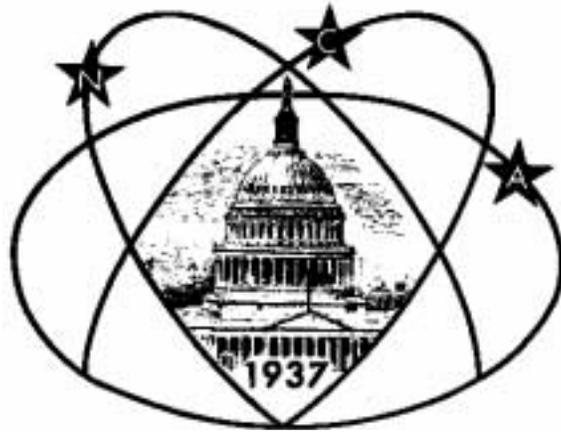


# Star



# Dust

National Capital Astronomers, Inc.

<http://capitalastronomers.org>

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## November Speaker: Dr. Neil Gehrels, “Gamma Ray Burst Discoveries with Swift”

Dr. Neil Gehrels, NASA Goddard Space Flight Center, will present the talk “Gamma Ray Burst Discoveries with Swift” at the November 11 meeting of the National Capital Astronomers, 7:30 P.M., at the University of Maryland Observatory, in College Park, Maryland.

### Abstract

Gamma-ray bursts are among the most fascinating occurrences in the cosmos. They are thought to be the birth cries of black holes throughout the universe. There has been tremendous recent progress in our understanding of bursts with the new data from the Swift mission. Swift was launched in November 2004, and is a multi-wavelength observatory designed to determine the origin of bursts and use them to probe the early Universe. It was developed and is being operated by an interna-

tional team of scientists from the US, UK and Italy. The early findings from the mission will be presented. A large step forward has been made in our understand-

**“Gamma-ray bursts are thought to be the birth cries of black holes throughout the universe.”**

ing of the mysterious short GRBs. High redshift bursts have been detected, leading to a better understanding of star formation rates and distant galaxy environments. GRBs have been found with giant X-ray flares occurring in their afterglow. These, and other topics, will be discussed.

### Biography

Dr. Neil Gehrels received his Ph.D. in physics at Caltech in 1982; he has since been an astrophysicist at Goddard. Currently he heads the Astroparticle Physics Laboratory at NASA's Goddard Space Flight Center. He is Adjunct Professor at University of Maryland, and at Penn State University. He is Chair-Elect of the Astrophysics Division of the American Physical Society. He is Principal Investigator of NASA's SWIFT observatory; and Deputy Project Scientist for GLAST, to launch in 2007. His specialties: building space flight instruments to observe astronomical objects, and interpreting data from them. The emphasis of his research is on explosive events in the cosmos, such as gamma-ray bursts and supernovae.

## News and Notes from the NCA Mirror- and Telescope-Making Workshop

by *Guy Brandenburg*

[Continued from last month]

My own personal project, which I began with Nagesh Kanvindeh (NOVAC) and a little bit of help from Michael Chesnes (Howard Astronomical League, or HAL) and some consultation from Aki Lötjönen (Finland), Steve Johnson (local), and Rick Scott (Arizona?), is nearing completion. It's a Lurie-Houghton telescope with two 7.5-inch diameter corrector plates in the front of the telescope that both use the identical type of glass (in our case, something called BK-7) and that have identical, but opposite, spherical curves. The mirror

is also spherical, and its diameter is 8" at f/5. There is a flat diagonal mirror. Supposedly, this design is completely corrected for coma, astigmatism, spherical aberration, and color, has a very wide, flat field, and is good for both optical and photographic uses. We will see about all of that. Grinding, de-wedging, polishing, and figuring the two corrector plates has been the tricky

part, especially since two of the surfaces are convex. Fortunately, since the convex surfaces fit exactly into the concave surfaces, one can use a monochromatic light box to look at the behavior of the interference fringes when you very carefully place one of the plates on top of the other, to see whether the convex surface is any good. You can also look at the reflection of the back

**“Grinding, de-wedging, polishing, and figuring the two corrector plates has been the tricky part...”**

*(Continued on page 2)*

## NCA Events This Month

The Public is Welcome!

NCA Home Page: <http://capitalastronomers.org>

**NCA Mirror- and Telescope-making Classes:** Fridays, November 3, 10, and 17 (no class on Nov. 24), 6:30 to 9:30 P. M. at the Chevy Chase Community Center, at the northeast corner of the intersection of McKinley Street and Connecticut Avenue, N.W. Contact instructor Guy Brandenburg at 202-635-1860 or email him at [gbrandenburg@yahoo.com](mailto:gbrandenburg@yahoo.com).

**Open house talks and observing** at the University of Maryland Observatory in College Park on the 5th and 20th of every

month at 9 P.M. The talks are non-technical. There is telescope viewing afterward if the sky is clear.

**Upcoming NCA Meetings—Saturdays**  
November 11: Neil Gehrels, NASA/GSFC, “Gamma Ray Burst Discoveries with Swift.”  
December 9, Ted Gull, Astrophysicist, Astrophysics Science Division, Goddard Space Flight Center, “Eta Carinae: a Massive Star System in Transition”

See Page 3 for other events this month.

## Observing with NCA C-14 Mike McNeal

Schedule is open, generally, Saturdays at 7:30 P.M. Call to set up a time.

In Mike McNeal’s backyard, 5410 Grove St, Chevy Chase, MD, (Friendship Heights Metro).

Please make reservations by 10 p.m. the Friday before. Call Mike at 301-526-2648 or email him at [mcnealmi@verizon.net](mailto:mcnealmi@verizon.net).

We need a new volunteer to house NCA’s C-14, make it available for weekly viewing, and transport it to other sites, e.g., Exploring the Sky and star parties.

## News and Notes from the NCA Mirror- and Telescope-Making Workshop

(Continued from page 1)

of the convex surface, but that’s a little hard to interpret. I got a lot of practice in using the lathe when I made the holder for the corrector plates. I recently found that using very hard pitch is an excellent way of getting rid of a turned-down edge! I also discovered that making an f/16 surface is much different than making an f/6 mirror - it seems much harder to me, in fact. Also, BK-7 glass is much softer than Pyrex. Nagesh has contributed, among other things, the secondary mirror, its holder, the spider, and the primary mirror and its holder. We got some of the aluminum for the lens cell from the Powers Collection.

I have decided to lower the prices on our telescope kits and also add a one-year membership (or renewal) in NCA as a feature. The new prices are as follows:

- 4.5 inch kit: \$40; aluminization \$10
- 6-inch kit: \$65; aluminization \$15
- 8-inch kit: \$100; aluminization \$20
- 10-inch kit: \$190; aluminization \$25
- 12.5-inch kit: \$300; aluminization \$30
- 14-inch kit: \$450 (we can’t fit it in our aluminizing chamber)

We would still like to get a table saw and a diamond grinding device for doing the rough-grinding on a mirror blank, which would save many hours of labor by those who want to make a mirror. If anybody knows of someone who is no longer using a table saw and wants to get rid of it, we’d be glad to take it off his/her hands. And if you know how to rig a safe, effective mechanical diamond grinder to do the initial hogging out of a flat blank, we’d like to hear about that, too.

Jerry Schnall is still hanging in there and

giving advice to mirror-makers on most Fridays. He has recently become a nonagenarian, and still usually gives better advice on figuring strokes than I do.

We continue to have classes every Friday evening that the Chevy Chase Community Center is open, in the basement, at McKinley Street and Connecticut Avenue, NW, from about 6 to 9:55 P.M. However, the center is closed for floods, hurricanes, Federal holidays, and snowstorms.

Recent news: the monochromatic light box that I built has now shown that the radius of curvature of two of the surfaces of the Lurie-Houghton project that I began with Nagesh Kanvindeh is now showing almost perfectly straight interference lines, which indicates a total difference of less than 1/2 wave, which is most excellent.

## In the News

Reported by Dr. Nancy Grace Roman

**Effect of Hawaiian Earthquake on Keck Telescopes** [from an article in *Science/NOW Daily News*, 17 October 2006, by Phil Berardelli]

Laura Kinoshita, the media representative for the facility, says the twin 10-meter telescopes, located at the summit of Mauna Kea, were not damaged by the temblor. Likewise, the observatory’s computers, adaptive optics, and overall structure were not harmed. But both instru-

ments did rock back and forth on their mountings during the event, causing their restraining bolts to be stressed and bent. The precision reference mounts on Keck I, which can pinpoint where the telescope is being aimed, were damaged. The technicians are hoping to have the instrument back “on sky” by later this week. The situation is slightly worse with Keck II because it suffered some damage to the system that moves the telescope on its tracks. All data being stored at the facility

have been backed up and are considered safe.

As soon as the repairs are completed and both telescopes have resumed operations, the observatory team will attempt to assess how to prepare for similar problems the next time around. “No one liked the idea of the telescopes rocking on their mounts,” says Kinoshita.

(Continued on page 3)

# Mid-Atlantic Occultations and Expeditions

by Dr. David Dunham

Dr. Dunham was unable to prepare his occultation information in time for publication in *Star Dust*. He says that he will post the information on the Web at <http://iota.jhuapl.edu/exped.htm> and will distribute it by the NCA listserver.

## In the News, continued

(Continued from page 2)

### Nasa's Spitzer Finds Hints of Planet Birth Around Dead Star [from NASA News]

NASA's Spitzer Space Telescope has uncovered new evidence that planets might rise up out of a dead star's ashes. Spitzer surveyed the scene around a pulsar, the remnant of an exploded star. The infrared telescope found a surrounding disk made up of debris shot out during the star's death throes. The dusty rubble in this disk might ultimately stick together to form planets.

This is the first time scientists have detected planet-building materials around a star that died in a fiery blast. "We're amazed that the planet-formation process seems to be so universal," said Deepto Chakrabarty of the Massachusetts Institute of Technology in Cambridge, principal investigator of the new research. "Pulsars emit a tremendous amount of high energy radiation, yet within this harsh environment we have a disk that looks a lot like those around young stars where planets are formed," he added.

The finding also represents the missing piece in a puzzle that arose in 1992, when Aleksander Wolszczan of Pennsylvania State University found three planets circling a pulsar called PSR B1257+12. Those pulsar planets, two the size of Earth, were the first planets of any type ever discovered outside our solar system. Astronomers have since found indirect evidence

the pulsar planets were born out of a dusty debris disk, but nobody had directly detected this kind of disk until now. The pulsar observed by Spitzer, named 4U 0142+61, is 13,000 light-years away in the Cassiopeia constellation. It was once a large, bright star with a mass between 10 and 20 times that of our sun. The star probably survived for about 10 million years, until it collapsed under its own weight about 100,000 years ago and blasted apart in a supernova explosion.

Some of the debris, or "fallback," from that explosion eventually settled into a disk orbiting the shrunken remains of the star, or pulsar. Spitzer was able to spot the warm glow of the dusty disk with its heat-seeking infrared "eyes." The disk orbits at a distance of about 1 million miles and probably contains about 10 Earth-masses of ma-

terial.

Any planets around the stars that gave rise to pulsars would have been incinerated when the stars blew up. The pulsar disk discovered by Spitzer might represent the first step in the formation of a new, more exotic type of planetary system, similar to the one found by Wolszczan in 1992.

"This might be the beginning of a second generation of planets," Wolszczan said. Pulsar planets would be bathed in intense radiation and would be quite different from those in our solar system. "These planets must be among the least hospitable places in the galaxy for the formation of life," said Charles Beichman, an astronomer at NASA's Jet propulsion Laboratory and the California Institute of Technology, both in Pasadena, Calif.

## Other National Capital Area Meetings

### Northern Virginia Astronomy Club

**Information about the November speaker and topic were unavailable as we went to press.**

General membership meetings are open to the public, and are held at Enterprise Hall, room 80, on the campus of George Mason University in Fairfax, Virginia. The meeting hall is in the basement floor of the building. It is best to park in parking lot B and walk up the hill to the rear of Enterprise Hall.

Meetings start at 7:00 P.M., on the second Sunday of every month. The first part of the meeting is club business, during which the officers make reports about their activities and areas of responsibility. The next part of the meeting usually includes:

- Show and Tell, where members share gadgets, books, techniques, etc.
- The Observing Report, describing the astronomical events for the next month.
- Q&A, where beginning astronomers are encouraged to ask questions to be answered by more experienced mem-

bers.

- The Sky Tour, describing what's where in the sky for the next month.

The final part of the meeting is a program, usually by one of the members, but sometimes by "outside experts." We've had presenters from all aspects of Astronomy.

### Please Join Us for Dinner!

Since February 1995, a number of NOVAC members have been congregating on the night of our regular meetings for dinner. Hopefully this assists in getting to know one another, at a more relaxed location than at the meeting itself. It's also nice to see who it is you're talking to for a change and be able to connect faces with names - unlike the usual observing situation. All are welcome to attend, whether NOVAC members or prospective members, guests or whoever - just be prepared to discuss a little astronomy or any other topic that pops up!

If you'd like to join us, stop by the Red, Hot and Blue restaurant at 5:30 P.M. See you there!

Source: <http://novac.com/>

*The deadline for the December Star Dust is November 22. Please send your material to Elliott Fein by that date to ensure inclusion. Send submissions to Elliott Fein at [elliott.fein@verizon.net](mailto:elliott.fein@verizon.net).*

*Articles submitted may be edited to fit the space available.*

## Getting to the NCA Monthly Meeting and the Dinner Before the Meeting

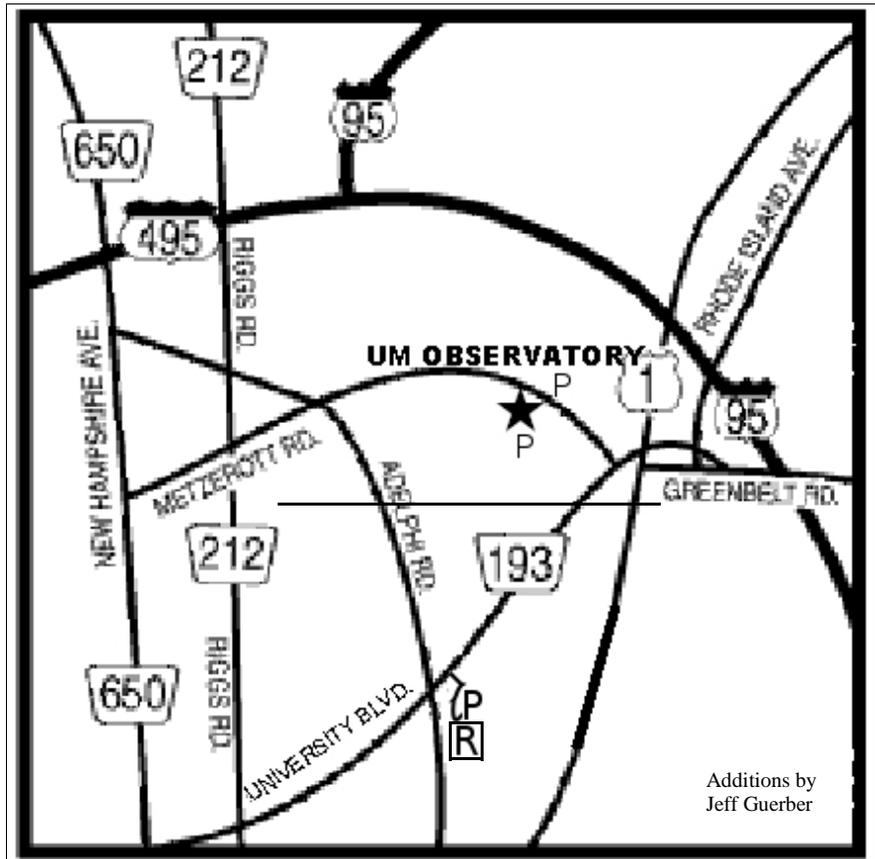
Jeff Guerber

NCA meetings are now held at 7:30 p.m. at the University of Maryland Observatory, in College Park on Metzerott Rd. between University Blvd. (MD-193) and Adelphi Rd. To get there from the Capital Beltway (I-495), either take US Rt. 1 south about a mile, turning right onto MD-193 West, then at the first light turn right onto Metzerott; or, take New Hampshire Ave. (MD-650) south, turn left at the second light onto Adelphi Rd., two more lights, turn left onto Metzerott, and proceed about a mile to the observatory. The observatory is on the south side of Metzerott Rd., directly opposite the UM System Administration building; you can park there if the observatory lot is full, but be careful crossing Metzerott Rd.

At 5:30 p.m., before the meeting, please join us for dinner at the Garden Restaurant in the UMD University College Inn and Conference Center, 3501 University Blvd. East at Adelphi Rd. From the Beltway, either take New Hampshire Ave. south, turn left onto Adelphi, and at the third light (passing Metzerott) turn left onto University then immediately right into the garage; or, take US-1 south, turn right onto University Blvd. west, and take it to the intersection with Adelphi Rd. Park either in the garage (costs), or in Lot 1 nearby (free). To get to the Observatory, exit to the right onto University Blvd. (MD-193) east, and at the second light turn left onto Metzerott Rd.

### Do You Want to Get *Star Dust* Electronically?

Any member wishing to receive *Star Dust*, the newsletter of the National Capital Astronomers, via e-mail as a PDF file attachment, instead of hardcopy via U.S. Mail, should contact Nancy Grace Roman, the NCA Secretary, at nancy.roman6@verizon.net or 301-656-6092 (home).



Getting to the NCA Meeting  
Star=Observatory R=Restaurant P=Parking

## Observing after the Meeting

Elizabeth Warner

Following the meeting, members and guests are welcome to tour through the Observatory.

Weather permitting, several of the telescopes will also be set up for viewing.

### Are You Coming to Dinner?

If you are planning to come to the dinner before the meeting, please tell Benson J. Simon, telephone: 301-776-6721, e-mail bjs32@cornell.edu so that we can make reservations for the right number of people.

### Do You Need a Ride?

Please contact Jay Miller, 240-401-8693, if you need a ride from the metro to dinner or to the meeting at the observatory. (Please try to let him know in advance by email at rigell1@starpower.net.)

# Support the IDA

Join the International Dark-Sky Association  
3225 N. First Avenue Tucson, AZ  
85719-2103  
[www.darksky.org](http://www.darksky.org)

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### SERVING SCIENCE & SOCIETY SINCE 1937

NCA is a nonprofit, membership-supported, volunteer-run, public-service corporation dedicated to advancing astronomy, space technology, and related sciences through information, participation, and inspiration, via research, lectures, presentations, publications, expeditions, tours, public interpretation, and education. NCA is the astronomy affiliate of the Washington Academy of Sciences. NCA is an IRS Section 501(c)(3) tax-deductible organization. All are welcome to join NCA.

#### SERVICES & ACTIVITIES:

**Monthly Meetings** feature presentations of current work by researchers at the horizons of their fields. All are welcome; there is no charge. See monthly *Star Dust* for time and location.

**NCA Volunteers** serve in a number of capacities. Many members serve as teachers, clinicians, and science fair judges. Some members observe total or graze occultations of stars occulted by the Moon or asteroids.

**Publications** received by members include the

monthly newsletter of NCA, *Star Dust*, and an optional discount subscription to *Sky & Telescope* magazine.

**Consumer Clinics:** Some members serve as clinicians and provide advice for the selection, use, and care of binoculars and telescopes and their accessories. One such clinic is the semi-annual event held at the Smithsonian Institution National Air and Space Museum.

**Fighting Light Pollution:** NCA is concerned about light pollution and is interested in the technology for reducing or eliminating it. To that purpose, NCA is an Organization Member of the International Dark Sky Association (IDA).

**Classes:** Some NCA members are available for educational programs for schools and other organizations. The instruction settings include star parties, classroom instruction, and school-teacher training programs that provide techniques for teaching astronomy. NCA sponsors a telescope-making class, which is described in the *Star Dust* "Calendar of Monthly

Events."

**Tours:** On several occasions, NCA has sponsored tours of astronomical interest, mainly to observatories (such as the National Radio Astronomy Observatory) and to the solar eclipses of 1998 and 1999.

**Discounts** are available to members on many publications, products, and services, including *Sky & Telescope* magazine.

**Public Sky Viewing Programs** are offered jointly with the National Park Service, and others. Contact: Joe Morris, joemorris@erols.com or (703) 620-0996.

**Members-Only Viewing Programs** periodically, at a dark-sky site.

**NCA Juniors Program** fosters children's and young adults' interest in astronomy, space technology, and related sciences through discounted memberships, mentoring from dedicated members, and NCA's annual Science Fair Awards.

**Fine Quality Telescope**, 14-inch aperture, see "Calendar of Monthly Events."

### Yes, I'd like to join NATIONAL CAPITAL ASTRONOMERS!

Name: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Street address: \_\_\_\_\_

City/State/ZIP: \_\_\_\_\_

Telephone: \_\_\_\_-\_\_\_\_-\_\_\_\_ E-mail: \_\_\_\_\_

Other family members who should receive a membership card: \_\_\_\_\_

Would you prefer to get *Star Dust* by e-mail? \_\_\_\_\_

#### MEMBERSHIP CATEGORIES AND ANNUAL DUES RATES

All members receive *Star Dust*, the monthly newsletter announcing NCA activities. As an added optional benefit to extend your knowledge of astronomy you may also choose *Sky and Telescope* magazine at the discounted rate of \$33.

Student Membership: ..... \$5 .....with *Sky and Telescope*....\$38

Standard Individual or Family Membership: ..... \$10 .....with *Sky and Telescope*....\$43

You are welcome to make contributions in any amount in addition to the dues shown above.

Contribution amount: \_\_\_\_\_

Please mail this form with your check payable to National Capital Astronomers, to:

Mr. Michael L. Brabanski, NCA Treasurer; 10610 Bucknell Drive, Silver Spring, MD 20902-4254



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**FIRST CLASS  
DATED MATERIAL**

***NCA Will  
Meet on  
November 11!***

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