118.50	100.0%
	2	11	5.00	113.50	118.50	100.0%

SCHM Telescope

Instrument	Requests		Nights Requested		Total Nights Requested	Percentage
	Dark	Bright	Dark	Bright		
NFDIR	4	2	22.00	15.00	37.00	100.0%
NFPRM	0	0	0.00	0.00	0.00	0.0%
	4	2	22.00	15.00	37.00	100.0%

2000A MMT Observing Request Statistics February 2000 - July 2000

Summary

MMT	
No. of requests	26
No. of nights requested	75.00
No. of nights available	11
Oversubscription	6.82
Average request	2.8

Requests by Telescope:

MMT Telescope

Instrument	Requests		Nights Requested		Total Nights	
	Dark	Bright	Dark	Bright	Requested	Percentage
BCHAN	5	2	18.00	2.00	20.00	26.7%
FSPEC	0	1	0.00	5.00	5.00	6.7%
MCAM	2	1	11.00	4.00	15.00	20.0%
MIRAC3	0	4	0.00	10.00	10.00	13.3%
PISCES	0	4	0.00	11.00	11.00	14.7%
RCHAN	5	1	10.00	2.00	12.00	16.0%
SPOL	1	0	2.00	0.00	2.00	2.7%
	13	13	41.00	34.00	75.00	100.0%