

## Contact List

**Kitt Peak Visitor Center**—318-8726  
Nick Petrosino, Supervisor  
npetrosino@noao.edu  
318-8732

**NOAO Public Outreach**  
Rich Fedele, Manager  
rfedele@noao.edu  
318-8163  
Robert Wilson,  
Program Coordinator  
rwilson@noao.edu  
318-8440

### Kitt Peak Docent Program

950 N Cherry Ave  
Tucson, AZ 85719

**Docent Forum:** <http://groups.yahoo.com/group/docentforum/>

**Docent Calendar:** <http://groups.yahoo.com/group/docentforum/>

**Volunteering at Kitt Peak:** <http://www.noao.edu/outreach/kpoutreach.html>

[www.noao.edu](http://www.noao.edu)



## Next Docent Meeting Monday, February 18

The next docent meeting will be held on Monday, February 18. The meeting will convene at 6:00 in the main conference room and will feature dinner and a speaker. Docents should visit the docent forum calendar to schedule their hours. Docents who do not have web access may contact Nick Petrosino. See the URL for the docent calendar at lower left.

«First Name» «Last Name»  
«Mailing Address»  
«City» «State» «Zip Code»



# DOCENT NEWS

## EDWIN CARPENTER'S STAR PARTY

### Points of Interest:

- The docent meeting is scheduled for Monday, February 18 and will feature dinner and speaker Rich Fedele.
- February 5: Lecture: Asteroid Impact-Protecting the Earth, Fullerton CA
- February 7: Annular solar eclipse, visible in Antarctica
- February 8: Jules Verne's 180th birthday (1828)
- February 12: Asteroid 2007 DA near-Earth flyby at 0.025 AU
- February 16: 60th anniversary (1948) of Gerard Kuiper's discovery of Uranus Moon Miranda
- February 19: Nicolas Copernicus's 535th birthday (1473)
- February 20: Last total lunar eclipse until December 2010
- February 23: Saturn at opposition

For additional information about these points of interest, visit [www2.jpl.nasa.gov/calendar/](http://www2.jpl.nasa.gov/calendar/).

In their tour introductions, docents tell of the difficulty encountered by the NSF in getting the reluctant tribal council to grant access to Kitt Peak. The negotiations took a favorable turn after the council attended a star party at Steward Observatory, hosted by Dr. Edwin Carpenter, on October 28, 1955.

A question sometimes arises about what the group might have viewed through the 36-inch telescope then housed in Steward Observatory. In his book *Realm of the Long Eyes: A Brief History of Kitt Peak National Observatory*, author James E. Kloeppel (1983) states that "the sight of the moon and planets awed the Council . . ." (p. 20).

The moon was certainly up that night and if fact would have dominated the sky with 93.6% illumination. In *AURA and its US National Observatories* (Edmondson, 1997) Dr. Meinel recounts the occasion, as told to him by Dr. Carpenter, in a letter written shortly after the event at Steward. He writes of the "dramatic occasion" for the Council members to look at the moon and then "tell what they had seen through the telescope" (p. 44).

But were there really any planets available for viewing during that historic star party?

According to *Sky and Telescope* for October 1955 (p. 523), Mercury set ninety minutes before the sun. Assuming that the event occurred after dark, Mercury would not have been an option. Venus too was not favorably placed for viewing, being just over 11 degrees from the sun and setting forty-five minutes later.

Mars and Jupiter rose before the sun in the morning sky by two hours and four and a half hours respectively. So they too would have set while it was still light.

Saturn reached conjunction with the sun early in the month of October, ruling out that planet as a possible target and Neptune had just passed conjunction and so was out of contention as well.

That leaves Uranus, which *Sky and Telescope* says was available only in the morning hours. And Pluto, of course, would not have been worth the trouble, at magnitude 14, if it had been available.

So it appears that the moon stole the show that night, but it produced the desired results. The following January, the Schuk Toak District Council recommended to the Papago Council that access to Kitt Peak be granted to the NSF. The rest is astronomy history.

## NSF PROPOSAL REVIEW PANEL ON KITT PEAK

On February 20, the same date as the lunar eclipse, members of a proposal review panel created by the National Science Foundation will visit Kitt Peak. The panel comprises members of various institutions who are visiting NOAO and NSO facilities in preparation for the renewal of the cooperative agreement between AURA and the NSF.

The cooperative agreement is the funding lifeline for NOAO. Every five years the cooperative agreement comes up for renewal. As happened five years ago, it can also be re-

competed. Then organizations including AURA competed to manage NOAO in cooperative agreement with the NSF. The NSF awarded the agreement to AURA. This time AURA is not in competition with any other organizations.

But the visit is nonetheless important. Docents may encounter the panel members in the visitor center and elsewhere. Docents need only display their usual professionalism and dedication to the mission of the visitor center to make a favorable impression.

## LINKED HAWAIIAN TELESCOPES CATCH A NOVA SURPRISE

First results from a new NASA-funded scientific instrument at the W. M. Keck Observatory at Mauna Kea, Hawaii, are helping scientists overturn long-standing assumptions about powerful explosions called novae and have produced specific information about one nearby nova.

This sophisticated new system, called the Keck Interferometer, combines the observing power of the two 10-meter (33 feet) Keck telescopes into a single mega-telescope. Using the interferometer's "nulling" mode, data were taken by the Keck Interferometer team on a nearby nova called RS Ophiuchi.

In "nulling" mode, the Keck Interferometer suppresses the blinding light of a star so researchers can study the surrounding environment. The instrument helps them observe very faint objects near bright sources and produces 10 times more resolving power than a single Keck telescope working alone. It is the only instrument of its kind in operation.

The nulling mode was developed to search for dust regions around nearby stars, where planets might be forming, but the bright starlight poses a great challenge. "Because a star is so much brighter than the dust, something has to block the light, which is what the nuller does," said Rachel L. Akeson, Keck Interferometer project scientist at the California Institute of Technology's Michelson Science Center. "This technique turns out to be useful for lots of other kinds of objects, including this one, where dust is near a star that just went nova."

These nova data were taken by a team led by Wes Traub of NASA's Jet Propulsion Laboratory, Pasadena, Calif., and the data analysis and unified model for the nova were produced by a team led by Richard Barry and William Danchi of the Goddard Space Flight Center, Greenbelt, Md.

The star in the constellation Ophiuchus went nova at the perfect time for the team, on Feb. 12, 2006. "We were extremely lucky, because we had astronomers in place at two mountain-top interferometers, Keck in Hawaii and Infrared Optical Telescope Array in Arizona. Within minutes of hearing about the discovery of the nova, we alerted both teams to start observing it that night," said Traub, a senior research scientist at JPL.

The nova system, known as RS Oph consists of a white dwarf and a red giant. The red giant is gradually shedding its massive gaseous outer layers, and the white dwarf is sweeping up much of this wind, growing in mass over time. As the matter builds up on the white dwarf's surface, it eventually reaches a critical temperature that ignites a thermonuclear explosion that causes the system to brighten 600-fold. RS Oph was previously observed blowing its stack in 1898, 1933, 1958, 1967 and 1985, so astronomers were eagerly anticipating the 2006 eruption.

About three-and-a-half days after the nova was detected, the group observed the explosion with the Keck nuller. They set the instrument to cancel the nova's light, allowing them to see the much fainter surrounding material, and then the extremely

bright blast zone.

The instrument's versatility was key to a surprising discovery. The nuller saw no dust in the bright zone, presumably because the nova's blast wave vaporized dust particles. But farther from the white dwarf, at distances starting around 20 times the Earth-sun distance, the nuller recorded the spectral chemical signature of silicate dust. The blast wave had not yet reached this zone, so the dust must have pre-dated the explosion.

"This flies in the face of what we expected. Astronomers had previously thought that nova explosions actually create dust," said Richard Barry of Goddard, lead author of the paper on the observations that will appear in the *Astrophysical Journal*. The team thinks the dust is created as the white dwarf plows through the red giant's wind, creating a pinwheel pattern of higher-density regions that is reminiscent of galaxy spiral arms. Inside these arms, atoms become cool enough and dense enough to allow atoms to stick together to form dust particles. The nova's blast wave has since destroyed RS Oph's pinwheel pattern, but it should re-form over the next few years, and future observations by NASA's Spitzer Space Telescope could see it. Barry is also coauthor of a paper based on Spitzer observations of RS Oph.

Most studies of RS Oph have relied on spectroscopic models, which have not been able to distinguish various nova components with as much detail as the interferometer. The Keck nuller measured one component of the RS Oph system to an accuracy of just 4 milliarcseconds, or about the size of a basketball seen 7,500 miles away.

The Keck Interferometer is part of NASA's ongoing quest to search for planets orbiting other stars. JPL, a division of Caltech, manages the Keck Interferometer for NASA. The Keck Interferometer was developed by JPL, the W.M. Keck Observatory and the Michelson Science Center. The W.M. Keck Observatory is funded by Caltech, the University of California and NASA, and is managed by the California Association for Research in Astronomy, Kamuela, Hawaii. More information on the Keck Interferometer is at <http://ki.jpl.nasa.gov>.

*Additional contact:  
Laura Kinoshita  
Keck Observatory  
Mauna Kea, Hawaii  
1- 877-239-3067  
laura@laura-kinoshita.com*

# February 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 Don, Vance (C)	2 Jim, Jerry, Mike
3 Larry L., Ken	4 Frank, Joe W. <i>Sierra MS 20</i>	5 Gerald, Joyce, Mike	6 Sheila, Paul	7 Joe S., Jerry	8 Don, Robert	9 Eugene, Jim
10 Jerry, Ken	11 Aubrey, Larry	12 Gerald, Mike	13 Sheila, Frank	14 Joe S., Aubrey, Jerry	15 Don, Vance(C)	16 Eugene, Jim
17 Jerry, Gerald	18 Joyce, Frank <i>Docent Meeting</i>	19 Gerald, Joe W.	20 Sheila, Paul	21 Everett, Robert, Jerry <i>1st Baptist 40</i>	22 Don, Joe S.	23 Larry L., Jim
24 Jerry, Ken	25 Robert, Paul	26 Gerald, Joyce	27 Sheila, Paul	28 Everett, Aubrey, Jerry	29 Don, Joe S., Vance(C)	

## DOCENT CLASS OF 2008

Docent training for 2008 is in session with another promising group of trainees. They completed the introduction to Kitt Peak in fine fashion on January 23 and were introduced to CFO and the policies of the docent program on January 30. From here on they will spend most of their time on Kitt Peak.

The twelve trainees are Harald Bange, Alan Brass, Adrienne DeMinor, Chester Fennell, David Jacobsen, Renae Lauterbach, Sherry Massie, Keith Parker, David Sattinger, CR Teeple, Douglas Van Dorpe, and John White. A couple of the trainees have some experience with astronomy, including at least one active observer and TAAA member.

Public Outreach is pleased to have them in the program and urges the docents to offer them support and encouragement as you encounter them about the facility or at the docent meetings. Mentors will be contacted soon to establish partnerships while training is still in progress.

## CLASS OF 2007 ONE-YEAR REUNION

Often during the course of docent training friendships form among the trainees. After graduation those friends find themselves on different schedules, perhaps meeting occasionally at the docent meetings. Two graduates of the class of 2007, Joe Wilkins and Robert Irwin, decided that a reunion of their class would be a good way to renew the friendships and celebrate their first year as docents. On January 19, seven of the docents and their wives gathered at the home of Joe and Jean Wilkins. Pictured from left to right are Bill Sisco, Frank Jank, Joe Spitler, Robert Irwin, Jack Juraco, Robert Wilson, Everett Lindsay, and Joe Wilkins. Paul Barby could not attend.

