2012A NOAO Call for Proposals Due 30 September 2011

Verne V. Smith & Dave Bell

Standard proposals for NOAO-coordinated observing time for semester 2012A (February 2012–July 2012) are **due by the evening of Friday, 30 September 2011, midnight MST.**

The facilities available this semester include the Gemini North and South telescopes, Cerro Tololo Inter-American Observatory (including SOAR), Kitt Peak National Observatory (including WIYN), and community-access time with the MMT 6.5-m telescope, the 200-in (5-m) Hale Telescope at Palomar Observatory, and the CHARA interferometer at Mt. Wilson.

A formal Call for Proposals is available at *ast.noao.edu/observing/proposal-info* as a self-contained, downloadable pdf document that contains all information necessary to submit an observing proposal to NOAO. Included in this document are the following:

- How to prepare and submit a proposal for an observing program
- Deadlines
- Descriptions of classes of programs, such as normal, survey, or long-term, as well as the criteria of evaluation for each class
- Who may apply, including special guidelines for thesis student proposals, or travel support for classical observing on the Gemini telescopes
- Changes and news or updates since the last Call for Proposals
- Links to Systems facilities Web pages
- How to acknowledge use of NOAO facilities in your papers

Previous information on various Web pages that contain all of the information within the Call for Proposals document also remains available at *www.noao.edu/noaoprop*.

There are four options for submission:

Web Submission – The Web form may be used to complete and submit all 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.

File upload – A customized LaTeX file may be downloaded from the Web proposal form after certain required fields have been completed. "Essay" sections can then be edited locally and the proposal submitted by uploading files through a Web page at *www.noao.edu/noaoprop/submit/*.

Email submission – A customized LaTeX file may be downloaded from the Web proposal form after certain required fields have been completed. "Essay" sections can then be edited locally and the proposal submitted by email. Please carefully follow the instructions in the LaTeX template for submitting proposals and figures. Please use file upload instead of email if possible.

Gemini Phase I Tool (PIT) – Investigators proposing for Gemini time **only** may optionally use Gemini's tool, which runs on Solaris, RedHat Linux, Windows, and Mac platforms and can be downloaded from *www.gemini.edu/sciops/P1help/p1Index.html*.

Note that proposals for Gemini time may also be submitted using the standard NOAO form and that proposals that request time on Gemini plus other NOAO facilities **MUST** use the standard NOAO form. PIT-submitted proposals will be converted for printing at NOAO and are subject to the same page limits as other NOAO proposals. To ensure a smooth translation, please see the guidelines at: *www.noao.edu/noaoprop/help/pit.html*.

Help with proposal preparation and submission is available via the addresses below:

Web proposal materials and information	*www.noao.edu/noaoprop/*
TAC information and proposal request statistics	*www.noao.edu/gateway/tac/*
Web submission form for thesis student information	*www.noao.edu/noaoprop/thesis/*
Request help for proposal preparation	*noaoprop-help@noao.edu*
Address for submitting LaTeX proposals by email	*noaoprop-submit@noao.edu*
Gemini-related questions about operations or instruments	*gemini-help@noao.edu*
	www.noao.edu/usgp/noaosupport.html
CTIO-specific questions related to an observing run	*ctio@noao.edu*
KPNO-specific questions related to an observing run	*kpno@noao.edu*
MMT-specific questions related to an observing run	*mmt@noao.edu*
Hale-specific questions related to an observing run	*hale@noao.edu*

Delayed Call for New NOAO Survey Programs

The National Optical Astronomy Observatory (NOAO) allows astronomers to use NOAO facilities to obtain large, homogeneous datasets aimed at addressing significant scientific problems by proposing to the NOAO Survey program. The call for new Survey proposals is traditionally issued on an annual basis with a mid-September deadline. This year, however, NOAO will delay the call by six months, but anticipates announcing the opportunity to propose for new surveys at the end of 2011, with a likely deadline of mid-March 2012.

The six-month delay is motivated by the desire to let surveys use the capabilities that are being deployed in 2012, including the return of NEWFIRM to the Kitt Peak Mayall 4-m. Note that as DECam (CTIO Blanco 4-m) will be under commissioning during 2012, it will not be available for surveys for the expected March 2012 call. The availability of Flamingos-2 (Gemini South) and KOSMOS (Mayall 4-m) for the next Survey call is as yet unclear. Watch the NOAO Web pages for more information. The call will be announced in the *NOAO Newsletter,* as well as on the NOAO proposal Web page: *ast.noao.edu/observing/proposal-info*. [Article updated 9/9/2011.]

Update on DECam Installation & Blanco 4-m Availability: Blanco Shutdown in 2012A

Chris Smith

In the previous *Newsletter*, we reported that CTIO was planning to begin installation of the Dark Energy Camera (DECam) on the Blanco 4-m telescope in late September. Due to the complexity of this installation, which involves significant work to the telescope structure, it will require several months of telescope shutdown while we replace the top-end cage and install the new imager. We anticipated that only four to eight weeks of time would be available to the community in 2011B and that commissioning and science verification would continue into 2012A.

As a result of slips in the delivery schedule of the DECam optics and planning constraints around the 2011 holiday season, the delivery and installation of DECam has been delayed by several months. As of early August, we plan to begin the installation shutdown in early January 2012. Given the heavy oversubscription for time on the Blanco in 2011B, there are a sufficient number of highly ranked proposals to fill the newly available time in this semester, so the telescope is being scheduled with those 2011B proposals through to early January, and proposers are being alerted.

Availability of DECam and the Blanco in 2012A

The delays in camera installation mean that the installation and commissioning now fall in the period of January through August 2012, almost completely in the 2012A semester. This period includes three months (mid-January through mid-April) during which we must disassemble the telescope in order to remove and replace the prime focus cage, the most significant change made in the telescope's almost 40-year history. During the following three months, we will re-commission the whole telescope, starting with the $f/8$ instrumentation and finishing with commissioning the DECam system.

We anticipate roughly four weeks of community time in 2012A with $f/8$, during which we will make Hydra and ISPI available for community use, although probably via service or remote observing to maintain flexibility in the telescope and DECam commissioning schedule. More details will follow in the 2012A Call for Proposals (see *ast.noao.edu/observing/proposal-info*).

Community Access to the Blanco in 2012B and Beyond

In July/August 2012, we plan to begin science verification (SV) observations with DECam. The SV observations will include a significant amount of community science. We will announce the details of the SV activities and how to propose for SV projects in the 2012B Call for Proposals.

In September 2012, the Dark Energy Survey (DES) will commence observations. In the September through January period, the community will have access to no less than 25% of the time (roughly one week per month). Although there will be a few DES nights scheduled in February, we anticipate largely normal community access in the A semesters during the duration of the DES survey (2012 to 2016).

Although community access is limited, the DES will be providing imaging data in all available filters over 5,000 square degrees, which is much of the sky available in the B semester. This data will have only a one-year proprietary period. So if your observation involves imaging of selected fields during the B semester, it is possible that the data you need will be taken by the DES and will be available after one year.

Availability of the CTIO 1.0- and 0.9-m Telescopes in 2012A

Charles Bailyn

We may curtail some activities at the 1.0-m and 0.9-m telescopes due to financial limitations. Therefore, proposers should indicate clearly if they require one of these telescopes rather than the other, and why. If no such discussion is included, we will assume that the program can be executed on either telescope. We may also curtail service observing on the 0.9-m telescope, so proposers for service programs who might be able to carry out the project with a traditional user run should make this clear. Otherwise, we will assume that service proposals can only be executed in service mode. Proposers are strongly encouraged to consult the SMARTS Web pages prior to proposal submission for the latest information.

Mayall 4-m Telescope News

Dick Joyce

Over the period of July 11–August 15, the Mayall telescope was shut down to carry out a number of maintenance projects which required the telescope to be out of service for a number of nights. These ranged from long-term repair work to efforts designed to increase the telescope operation efficiency and image quality.

We decided to defer aluminization of the primary mirror to next year. During this shutdown, the primary was washed, a procedure that has historically decreased scattering and returned the reflectivity to within one to two percent of a freshly coated surface.

The major project was the completion of the crack repairs to the dome rails, which involved cleaning out the grout under the crack, air arc cleaning of the crack, and rewelding. New grout was then installed under the repaired crack. Will Goble notes that we have repaired a total of 19 cracks over the past few years, and the two repaired this summer should complete the job.

Since the primary was not removed, there was extra time to investigate the procedures for alignment of the secondary mirror and on-sky wavefront evaluation to optimize the image quality at the R-C focus. Should the Big Baryon Oscillation Spectroscopic Survey (BigBOSS) instrument be installed at the Mayall, this latter procedure will be very important because switching between prime focus BigBOSS and cassegrain operation will involve removal and installation of the entire secondary fixture on the front of the BigBOSS cage on a moderately frequent basis.

We also carried out a complete census of the cables in the Cassegrain rotator wrap-up, with the goal of determining if any may be removed to decrease the size and weight of the wrap-up. Since the eventual goal of efficient operation of the Kitt Peak Ohio State Multi-Object Spectrograph (KOSMOS) is to be able to rotate the instrument with the telescope at any position, not just at zenith, it will be necessary to find a way to ensure that the cables can be accommodated during rotation in a safe manner. Approximately 20 of the 60 cables in the wrap-up were removed, and tests of the rotator were carried out to ensure that operation away from the zenith will be possible with KOSMOS.

Standard maintenance of the guider rotator and recoating of some of the guider mirrors was also carried out.

On the instrumentation front, we note that NEWFIRM will be returning from Cerro Tololo later this fall and will be recommissioned on the Mayall 4-m telescope beginning in late January 2012. It will be offered for observing in the 2012A semester, although the recommissioning effort will be ongoing in early February.

We expect to begin testing and commissioning of KOSMOS during the fall of this year. See "KOSMOS and COSMOS Updates" in the System Science Capabilities section of this issue for more information.

WIYN 0.9-m Telescope News

Hillary Mathis

We would like to update the community on the status of the WIYN 0.9-m telescope. The past year has seen a number of positive changes and improvements at the venerable 0.9-m telescope, and we continue to operate at a fairly efficient level. A number of improvement and maintenance projects carried out in recent months have led to gains in overall operations. In addition, the past year has been busy with the commissioning of the new and improved Mosaic camera, three new partners joining the consortium, and continued work toward the completion of a new CCD imager for the 0.9-m telescope.

Mosaic 1.1, which had been recently upgraded and commissioned at the Mayall 4-m telescope, was brought to the 0.9-m telescope for commissioning in January 2011. The commissioning went very smoothly, and the weather cooperated to allow us to complete all of our verification

continued

WIYN 0.9-m Telescope News continued

science objectives in five nights. New users have been very happy with the ease of use of Mosaic 1.1 with its new software setup and are *very* excited about the 19-s readout time. We offered Mosaic 1.1 as a shared-risk instrument in semester 2011A, and it is currently being offered as a fully supported instrument in 2011B. Any member of the general user community can apply to use Mosaic 1.1 on the 0.9-m telescope through the regular NOAO time allocation process.

The 0.9-m Consortium has grown in the past year with the addition of three new partner institutions. We are happy to welcome Austin Peay State University, Rochester Institute of Technology, and Haverford College to our consortium. Our new partners have been very enthusiastic about the observing and educational opportunities opened up via their access to the telescope. The consortium is pleased to add new partners with a diverse range of interests and talents who will help us operate our mostly volunteer-based consortium.

We are continuing to make progress on bringing our new camera, the Half-Degree Imager (HDI) to the telescope. HDI is being built around a 4K × 4K monolithic CCD. The chip has been purchased from e2v, and testing of the detector has begun. We are currently completing negotiations with a vendor to package the CCD and provide a turn-key instrument. The completed HDI will deliver a field of view of 29.4 arcmin on a side (more than double the areal coverage of the current S2KB CCD) with 0.43-arcsec/pixel image scale. We expect readout times to be well under 30 seconds. We hope to be able to offer it to the public starting in 2012B.

For more information on the WIYN 0.9-m telescope, please refer to the home page at *www.noao.edu/0.9m*.

Community Access Time Available in 2012 with CHARA

Steve Ridgway

NOAO and Georgia State University are announcing a third opportunity for observations with the Center for High Angular Resolution Astronomy (CHARA) optical interferometer array at Mt. Wilson Observatory. About 50 hours will be available during calendar year 2012. Observations will be carried out by CHARA staff.

Requests should be submitted using the standard NOAO proposal form by selecting "CHARA" in the telescope list and entering "nights requested" as a decimal assuming 10 hours/night (e.g., 1.6 nights = 16 hours). Proposals must be submitted by the standard 2012A deadline of 30 September 2011. Note that this one-time call covers all of calendar year 2012, as opposed to the six-month period of February–July 2012 for other resources in the 2012A proposal cycle. For more information, see *www.noao.edu/gateway/chara/*.

System-Wide Observing Opportunities for Semester 2012A: Gemini, MMT, and Hale

Knut Olsen, Dave Bell & Verne V. Smith

Semester 2012A runs from 1 February 2012 to 31 July 2012, and the NOAO System Science Center (NSSC) encourages the US community to propose for observing time using all of the ground-based, open-access, system-wide facilities available during this semester. This article summarizes observing opportunities on telescopes other than those from KPNO, CTIO, WIYN, and SOAR.

The Gemini Telescopes

The US user community has about 50 nights per telescope per semester on the Gemini North and Gemini South telescopes, which represents the largest piece of open-access observing time on 8-m-class telescopes. The Gemini Observatory provides unique opportunities in observational and operational capabilities, such as the ability to support both classically- and queue-scheduled programs.

In an effort to increase interactions between US users and the Gemini staff, as well as observing directly with the telescopes and instruments, **NOAO strongly encourages US proposers to consider classical programs, which can be as short as one night, on the Gemini telescopes. NOAO will cover the travel cost to observe at Gemini for one observer.**

US Gemini observing proposals are submitted to and evaluated by the NOAO Time Allocation Committee (TAC). The formal Gemini "Call for Proposals" for 2012A will be released in early September 2011 (close to the publication date of this *Newsletter* issue), with a US proposal deadline of Friday, 30 September 2011. As this article is prepared well before the release of the Call for Proposals, the following lists of instruments and capabilities are only our expectations of what will be offered in semester 2012A. Please watch the NSSC Web page (*www.noao.edu/nssc*) for the Gemini Call for Proposals, which will list clearly and in detail the instruments and capabilities that will be offered.

NSSC anticipates the following instruments and modes on Gemini telescopes in 2012A:

continued

Observing Opportunites for Semester 2012A continued

***Gemini North*:**

- NIFS: Near-infrared Integral Field Spectrometer.
- NIRI: Near Infrared Imager.
- ALTAIR adaptive optics (AO) system in natural guide star (NGS) mode, as well as in laser guide star (LGS) mode. ALTAIR can be used with NIRI imaging, NIFS integral field unit (IFU) spectroscopy, NIFS IFU spectral coronagraphy, and GNIRS.
- Michelle: mid-infrared (7–26 μm) imager and spectrometer, which includes an imaging polarimetry mode.
- GMOS-North: Gemini Multi-Object Spectrograph and imager. Science modes are multi-object spectroscopy (MOS), long-slit spectroscopy, IFU spectroscopy and imaging. Nod-and-Shuffle mode is also available.
- GNIRS: Gemini Near Infrared Spectrograph offers a wide variety of spectroscopic capabilities including long-slit (single order) spectroscopy within the 1.0–5.4 μm range. The instrument can be used with adaptive optics over most of its wavelength range.
- All of the above instruments and modes are offered for both queue and classical observing, except for LGS, which is available as queue only. **Classical runs are now offered to programs that are one night or longer and consist of integer nights.**
- Details on use of the LGS system can be found at *www.gemini.edu/sciops/instruments/altair/?q-node/10121*, but a few points are emphasized here. Target elevations must be >40 degrees and proposers must request good weather conditions (Cloud Cover = 50%, or better, and Image Quality = 70%, or better, in the parlance of Gemini observing conditions). Proposals should specify "Laser guide star" in the Resources section of the Observing Proposal. Because of the need for good weather, LGS programs must be ranked in Bands 1 or 2 to be scheduled on the telescope.
- Time trades will allow community access to:
  Subaru: 4–8 nights (all instruments offered).

Gemini South:

- T-ReCS: Thermal-Region Camera Spectrograph mid-infrared (2–26 μm) imager and spectrograph.
- GMOS-South: Gemini Multi-Object Spectrograph and imager. Science modes are MOS, long-slit spectroscopy, IFU spectroscopy and imaging. Nod-and-Shuffle mode is also available.
- NICI: Near-Infrared Coronagraphic Imager. NICI is available for general user proposals, although its use is restricted to good seeing conditions.
- FLAMINGOS-2 is being refurbished at the La Serena base facility prior to being taken back to the telescope to finish its commissioning and is not expected to be available for general scientific use in 2012A.
- All modes for GMOS-South, T-ReCS, and NICI are offered for both queue and classical observing. **As with Gemini North, classical runs are now offered to programs with a length of at least one or more integer nights.**

Detailed information on all of the above instruments and their respective capabilities is available at *www.gemini.edu/sciops/instruments/instrumentIndex.html*.

We remind the US community that Gemini proposals can be submitted jointly with collaborators from other Gemini partners. An observing team requests time from each relevant partner. All multi-partner proposals must be submitted using the Gemini Phase I Tool (PIT).

Note that queue proposers have the option to fill in a so-called "Band 3" box, in which they can reconfigure their program execution if it is scheduled on the telescope in Band 3. Historically, it has been found that somewhat smaller than average queue programs have a higher probability of completion if they are in Band 3, as well as if they use weather conditions whose occurrences are more probable. Users might want to think about this option when they are preparing their proposals.

Efficient operation of the Gemini queue requires that it be populated with programs that can effectively use the full range of observing conditions. Gemini proposers and users have become increasingly experienced at specifying the conditions required to carry out their observations using the on-line Gemini Integration Time Calculators for each instrument. NSSC reminds you that a program has a higher probability of being awarded time and of being executed if ideal observing conditions are not requested. **The two conditions that are in greatest demand are excellent image quality and no cloud cover. We understand the natural high demand for these excellent conditions, but wish to remind proposers that programs that make use of less than ideal conditions are also needed for the queue.**

NOAO accepts Gemini proposals via either the standard NOAO Web proposal form or the Gemini PIT software. For additional instructions and guidelines, please see *www.noao.edu/noaoprop/help/pit.html*.

TSIP Open-Access Time on MMT

As a result of awards made through the National Science Foundation (NSF) Telescope System Instrumentation Program (TSIP), telescope time is available to the general astronomical community at the following facility in 2012A:

- ***MMT Observatory***
  Up to 12 nights (6 bright) of classically-scheduled observing time are expected to be available with the 6.5-m telescope of the MMT Observatory. We have a total of 28 nights on MMT, which we expect to take at up to ~10–12 nights per semester in 2012. Bright time requests (more than 10 days from new moon) are particularly encouraged and should have a higher probability of being scheduled. MMT is using the TSIP funds to finish development of the Binospec optical multi-object spectrograph. For further information, see *www.noao.edu/gateway/mmt/*.

ReSTAR Observing Time on the Hale Telescope

Funding for the Renewing Small Telescopes for Astronomical Research (ReSTAR) proposal was provided by the NSF for FY10, and one part of this award was used to procure 23 nights per year, over three years, on the 200-in Hale Telescope at Palomar. The 2012A allocation is as follows:

- ***Hale Telescope***
  Ten nights of classically-scheduled observing time will be available with the 200-in Hale Telescope at Palomar Observatory. For more information, see *www.noao.edu/gateway/hale/*.

Lists of instruments that we expect to be available in 2012A can be found following this article. As always, investigators are encouraged to check the NOAO Web site for any last-minute changes before starting a proposal.

If you have any questions about proposing for US observing time, feel free to contact us:
kolsen@noao.edu, *dbell@noao.edu*, or *vsmith@noao.edu*.

CTIO Instruments Available for 2012A

Spectroscopy	Detector	Resolution	Slit
CTIO BLANCO 4-m [1]			
Hydra + Fiber Spectrograph	SITe 2K×4K CCD, 3300–11,000Å	700–18,000, 45,000	138 fibers, 2" aperture
SOAR 4.1-m			
OSIRIS IR Imaging Spectrograph [2]	HgCdTe 1K×1K, JHK windows	1200, 1200, 3000	3.2', 0.5', 1.2'
Goodman Spectrograph [3]	Fairchild 4K×4K CCD, 3100–8500Å	1400, 2800, 6000	5.0'
CTIO/SMARTS 1.5-m [4]			
Cass Spectrograph	Loral 1200×800 CCD, 3100–11,000Å	<1300	7.7'
CHIRON	e2v CCD 4K×4K, 420–870 nm	80,000 (with image slicer)	2.7" fiber

Imaging	Detector	Scale ("/pixel)	Field
CTIO BLANCO 4-m [1]			
ISPI IR Imager	HgCdTe (2K×2K 1.0–2.4μm)	0.3	10.25'
SOAR 4.1-m			
SOAR Optical Imager (SOI)	e2v 4K×4K Mosaic	0.08	5.25'
OSIRIS IR Imaging Spectrograph	HgCdTe 1K×1K	0.33, 0.14	3.2', 1.3'
Spartan IR Imager [5]	HgCdTe (mosaic 4-2K×2K)	0.068, 0.041	5.2', 3.1'
Goodman Spectrograph [3]	Fairchild 4K×4K CCD	0.15	7.2' diameter
CTIO/SMARTS 1.3-m [6]			
ANDICAM Optical/IR Camera	Fairchild 2K×2K CCD	0.17	5.8'
	HgCdTe 1K×1K IR	0.11	2.0'
CTIO/SMARTS 1.0-m [7,8]			
Direct Imaging	Fairchild 4K×4K CCD	0.29	20'
CTIO/SMARTS 0.9-m [7,9]			
Direct Imaging	SITe 2K×2K CCD	0.4	13.6'

[1] In 2012A, the Blanco 4-m telescope will be available to users for a limited amount of time only. Please see the article by Chris Smith, "Update on DECam Installation & Blanco 4-m Availability: Blanco Shutdown in 2012A" in this section of the *Newsletter*.

[2] The spectral resolutions and slit lengths for the OSIRIS imaging spectrograph correspond to its low-resolution, cross-dispersed, and high-resolution modes, respectively. In the cross-dispersed mode, one is able to obtain low-resolution spectra at JHK simultaneously.

[3] The Goodman Spectrograph is available in single-slit mode. Imaging mode is also available, but only with U, B, V, and R filters.

[4] Service observing only.

[5] Spartan is available in the low resolution mode. The high resolution mode is commissioned, but has seen very little use. Spartan should be preferred to OSIRIS for most **imaging** applications.

[6] Service observing only. Proposers who need the optical only will be considered for the 1.0-m unless they request otherwise. Note that data from both ANDICAM imagers is binned 2×2.

[7] In 2012A, observing time and services at the 0.9- and 1.0-m telescopes might be reduced. For more information, please see the article by Charles Bailyn, "Availability of the CTIO 1.0- and 0.9-m Telescopes in 2012A."

[8] Classical observing only. Observers may be asked to execute up to 1 hr per night of monitoring projects that have been transferred to this telescope from the 1.3-m. In this case, there will be a corresponding increase in the scheduled time. No specialty filters, no region of interest.

[9] Classical or service, alternating 7-night runs. If proposing for classical observing, requests for 7 nights are strongly preferred.

Gemini Instruments Available for 2012A*

GEMINI NORTH	Detector	Spectral Range	Scale ("/pixel)	Field
NIRI	1024×1024 Aladdin Array	1–5μm R~500–1600	0.022, 0.050, 0.116	22.5", 51", 119"
NIRI + Altair (AO- Natural or Laser)	1024×1024 Aladdin Array	1–2.5μm + L Band R~500–1600	0.022	22.5"
GMOS-N	3×2048×4608 CCDs	0.36–1.0μm R~670–4400	0.072	5.5' 5" IFU
Michelle	320×240 Si:As IBC	8–26μm R~100–30,000	0.10 img, 0.20 spec	32"×24" 43" slit length
NIFS	2048×2048 HAWAII-2RG	1–2.5μm R~5000	0.04×0.10	3"×3"
NIFS + Altair (AO- Natural or Laser)	2048×2048 HAWAII-2RG	1–2.5μm R~5000	0.04×0.10	3"×3"
GNIRS	1024×1024 Aladdin Array	0.9–2.5μm R~1700, 5000, 18,000	0.05, 0.15	50", 100" slit (long) 5"–7" slit (cross-d)

GEMINI SOUTH	Detector	Spectral Range	Scale ("/pixel)	Field
GMOS-S	3×2048×4608 CCDs	0.36–1.0μm R~670–4400	0.072	5.5' 5" IFU
T-ReCS	320×240 Si:As IBC	8–26μm R~100, 1000	0.09	28"×21"
NICI	1024×1024 (2 det.) Aladdin III InSb	0.9–5.5μm Narrowband Filters	0.018	18.4"×18.4"

EXCHANGE	Detector	Spectral Range	Scale ("/pixel)	Field
MOIRCS (Subaru)	2×2048×2048 HAWAII-2	0.9–2.5μm R~500–3000	0.117	4'×7'
Suprime-Cam (Subaru)	10×2048×4096 CCDs	0.36–1.0μm	0.2	34'×27'
HDS (Subaru)	2×2048×4096 CCDs	0.3–1.0μm R<90,000	0.138	60" slit
FOCAS (Subaru)	2×2048×4096 CCDs	0.33–1.0μm R~250–7500	0.104	6' (circular)
COMICS (Subaru)	6×320×240 Si:As	8–25μm R~250, 2500, 8500	0.13	42"×32"
IRCS (Subaru)	1024×1024 InSb	1–5μm R~100–20,000	0.02, 0.05	21"×21", 54"×54"
IRCS+AO188 (Subaru)	1024×1024 InSb	1–5μm R~100–20,000	0.01, 0.02, 0.05	12"×12", 21"×21", 54"×54"

* Availability is subject to change. Check the NOAO and Gemini Calls for Proposals and/or the Gemini Web pages for up-to-date information.

KPNO Instruments Available for 2012A

Spectroscopy	Detector	Resolution	Slit Length	Multi-object
Mayall 4-m				
R-C CCD Spectrograph [1]	T2KA/LB1A CCD	300–5000	5.4'	single/multi
MARS Spectrograph	LB CCD (1980×800)	300–1500	5.4'	single/multi
KOSMOS [2]	e2v CCD	2400	up to 10'	single/multi
Echelle Spectrograph [1]	T2KA CCD	18,000–65,000	2.0'	
FLAMINGOS [3]	HgCdTe (2048×2048, 0.9–2.5mm)	1000–1900	10.3'	single/multi
WIYN 3.5-m [4]				
Hydra + Bench Spectrograph [5]	STA1 CCD	700–22,000	NA	~85 fibers
SparsePak [6]	STA1 CCD	400–13,000	IFU	~82 fibers
2.1-m				
GoldCam CCD Spectrograph	F3KA CCD	300–4500	5.2'	
FLAMINGOS [3]	HgCdTe (2048×2048, 0.9–2.5mm)	1000–1900	20.0'	
Imaging	**Detector**	**Spectral Range**	**Scale ("/pixel)**	**Field**
Mayall 4-m				
CCD MOSAIC 1.1	8K×8K	3500–9700Å	0.26	35.4'
NEWFIRM [7]	InSb (mosaic, 4, 2048×2048)	1–2.3μm	0.4	28.0'
SQIID	InSb (3-512×512 illuminated)	JHKs	0.39	3.3'
FLAMINGOS [3]	HgCdTe (2048×2048)	JHKs	0.32	10.3'
WIYN 3.5-m [4]				
Mini-Mosaic [8]	4K×4K CCD	3300–9700Å	0.14	9.3'
WHIRC [9]	VIRGO HgCdTe (2048×2048)	0.9–2.5μm	0.10	3.3'
2.1-m				
CCD Imager [10]	T2KB/STA2 CCD	3300–9700Å	0.305	10.4'
SQIID	InSb (3-512×512 illuminated)	JHKs	0.68	5.8'
FLAMINGOS [3]	HgCdTe (2048×2048)	JHKs	0.61	20.0'
WIYN 0.9-m				
CCD MOSAIC 1.1 [11]	8K×8K	3500–9700Å	0.43	59'

[1] T2KA is default CCD for RCSP and ECH. T2KB now serves as T2KA's backup. LB1A may be requested for RCSP if appropriate.

[2] Proposers should only write proposals for RCSP or MARS. But an interest in adapting the proposal to use KOSMOS may be expressed. See the KOSMOS article in this *Newsletter* for more details.

[3] FLAMINGOS Spectral Resolution given assuming 2-pixel slit. Not all slits cover full field; check instrument manual. FLAMINGOS was built by the late Richard Elston and his collaborators at the University of Florida. Dr. Anthony Gonzales is currently the PI of the instrument.

[4] Owing to a delay in the One Degree Imager (ODI), we expect 2012A to be a normal semester with the instrument complement as listed in the table. Repairs to the WIYN dome, which suffered damage during a winter storm in January 2010, may necessitate closing the facility for some nights in the 2012A semester. For current information regarding the status of the WIYN telescope and instruments, see *www.wiyn.org/observe/status.html*.

[5] One-degree field with two fiber bundles of ~85 fibers each. "Blue" (3") and "Red" (2") fibers.

[6] Integral Field Unit, 80"×80" field, 5" fibers, graduated spacing.

[7] NEWFIRM will be recommissioned in February 2012. Permanently installed filters include J, H, and Ks. See *www.noao.edu/ets/newfirm* for further information, filter availability, and policy on filter changes.

[8] Plans are underway to upgrade MiniMo. This upgrade will include new detectors, electronics, and operating system. Please see *www.wiyn.org/observe/status.html* prior to submitting your proposal to check on the status of the upgrade plan.

[9] WHIRC was built by Dr. Margaret Meixner (STScI) and collaborators. Proposals requiring use with WTTM should explicitly state this; new users of WTTM are advised to consult KPNO support staff for details.

[10] T2KB is the default CCD for CFIM. STA2, with MONSOON controller, is available on request, following laboratory development and some commissioning during 2011A. Its main advantages are better DQE than T2KB, especially in U and B, and faster readout. The field is somewhat smaller; 10.2'(RA) × 6.6'(DEC), pixel scale is same as for T2KB. Potential users should contact KPNO support staff for details.

[11] Availability at WIYN 0.9-m is strongly dependent on Mayall 4-m scheduled use.

MMT Instruments Available for 2012A

	Detector	Resolution	Spectral Range	Scale ("/pixel)	Field
BCHAN (spec, blue-channel)	Loral 3072×1024	R~800–11,000	0.32–0.8μm	0.3	150" slit
RCHAN (spec, red-channel)	Loral 1200×800	R~300–4000	0.5–1.0μm	0.3	150" slit
MIRAC-BLINC (mid-IR img, PI inst)	256×256 DRS MF/HF		2–25μm	0.054–0.10	13.8"–25.6"
Hectospec (300-fiber MOS, PI)	2 2048×4608	R~1000–2500	0.37–0.92μm		60', 1.5"×300
Hectochelle (240-fiber MOS, PI)	2 2048×4608	R~34,000	0.38–0.9μm		60', 1.5"×240
SPOL (img/spec polarimeter, PI)	Loral 1200×800	R~300–2000	0.38–0.9μm	0.19	19"
ARIES (near-IR imager, PI)	1024×1024 HgCdTe	R~3000–60,000	1.1–2.5μm	0.02–0.10	20"–100"
SWIRC (wide n-IR imager, PI)	2048×2048 HAWAII-2		0.9–1.8μm	0.15	5'
CLIO (thermal-IR AI camera, PI)	512×1024 HAWAII-1		3–5μm	0.03	15"×30"
MAESTRO (optical echelle, PI)	4096×4096	R~28,000–93,000	0.32–1.0μm	0.15	
PISCES (wide n-IR imager, PI)	1024×1024 HgCdTe		1–2.5μm	0.026–0.185	0.5'–3.2'
MMTPol (AO n-IR polarimeter, PI)	1024×1024 HgCdTe		1–5μm	0.043	25"

Hale Instruments Available for 2012A

	Detector	Resolution	Spectral Range	Scale ("/pixel)	Field
Double Spectrograph/Polarimeter	1024×1024 red, 2048×4096 blue	R~1000–10,000	0.3–1.0μm	0.4–0.6	128" long, 8"×15" multi
TripleSpec	1024×2048	R~2500–2700	1.0–2.4μm	0.37	30" slit

CHARA Instruments Available for 2012

	Beam Combiner	Resolution	Spectral Range	Beams
The CHARA Array consists of six 1-m aperture telescopes with baselines from 30 to 330 meters.	Classic, Climb	Broadband	H or K	2 or 3
	MIRC	40	H or K	6
	VEGA	6000/30,000	45nm in 480–850nm	2 or 3

Changes Made to the ORP

The KPNO Observing Run Preparation (ORP) form has been redesigned to better suit the needs of our observers and support staff. Check it out at *www.noao.edu/kpno/forms/orp-form/noao-orp.html* the next time you need to submit an ORP!

Participating in the SMARTS Consortium

Charles Bailyn & Todd Henry

The Small and Moderate Aperture Research Telescope System (SMARTS) Consortium would like to remind all NOAO users that they or their institutions can join SMARTS at a variety of levels. Possible membership can be acquired for single use observing runs that span a few days or weeks, or distributed observing over one or more semesters for time-domain science. Guaranteed time on the CTIO 1.5-, 1.3-, 0.9- or Yale 1.0-m telescopes can be purchased by individual members for as little as a few thousand dollars, up to major partners contributing $50K to $100K per year or more. Capabilities of the SMARTS telescopes include imaging at optical and infrared wavelengths and low- and high-resolution spectroscopic observations. Astronomers may opt for user time for which they travel to the telescope, or service observations done by SMARTS staff for which observing cadences are highly flexible. Partnerships can be with institutions, with individuals, or with groups of individuals. We also welcome international partners. SMARTS is particularly useful for graduate and undergraduate training and observing experience. Please see *www.astro.yale.edu/smarts*, or contact Charles Bailyn at *charles.bailyn@yale.edu* or Todd Henry at *thenry@chara.gsu.edu* for details about how to become a SMARTS member.

After Twelve Years of Mosaic II. . .

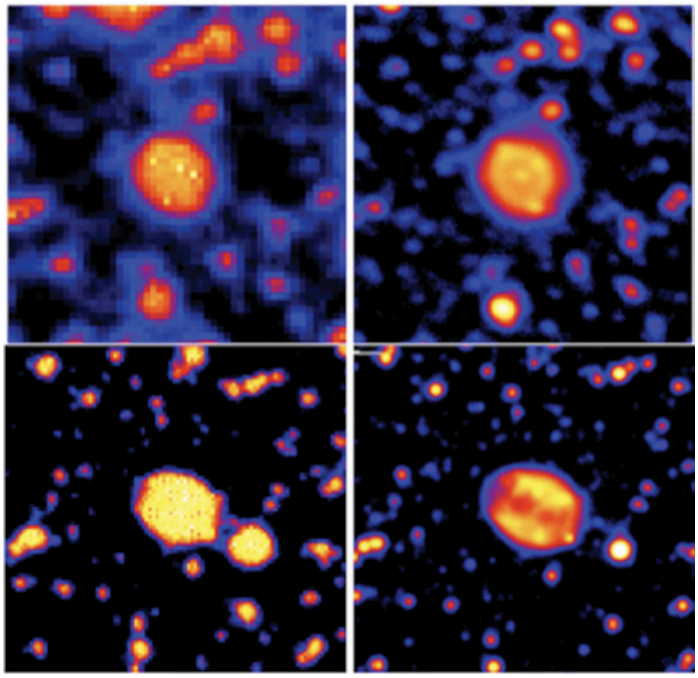
Andrea Kunder

The NOAO community bids farewell to the soon-to-be decommissioned Mosaic II optical imager of the Cerro Tololo Inter-American Blanco 4-m Telescope. After twelve years of outstanding performance, this optical, wide-field imager with its 36 × 36 arcmin field of view and 0.27-arcsec pixels will be retired in late 2011. The Mosaic II imager saw first light in July 1999 and replaced the Big Throughput Camera (BTC) previously used on the Blanco 4-m telescope. The decommissioning of the Mosaic II imager is due to the construction of the next generation of wide-field imagers, the Dark Energy Camera (DECam), which will take over the throne at the Blanco prime focus.

"Having been involved at the beginning of the mosaic project, helping deploy first Mosaic I, and later Mosaic II, it is very rewarding to see how successful and productive the two instruments have been," says SOAR Director Steve Heathcote about his experience with Mosaic II. He added, "In some semesters, more than 50% of the allocated time went to Mosaic II, its users going away with gigabytes of data." Mosaic II has been especially valuable to the astronomy community due to the large number of optical filters that are available for use (~25), the large number of photometric nights for imaging (~220 per year) and its wide field of view. The accompanying image shows the greatly improved image quality that is easily achieved with Mosaic II. "Not only have we seen important advances in astrophysics as a result of programs that have taken advantage of Mosaic II," states Alistair Walker, also one of the first Mosaic II instrument scientists, "but our work with Mosaic II has paved the way for state-of-the-art, wide-field cameras, such as DECam."

Mosaic II will continue to live on, not only in our hearts, but also through the NOAO Science Archive (*www.noao.edu/sdm/archives.php*), which hosts much of the data that has been taken over the years, pipeline-reduced, and available to download for free. A full description of Mosaic II can be found on the Mosaic II Web pages, *www.ctio.noao.edu/mosaic*.

continued



PPA1800-2904 (top) and H2-36 (bottom). Compare the photographic SHS image on the left (taken in Hα) with the higher resolution Mosaic II image on the right (taken in [O III] λ5007). Note the improved ability to discern the bipolar core in H2-36 and the shell structure revealed around the central star of compact MASH PN PPA1800-2904. (Image credit: Anna Kovacevic.)

After Twelve Years of Mosaic II continued

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End of Run Report: .Blanco 4-m.MosaicII
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Telescope:                                  Blanco 4-m
Instrument:                                 Mosaic II

Date, beginning of first night of run: 1999 B
Date, beginning of last night of run:  2011B

General disposition of run:
Total Nights:                               1694.5
Unique Runs:                                489
Unique Programs:                            355
Time lost to technical problems:            just a little
Portion of goals achieved:                  more than ever expected
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Comments, recommendations, suggestions:
Only a camera with a wider field of view, faster read out time and fewer arcon crashes would improve on
Mosaic II.
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While there are too many interesting results to list in this article, the following ones are some of the highlights.

"Astrometric and Photometric Follow-up of Newly Discovered Small NEOs"

J. Masiero, A. Mainzer, J. Bauer, T. Grav, J. Larsen, R. McMillan & E.L. Wright

The Wide-field Infrared Survey Explorer (WISE), in the course of conducting an all-sky four-color mid-infrared survey, became the leading observer of small Solar system objects in the year 2010. While many of these objects were previously known, newly discovered objects, especially those asteroids that pass close to the Earth known as near-Earth Objects (NEOs), required prompt astrometric follow-up to enable precise calculation of their orbital elements. The unique combination of wide field-of-view, large aperture, and location in the Southern Hemisphere offered by CTIO with Mosaic-II provided a critical component to our follow-up program of the smallest, darkest and most unusual NEOs observed by WISE/NEOWISE. Photometric observations of these objects further enabled us to determine albedos and preliminary spectral classifications for these newly discovered objects. This project, combined with WISE and data from a suite of other follow-up observatories, has allowed us to measure with the highest precision to date the number of asteroids passing close to the Earth and thus the hazard they pose. Simultaneously, physical characterization has provided an avenue to understand the origin of the NEOs and the orbital evolution of the Solar system as a whole.

"A New [O III] Galactic Bulge Planetary Nebulae Luminosity Function"

Anna V. Kovacevic, Quentin A. Parker, George H. Jacoby, Rob Sharp, Brent Miszalski & David J. Frew

The Planetary Nebulae Luminosity Function (PNLF) distance technique is an important standard candle for observational cosmology and has already provided accurate distances to 62 galaxies as near as the Magellanic Clouds and as far away as the Coma cluster (>100Mpc). We have successfully used the Mosaic-II camera on the CTIO 4-m Blanco telescope in July 2008 and June 2009 to obtain narrowband [O III] photometry of 435 Planetary Nebulae in the Galactic bulge to perform detailed studies with which to construct a new PNLF. This is the largest (~60 square degrees), uniform [O III] survey of the inner Galactic bulge ever undertaken and provides observations for ~80% of known PN in this region. Three hundred and eighty-three of these PN were being observed in [O III] for the first time, so these observations have provided a significant advance for PN studies in the Galactic bulge. The excellent resolution of our data allows for not only a robust set of homogeneous fluxes and angular diameters, but greater details into their intricate, otherwise undetermined PN morphologies.

"The Monitor Project: Rotation Periods and Occultations of Young Low-Mass Stars with Mosaic-II"

Suzanne Aigrain, Jonathan Irwin, Simon Hodgkin, Estelle Moraux, Jerome Bouvier, Leslie Hebb, Adam Miller, Jayne Birkby & Aleks Scholtz

We used Mosaic-II between 2005 and 2007 to obtain time-series photometry of three young open clusters: NGC2362, NGC2516, and M50 as part of the Monitor project (Aigrain et al. 2007; Irwin et al. 2007a). Candidate cluster members were selected from color-magnitude diagrams, constructed using deep Mosaic I- and V-band images, and their I-band light curves were searched for sinusoidal modulation (indicative of rotational modulation of star-spots), eclipses, and transits. The rotation period results provided very valuable constraints on the angular momentum evolution of low-mass stars from the TTauri stage to the early main-sequence (Irwin & Bouvier 2009, Irwin et al. 2007b, 2008, 2009). We were also able to identify several dozen candidate eclipsing binaries and planetary transits, most of which were followed up using FLAMES/GIRAFFE on the VLT. (Miller et al. 2008; Birkby et al. 2009). Analysis of additional Mosaic-II observations of NGC 2547, obtained in 2009 to extend the rotation period coverage to very low mass stars, is also ongoing.

References

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