



The Ongoing Renewal of KPNO

Buell Jannuzi

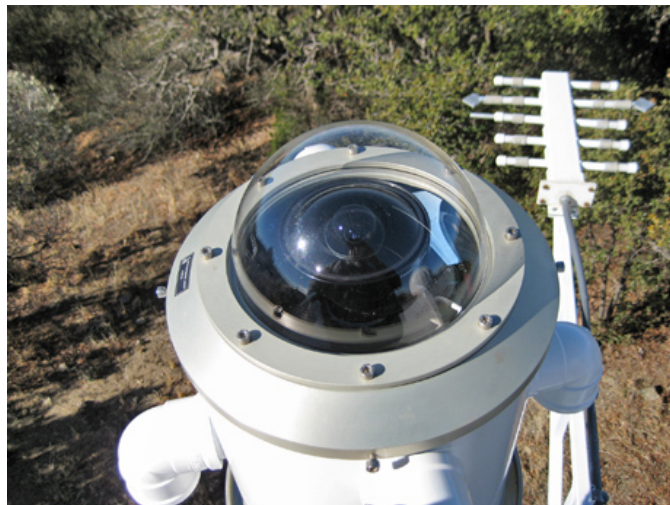
As we get ready to enter the 50th year of the Kitt Peak National Observatory (KPNO), we are continuing our efforts to renew our relationships with the communities we rely on for support, and to modernize and augment the facilities we provide for research and education. We are renewing our staff through new hires and additional training (see companion story). We are working to modernize our infrastructure, telescopes, and instruments. The observatory will be well-positioned to continue as a key component of the system of capabilities that NOAO provides to the community (see related story in the Director's Office section).

KPNO is situated on Kitt Peak in the Schuk Toak District of the Tohono O'odham Nation. The mountain, known as Iolkam Duag or Ioligam Doag to the O'odham, is part of a range of mountains that are sacred to them and an important part of the Tohono O'odham cultural heritage.



Tohono O'odham Nation Chairman Ned Norris, Jr., Schuk Toak District Chairwoman Phyllis Juan, and representatives of the Councils of the District and Nation visit the WIYN 3.5-meter telescope during their tour of Kitt Peak National Observatory 3 December 2007. Credit: J. Glaspey

Over the past year, KPNO and the NOAO educational outreach office have worked with various groups of the Tohono O'odham community to develop further educational programs with the students and teachers of the schools serving the Nation's children and adults. Many of these programs take advantage of the observatory's telescopes to share the wonders of the night sky with the people of the Tohono O'odham Nation. In December, we hosted a tour of the observatory for representatives of the District and the Nation's executive and legislative governments so that they could learn more about the programs that we make available to the people of the Nation and the operations of the observatory, including the telescopes of the National Solar Observatory. In February, we attended the Schuk Toak District Council



The Kitt Peak All Sky Camera (KASCA) has been installed on the roof of the administration building and will be going into operation in late February.

meeting to review our existing programs with the O'odham and begin the process of developing new collaborations that will address common goals, including improved science education of the Nation's youth. We will continue to work with the Tohono O'odham Nation, the host of our astronomical research and educational activities.

The long-term potential of our observatory also depends on the continued support of the local governments of Arizona to help protect the dark skies that helped attract the many observatories that now operate in Arizona (which represent a total investment of more than \$1 billion in infrastructure, see the related story regarding a new study of astronomy's economic impact on Arizona). Recently we have had several productive meetings with representatives of Pima County to investigate how the existing, strong Outdoor Lighting Code (which is shared by the City of Tucson) might be modified to make it easier for all to support and follow as the technologies that need to be regulated evolve. We have received very constructive suggestions and support from County Supervisor Sharon Bronson and county staff in the Sustainability and Development offices. In the months ahead, we will be holding similar meetings with representatives of governments to the north and south of Pima County, whose outdoor lighting codes are also critical to the preservation of the dark skies the observatory currently enjoys.

We continue to make progress on renewing the telescopes and observatory infrastructure. Some new computers have been installed at the Mayall 4-meter telescope, in part to support the arrival of the newly commissioned wide-field, near infrared imager NEWFIRM, by improving the system that coordinates the communication between all

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The Ongoing Renewal of KPNO continued

the instruments and the telescopes. A new Kitt Peak All-Sky Camera (see photo) has been mounted on the administrative building on Kitt Peak and will be providing images via the Web by the publication date of this *NOAO/NSO Newsletter*. A differential image-motion monitor (DIMM) identical to one installed at our sister observatory in Chile, Cerro Tololo Inter-American Observatory, has been assembled and will be deployed on the mountain during the next two months. This will allow improved monitoring of the site characteristics for comparison to the delivered image quality at each of our telescopes. A new clean-room facility suitable for the changing of filters in NEW-FIRM, which will avoid the need to take the instrument to Tucson just to change filters, has been designed and is being purchased. Progress on additional projects will be provided in future *Newsletter* articles.

While we prepare for the future, we are also preparing to celebrate the past 50 years of your national observatory. On 1 March 1958, Kitt Peak was selected as the site for the national observatory, and on 15 March

1960, Kitt Peak National Observatory was dedicated. Historically we have celebrated our anniversary using 1958 as our founding year, but for this 50th anniversary, we will continue celebrations through 2010, the 50th anniversary of our dedication. The extended timeline allows us to hold a series of events to include all the diverse groups that have been critical to the successes of the national observatory.

We are already discussing the topic with the Tohono O'odham Nation and our own staff to obtain their ideas about how we should celebrate the anniversary of the national observatory and the landmark concept that it be open to all astronomers based on the merit of their scientific proposals. We are also eager for your suggestions. Please send your suggestions to the chair of the KPNO 50th Anniversary Steering Committee, Elizabeth Alvarez (ealvarez@noao.edu), and watch the NOAO Web site and *NOAO/NSO Newsletter* for updates in the months ahead. ■

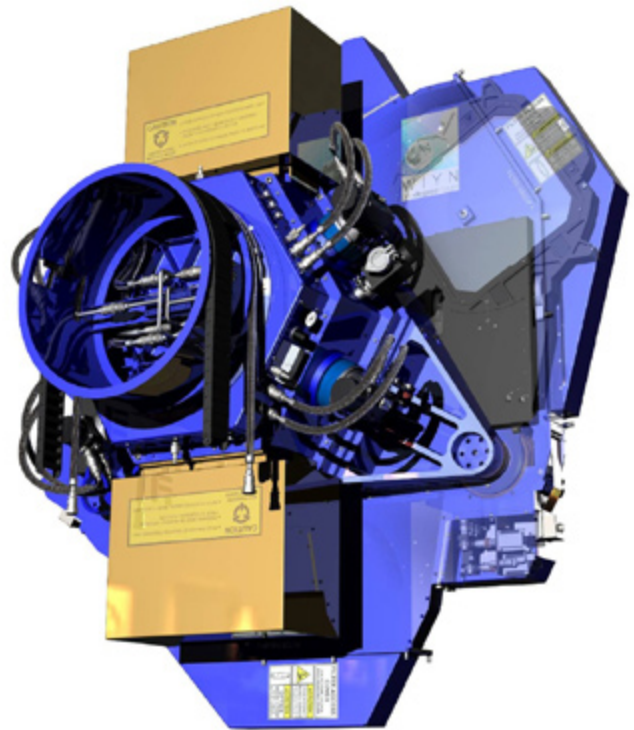
Gary Muller Wins Design Contest Grand Prize—Again!

John Cavin (WIYN/University of Wisconsin)

WIYN Senior Mechanical Engineer Gary Muller won the Grand Prize in the SolidWorks Design Contest 2007 for the mechanical design of the WIYN One-Degree Imager (ODI). Gary had previously won the contest in 2001 for the design of the Gemini Near-Infrared Spectrograph (GNIRS). The announcement was made in January before an audience of 4,700 participants at the SolidWorks World 2008 conference. The press release may be viewed at www.pr-inside.com/powerful-observatory-camera-model-wins-r401747.htm.

The ODI design consists of approximately 500 individual drawings and 17,000 parts. The completed ODI camera will be approximately 7.5 feet high and will weigh approximately 2,500 pounds. ODI consists of a forward corrector, Atmospheric Dispersion Compensators, a nine-position filter mechanism, a shutter, a Dewar assembly, and the controller electronics (see figure). The Dewar assembly houses a 16-inch square silicon carbide plate that mounts the 64 Orthogonal Transfer CCDs (OTCCDs) that make up the one-Gigapixel focal plane. The Dewar also provides vacuum and cooling for the OTCCDs to $-110 \pm 1^\circ\text{C}$.

Gary used SolidWorks to document the entire design and is using the tools available in the NOAO machine shop to transfer the design electronically to the computer-controlled machines for fabrication. We congratulate Gary on another excellent instrument design and his international recognition as one of the nation's top mechanical engineers.



Rendering of the WIYN ODI designed by Gary Muller.

KPNO Staff Changes

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During the past year, we have been hiring new staff at Kitt Peak National Observatory and our downtown facilities for two reasons. The first is to cover positions of staff members who retired or moved on to new positions. The second is to expand our workforce to be able to undertake the modernization projects recommended by the NSF's Senior Review report and proposed in the five-year AURA renewal proposal submitted to the NSF. Here are some of our recent hires.

We welcome Karen Ray and Mario Lanning to the staff of the Central Facilities Office (CFO). As a secretary, Karen covers the position held by Susan Davidson, who retired after nearly thirty years of outstanding service to NOAO. Visitors will notice that Karen's many duties include supporting observers and docents who go to Kitt Peak by issuing General Services Administration (GSA) licenses and shuttle vehicle keys. As an information systems technician, Mario supports CFO and Kitt Peak with computer support and Web design, general installation and oversight of the energy and access control systems equipment, wiring and minor programming of low-voltage systems, and support to the video conferencing and PBX systems.

William (Bill) Ball joined our outstanding Electronic Maintenance team as a technician associate supporting the mountain instruments and telescopes. Bill spent two years in private industry following nine years at NOAO, where he worked with Al Fowler in the Infrared (IR)

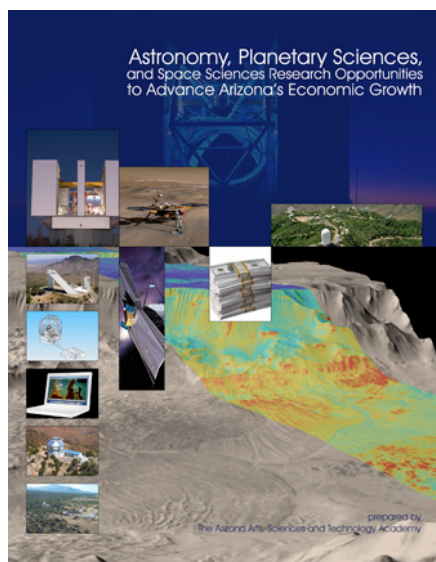
Research and Development Lab during the ALADDIN and Orion InSb detector development projects. Well-versed in cryogenic operations and IR-array controllers, Bill brings expertise matched to both existing and planned instrumentation.

Observing Assistants (OAs) Ed Eastburn and Hillary Mathis recently left KPNO for new positions with Pima County and the WIYN Observatory 0.9-meter telescope, respectively. We appreciate the excellent service they provided to the observatory. We have been fortunate to cover those positions with two new OAs who joined the staff in February. David Summers was an OA at KPNO from 1992–1995 and has operated facilities in New Mexico. Kristin Reetz has prior astronomy experience at Lowell Observatory.

We are pleased to announce that Alonzo Yeppa moved from our mountain facilities crew, where he worked as a custodian, to a new position as an observing support technician. Alonzo is working with Skip Andree and Bill Binkert to learn how to operate our telescopes, change the instruments, and generally support our observing operations.

Finally, we welcome Michael Kindschi, who joined Kitt Peak Engineering as a mechanical designer. Michael is assisting in both our continuing maintenance efforts and our modernization projects.

New Study Scopes Out Annual Impact of Astronomy and Space Sciences on Arizona



A new study of the economic impact of astronomy, space science, and planetary science on the state of Arizona found an annual impact of \$252.8 million, about equal to the once-per-decade influx from professional football's recent Super Bowl held in Phoenix. The sector employs 1,830 people in Arizona, with secondary employment that produces a total of 3,300 jobs. The cumulative investment in facilities, land, and instruments was found to be \$1.19 billion, with another \$635.7 million planned or underway.

The study, which included significant input and support by NOAO and NSO, was conducted for the Arizona Arts, Sciences and Technology Academy (AASTA) by the University of Arizona's Eller College of Management. The study project oversight committee was chaired by AASTA member Robert Millis, director of Lowell Observatory, with vice-chairs Michael Drake (University of Arizona) and Ronald Greeley (Arizona State University). Articles and editorials related to the report—including its recommendation for actions related to preserving the state's dark skies—have appeared in a variety of media outlets, including the Arizona Republic and Arizona Daily Star newspapers.

The report and related materials can be found at www.aasta.net/.