

# BULLETIN

volume 83, issue 7 *July 2009*

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OUR 82nd YEAR OF  
ASTRONOMY IN LOS  
ANGELES

Los Angeles Astronomical Society  
Griffith Observatory  
2800 East Observatory Road  
Los Angeles, CA 90027

**Change of Address, Membership:**  
Stephen Dashiell, LAAS Secretary

**LAAS Officers:**

President..... David Sovereign  
(626) 794-0646

Vice President ..... David Nakamoto  
david.nakamoto@verizon.net

Treasurer ..... Herbert Kraus  
Treasurer@laas.org

Secretary..... Stephen Dashiell  
Secretary@laas.org

Recording Secretary..Richard Roosman

**Volunteers:**

Library ..... Mary Brown  
nwwrgz@yahoo.com

Outreach..... Don DeGregori  
& Herbert Kraus  
Outreach@laas.org

Loaner Telescopes ..... Dave Sovereign  
(626) 794-0646

Messier Program ..... Norman Vargas  
(626) 288-4397

New Members..... Andee Sherwood  
Coordinator@laas.org

Speakers Bureau ..... Tim Thompson  
timthompson3@verizon.net

Youth Liaison .....(None Currently)  
Youth@laas.org

Bulletin Editor.....David Nakamoto  
BulletinEditor@laas.org

Bulletin Printer..... Richard Roosman

Web Site Manager ..... Jim McGee  
admin@laas.org

Contributing Authors... Tim Thompson  
Don DeGregori  
David Sovereign

*Editor's Corner*

**W**e still have room for all three Mt Wilson nights. We need to know if we have enough people to go ahead with those nights. **PLEASE, DON'T DELAY** getting your name on the list and pay for your night if you're thinking of going.

The Recycled Telescope did make it to this year's RTMC, and won a merit award!

Lately we've been hearing more about supporting our younger members, and people with new equipment. As soon as there's anything concrete we'll announce it here. In the meantime, those that are interested should think of joining the LAAS Yahoo group to enter into the discussion.

My many thanks to all who have contributed to the success of the bulletin. Please consider writing or submit images. Articles need to be 1,500 words or less. Submit only a few images at one time, each with its own caption. The deadline for submitting bulletin material is the 10th of each month. If possible, please submit electronically to:  
BulletinEditor@laas.org

Material may be sent to the LAAS address listed at the top of the column at left, but timely reception and publication cannot be guaranteed. ✧

# Mt Wilson 60" Nights



LAAS has arranged for two half-nights and one full-night at the Mount Wilson 60-inch telescope this year. All three are New Moon nights. Half-nights are until 1:00 am.

Aug 21st Fri (half night)  
Sept 18th Fri (half night)  
Oct 16th , Friday (full night)

Only LAAS members are allowed to sign up. If there is still room two (2) weeks prior to the date, paying guests will be permitted. Everyone who shows up, whether family member, friend, or guest, will have to pay in order to be allowed in the 60-inch telescope observatory. The cost is

\$80 per person for the full night (no half night reservations on a full-night outing), and \$45 per person for the half night. We are allowed to accommodate only a limited number of participants at each session, and your reservations are being accepted on a first come, first serve, basis.

***To secure your reservation, send in your request AND A CHECK payable to LAAS to our Treasurer at:***

P.O. Box 56084  
Sherman Oaks, CA 91413

Any LAAS member who has not been to a 60-inch night at Mount Wilson should consider it as an opportunity to visit astronomy history. To see the location and equipment used by giants such as Shapley and Hubble will add to your appreciation of their contributions. And you'll never get a better visual view !

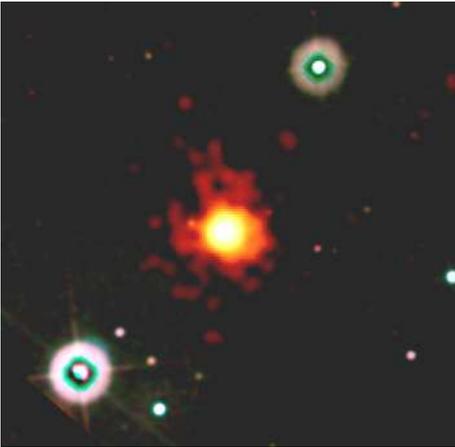
The scope will belong to LAAS for the time indicated. We mutually agree upon which objects to view. Often, a member is the operator, so it is a very comfortable environment. (Do bring a coat, however). The viewing is without a doubt the best you are likely to see in your lifetime.

If you need any further information about attending these nights on Mount Wilson, contact our Treasurer at [treasurer@laas.org](mailto:treasurer@laas.org) or by mail at P.O. Box 56084, Sherman Oaks, CA 91413. ✧

# The SWIFT Era

By Timothy Thompson

On March 18, 2008 at 23:12:49 PDT a “guest star” appeared in the sky over Los Angeles, 37 degrees above the northeastern horizon, in the constellation of Boötes (J2000 RA 14h 31m 42s, DEC +36d 18’ 10”). But it was only there for about 30 seconds. Still, with a peak visual magnitude of 5.6, if you were under a dark sky, and looking in the right direction, you could have seen it. This was the visible light flash of GRB 080319B, which was bright enough to make itself visible to human eyes, despite being a respectable distance of 7,500,000,000 light years away (redshift 0.937). It was the brightest gamma ray burst (GRB) yet seen, and the only one to reach naked eye visibility for any length of time. The total energy of the explosion was about 2,500,000 times that of the brightest supernova previously seen. GRB 080319B was the most powerful explosion yet witnessed by humanity.

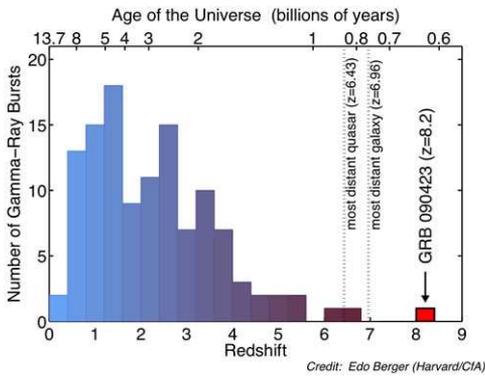


GRB 090423 imaged by the Swift Gamma Ray Observatory. X-rays are red & orange; ultraviolet and optical are blue & green. The GRB X-ray afterglow shows only X-rays and no optical emission, consistent with a high redshift source.

On April 23, 2009 at 00:55:19 PDT a GRB triggered the SWIFT Burst Alert Telescope, this time pointing to a spot in Leo (J2000 RA 09h 55m 33s, DEC +18d 09’ 37”) about 30 degrees above our SW horizon. Photometry on this GRB 090423 soon revealed that it was also exceptional, even for a GRB. On April 28, 2009, simultaneous press releases from NASA, the Gemini North Observatory on Mauna Kea, the European Southern Observatory and the Harvard Smithsonian Center for Astrophysics announced a measured redshift of 8.2 for GRB 090423. If this photometric redshift is confirmed by spectra now in the hands of the European Southern Observatory, then it is the highest redshift object yet discovered, and calls out to us from 13,035,000,000 light years away. GRB

090423 exploded when the universe was only about 630,000,000 years old. This is significant because we do not know when the first massive stars appeared as the universe evolved, but if GRB 090423 really is that far away, then we know at

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This figure shows the redshift distribution of GRBs. The new record holder is GRB 090423 with redshift 8.2 or about 13 billion light years. The previous record holder is GRB 080913 with redshift 6.7 or about 12.8 billion light years.

least that there must have been massive stars in the universe no later than the age of 630,000,000 years. Unlike GRB 080319B, GRB 090423 has no optical counterpart. The afterglow was visible only in X-rays and infrared.

Flashback to 1963, when the U.S. launched the first of 12 Vela satellites, designed to detect the gamma rays from nuclear weapons tested in violation of the Partial Test Ban Treaty. On July 2, 1967 at 14:19 UTC the Vela 3 & 4 satellites detected a gamma ray flash that was quickly recognized by its energy spectrum as not being a weapons related incident. This marks the first detection of cosmic GRBs, but the data remained classified for some years, to hide the capabilities of the Vela satellites.

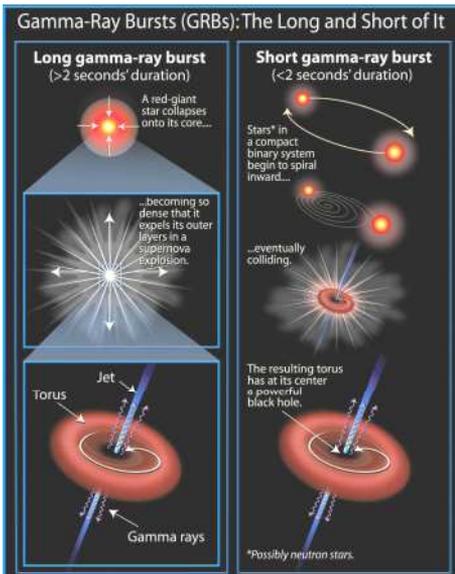
The data were eventually released, and the first scientific reports appeared in 1973 ("Observations of Gamma Ray Bursts of Cosmic Origin"; Klebesadel, Strong & Olson; *Astrophysical Journal Letters* 182: L85, June 1973). Since then, well over 5000 papers on GRBs have been published, and they remain one of the major areas of study in cosmology and astrophysics. But at the time GRBs were a true mystery. There were only a small number known, and nobody knew if they were local or cosmological. There were even hypotheses about colliding Oort cloud comets generating GRBs.

The surprising discovery of GRBs put new interest into the field of gamma ray astronomy. So, on April 5, 1991, Space Shuttle Atlantis, in shuttle mission STS-37, launched the Compton Gamma Ray Observatory (CGRO) into orbit. CGRO was one of NASA's Great observatories, along with the Chandra X-ray telescope (launched 23 July 1999), the Spitzer Space Telescope (launched 25 August 2003), and the Hubble Space Telescope (launched 24 April 1990). The other 3 Great observatories are still in orbit & on duty, but after a gyro failed, CGRO was deliberately dropped into Earth's atmosphere and destroyed on 4 June 2000. The Italian-Dutch X-ray satellite BeppoSAX (named after Italian astronomer Giuseppe "Beppo" Occhialini) was launched 30 April 1996, and after several system failures, fell into the Pacific Ocean on 29 April 2003. Finally, on 20 November 2004, NASA launched the Swift Gamma Ray Burst Mission, which remains in orbit and on duty. Swift is the first spacecraft specifically designed to

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observe GRBs. Swift triggers within seconds of the GRB first appearing, and it immediately signals a world wide network of telescopes to follow the GRB.

On 8 May 1997 at 21:42 UTC both CGRO and BeppoSAX detected GRB 970508. The X-ray flash was bright enough to be detected even by the Ulysses spacecraft, studying the solar wind. Followup observations with the 200-inch Hale Telescope at Palomar Observatory confirmed an optical afterglow, the first time this had been achieved for a GRB. Subsequent observations with the 10-meter Keck telescopes on Mauna Kea measured absorption lines in the afterglow spectrum showing a redshift of 0.8349, while other astronomers suggested a redshift as high as 1.09. The spectrum does not give the redshift of the GRB, but rather the redshift of the gas that makes the absorption lines. Still, this indicated that the GRB could be no closer than about 7,000,000,000 light years. This was the first detection of a GRB afterglow, and the first redshift measurement for a GRB. This was the first definitive observational evidence that GRBs were at cosmological distances.



There are two distinct types of GRBs, “long” and “short”. This figure illustrates how we think the two different types are generated. GRB 090423 could be either type, but “long” is favored due to its high redshift.

On 23 January 1999 at 09:47:14 UTC, GRB 990123 triggered both CGRO and BeppoSAX. An automated signal then activated the Robotic Optical Transient Search Experiment (ROTSE-1), which slewed to the GRB position and successfully observed the first optical afterglow for a GRB. The 60-inch telescope at Palomar Observatory continued to follow the fading optical afterglow, while the Keck II 10-meter telescope and the Hubble Space Telescope imaged the host galaxy of the GRB. For the first time astronomers had identified the host galaxy of a GRB. The measured redshift of 1.6 corresponds to a distance of about 9,500,000,000 light years.

We now know that there are two types of GRB: “short” and “long”. The short GRBs are thought to be the burst of gamma rays emitted by the final merger of a pair of close orbiting neutron stars, where the final merger

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event is very fast. The long GRBs are thought to be the burst of gamma rays released by the exceptionally powerful supernova explosion of an exceptionally massive star, which is now usually called a “hypernova” (after we have used up “nova” and “supernova”, there is not much left; what will be do if we find even more powerful explosions?). In this case it takes more time for the explosive shock wave to break out of a giant star. GRB 080319B was a long GRB. GRB 090423 is right in between and could be either one. But its very high redshift implies a long GRB, as it is easier to explain a hypernova going off in such a young universe; it takes a long time for a neutron star binary to spin down to merge and a universe only 630,000,000 years old seems not old enough to accommodate the time needed.

A type Ia supernova has to go off within about 100 light years in order to pose a serious risk to life on Earth. A core collapse supernova emits rather less at high energies (gamma rays, X-rays), so that type of supernova would need to be about 30 light years away to pose a serious risk. But since the energy of a GRB is beamed, and remains concentrated over long distances, if we are in a GRB beam even thousands of light years away, we can still be at serious risk. Even about 7500 light years away, a gamma ray burst from Eta Carinae could feasibly sterilize the side of Earth facing the burst. But if the gamma rays are beamed along the axis of the double lobed cloud we see around Eta Carinae, then such a burst, if it happened, would likely miss Earth, since the cloud appears to point away from us.



Artist's conception of what a GRB looks like up close. The emission is beamed so we can only see the GRB if we are in the beam.

The advent of the Swift satellite, and the subsequent rapid response network, has been so revolutionary that astronomers now routinely refer to the “Swift era” of GRB research. The rapid followup allowed by Swift, the ability to study the X-ray, optical and infrared afterglow, opens new frontiers in GRB research. Photometry of the afterglow allows for direct redshift measurements of the burst, even absent the images of host galaxies that we can now obtain. And it allows us to begin the task of realistic

modeling of the detailed mechanisms that power the most violent explosions in the universe. The Swift era is a new frontier in astrophysics and cosmology. ✧

# *Report on the Riverside Telescope Makers Conference*

*By Richard Roosman*

The Riverside Telescope Makers Conference May 22-25, 2009, was generally very pleasant. The weather was practically perfect. The night sky was great for a star party. The only real problem was that the LAAS solar telescope was stolen from our booth. We better rethink the booth for the next RTMC.



The LAAS's 26-inch (or 25.5 or 23-inch, depending on your measurement standards) is set up at RTMC. It won a merit award. Photo by Norm Vargas

Mostly good things happened on the weekend. Bob Deubler and Mark Briggs debuted the 26 inch telescope they have been working on for several weeks. This was the telescope originally designed to go into space. That idea was scrapped. So it was stored at Big Bear. Finally it was donated to LAAS and left at the Monterey Park Observatory. Bob and Mark worked on it, designed a mount, and hauled it to RTMC. The telescope attracted a lot of attention. Bob and Mark won a Merit Award in the telescope building category.

Norm Vargas and Sarah Shaw entered their photograph of a green flash in the Meteor/Atmospheric Category and won. Their photograph was the only entry

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LAAS's own Tim Thompson, third from the left, entertains questions following his talk. Photo by PJ Goldfinger.

in that category, so of course they won first place. Congratulations.

For a lot of people, door prizes are the highlight of RTMC. To my knowledge, no one from LAAS won a door prize on Saturday. Sunday was much better. Carrie Bogdanovich won a star analyser. Norm Vargas won an astronomy blanket and a June to June calendar. Tim Thompson won a Telrad. Mary Brown won a laser collimator. Hope I didn't leave any winner out.

The keynote speaker for Saturday was Dr. E. C. Krupp, director of Griffith Observatory. He spoke about (surprise) Griffith Observatory. Tim Thompson spoke Sunday about string theory.

Since RTMC includes star parties, and Memorial Day sometimes falls on a full moon, It was announced that RTMC would be scheduled for a weekend close to new moon. So next year will not be on Memorial Day Weekend. I heard a lot of grumbling about this. Holiday weekend or regular May weekend, a lot of us will be at RTMC in 2010. ✧

# *Brooks Ishler Biography*

## *By Ted Ishler*

While most 16 year olds spend their free time focused on their social lives, Brooks Ishler's thoughts and goals are astronomical. A sophomore honors student at Los Alamitos High School, Brooks is a space and science fanatic and plans to study astrophysics in college. In addition to his love of the universe, Brooks is a competitive pairs figure skater. He is coached by Olympic medalist and US Figure Skating Hall of Famer Peter Opegard and trains four hours every day after school. Brooks has competed at the junior national figure skating championships for the past two years. Between his school work and his grueling skating schedule, Brooks always finds time to keep up with the latest information about space and the night sky. He subscribes to Scientific American and Smithsonian Air and Space magazines, and studies his book on the universe each night before going to bed. Brooks' favorite place in southern California is the Griffith Observatory which he visits frequently.

Brooks is also concerned with the environment and is one a handful of teenagers nationwide trained by Al Gore to present the "Inconvenient Truth" slideshow.

Brooks sums up his goals this way: "I want to medal in pairs figure skating at the 2014 and 2018 Olympics. After I complete my undergraduate education at UCLA, I want to further my education at Cal Tech before becoming an astrophysicist working for the Jet Propulsion Laboratory where I hope to win a Nobel Prize."

Brooks is excited to be a new member of the LAAS. Brooks knows that his skating career is limited in years, but his exploration into the world of space and science will continue for a lifetime. ✧



# *Griffith Observatory*

## *Public Star Party Procedure*

PJ Goldfinger handles our Griffith Observatory Public Star Party List. As patrons may drive up freely and reservations are no longer needed, we will continue to keep a sign up list for this event. Please note changes may occur in future PSP events and to read the policy below each month.

LAAS Members must still sign up on time - Deadline is no later than the Tuesday night prior to the Saturday GO Public Star Party each month. The list information required is:

- Your name, any LAAS Members and Non members in your car.
- Bring Telescope y/n.

**NOTE: Those attending without a telescope as a favor will be required to be of some assistance if asked, needed and able.**

It is primarily the main focus of any LAAS member who attends this event to be of Public Service with their telescopes in showing the patrons of Griffith Observatory the delights of the nighttime sky. New Members are not expected to adhere to this policy. Please feel free to come up and enjoy the event given you are signed up.

Parking will be on the east side of the Griffith Observatory Hill designated for GO employees. A guard will be stationed with the LAAS GO PSP list. It is always wise to have one's LAAS name badge and/or club ID on them just in case. Unloading telescope and equipment will remain the same procedure as well, with a drive up , drop off and park down hill routine.

The list currently has been updated to 30 spots for LAAS members. First come, first serve.

Please check the LAAS website and Yahoo list for changes and updates in any LAAS event, as there are many communication mediums and some are missed.

To sign up for the Griffith Observatory Star Party the email address is: laas.starparty@gmail.com. Attendance is only granted once a confirmation email has been received. Most important though is to have fun and enjoy! ✧

*PJ Goldfinger*

# Outreach Program

Come on out to the school and show all the enthusiastic kids, parents, and teachers the night sky. They always appreciate it. And if you get WOW's when they look through you scope, you'll feel good. If no scope, come out anyway and help up set up or answer questions from the kids. So, Outreach volunteers, let's pitch in. I'm sure the kids and adults will appreciate our effort.

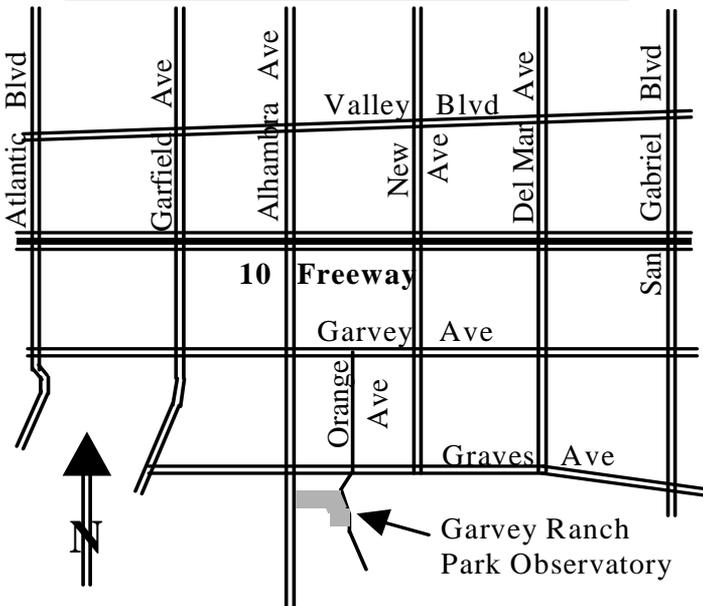
Thanks !      Outreach@laas.org      (818) 891-3087 ✧

(Editors Note: Be aware that often these requests come with very little advanced notice. Therefore, we won't post any events in the bulletin unless it is more than a month away. The best way to get news of these events is to use the Internet and either join the LAAS Yahoo group or access the LAAS website. To join the LAAS Yahoo group, see page)

*Don DeGregori*

## Map to Monterey Park Observatory

(The place to build your telescope)



# LOANER CORNER



It might not look like it, but the summer star parties are here! Now is the time for new members and existing members that would like to try out something new to check out one of the LAAS loaner telescopes. At the present time there are several available. All are fully equipped with a set of eyepieces. A simple collimating tool is included with all reflectors and a star diagonal is included with refractors.

LAAS-1: 4.5" f/8 Celestron reflector on a Polaris mount.



LAAS-2: 4.5" f/8 Tasco reflector on an Edmund equatorial mount with a clock drive. This telescope has been upgraded with a 1.25" focuser and 6x30 finder.

LAAS-4: 6" f/5 Telescopic reflector on a Dobsonian mount.

LAAS-6: 10" f/4.5 Discovery reflector on a Dobsonian mount. This fast telescope is also equipped with a Tele View Paracorr to correct off axis coma common with fast paraboloids.

LAAS-4

LAAS-7: 80mm f/15 Meade refractor on an Orion Sky View Deluxe equatorial mount. This is an excellent instrument for the Moon and planets.

LAAS-2

LAAS-8: 80mm f/11.4 Selsi refractor on an equatorial mount.

LAAS-9: 80mm f/6.25 refractor with University Optics objective on an equatorial mount. This fine Rich Field Telescope is good for going through the Messier Catalog.

For more information call: David Sovereign at (626) 794—0646. ✧

*David Sovereign*

# EVENTS CALENDAR

Date	Event	Location and Information
July 8th (Wed)	Board Meeting	Garvey Ranch Park Class Room. 8:00 pm to 10:00 pm
July 13th (Mon)	General Meeting	Griffith Observatory Leonard Nimoy Event Horizon Theater Slave Turyshev, JPL Research Scientist in the Astrophysics and Gravitation Group, will talk about lunar laser ranging. 7:45 pm to 9:45 pm
July 18th (Sat)	Dark Sky Night	Lockwood Valley
July 25th (Sat)	Public Star Party	Griffith Observatory 2:00 pm to 10:00 pm See pg 12 for details on how to attend.
Aug 5th (Wed)	Board Meeting	Garvey Ranch Park Class Room. 8:00 pm to 10:00 pm
Aug 10th (Mon)	General Meeting	Griffith Observatory Leonard Nimoy Event Horizon Theater Speaker to be announced later 7:45 pm to 9:45 pm
Aug 22th (Sat)	Dark Sky Night	Lockwood Valley
July 29th (Sat)	Public Star Party	Griffith Observatory 2:00 pm to 10:00 pm See pg 12 for details on how to attend.

## LAAS Yahoo Group—how to join

The group is private, and therefore does not come up in a search. To join, send email to: LAAS-subscribe@yahoo.com. Include your full name so the moderator can verify your LAAS membership. Your full name is necessary so we can check our records to see if you really are a LAAS member. If approved, you will receive further instructions via email. ✧

## Sky and Telescope Subscriptions

Sky and Telescope subscriptions renewals should be sent directly to Sky Publishing. To start a Sky and Telescope subscription, contact the LAAS Treasurer (see the contact information on page 2) directly to get the club rates, then thereafter send the renewal bills directly to Sky Publishing. ✧

## Astronomy Magazine Subscriptions

For those that subscribe to Astronomy Magazine through the LAAS, the rate has gone up to \$34 a year, \$60 for two years. ✧



LAAS Home Page: <http://www.laas.org>  
LAAS Bulletin Online: [http://www.laas.org/Resources\\_Newsletter.htm](http://www.laas.org/Resources_Newsletter.htm)

### Membership Annual Dues:

Youth	\$ 20.00
Regular (18-65)	\$ 45.00
Senior Citizen (65 and up)	\$ 30.00
Senior Family	\$ 40.00
Family	\$ 60.00
Life	\$ 500.00
<i>Additional fees:</i>	
Charter Star member	\$ 30.00
Star member, with pad	\$ 70.00
Star member, no pad	\$ 60.00
Printed Bulletin	\$ 15.00

**(Membership due date is indicated on the mailing label)**

## HANDY PHONE LIST



LAAS Answering Machine ..... (213) 673-7355  
Griffith Observatory  
Program..... (213) 473-0800  
Sky Report..... unavailable for now  
Lockwood Site ..... (661) 245-2106  
(not answered, arrange time with caller.  
Outgoing calls – collect or calling card)  
Mt. Wilson Institute..... (626) 793-3100