

GuideStar



July, 2014
Volume 32, #7

At the July 11 Meeting

*** 2nd Friday ***

STEREO Space Mission

Annie Wargetz

The STEREO (Solar TErrestrial RElations Observatory) is the third mission in NASA's Solar Terrestrial Probes program (STP).

It employs two nearly identical space-based observatories - one ahead of Earth in its orbit, the



other trailing behind - to provide the first-ever stereoscopic measurements to study the Sun and the nature of its coronal mass ejections, or CMEs.

Annie Wargetz

The GuideStar is the winner of the 2012 Astronomical League Mabel Sterns Newsletter award.



The Houston Astronomical Society is a member of the Astronomical League.

Highlights:

Novice: Telescopes - The Schmitt-Cas	5
Fred Gassert - Kansas Observer	6
A New Galactic Yardstick	10
Astronomical League Convention	11
The Texas 45 Summer 15	12
Barnard 68 - Dark Nebula	14

HAS Web Page:

<http://www.AstronomyHouston.org>

See the *GuideStar's* Monthly Calendar of Events to confirm dates and times of all events for the month, and check the Web Page for any last minute changes.

All meetings are at the University of Houston Science and Research building. See the last page for directions to the location.

Novice meeting: 7:00 p.m.

"Schmidt-Cassegrain Telescopes" — Alan Wilkerson

See page 6 for more information

General meeting: 8:00 p.m.

*See last page for directions
and more information.*

The Houston Astronomical Society

The Houston Astronomical Society is a non-profit corporation organized under section 501 (C) 3 of the Internal Revenue Code. The Society was formed for education and scientific purposes. All contributions and gifts are deductible for federal income tax purposes. General membership meetings are open to the public and attendance is encouraged.

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Dues and Membership Information

Annual Dues:Regular	\$36
Associate.....	\$6
Sustaining	\$50
Student	\$12
Honorary.....	N/C

All members have the right to participate in Society functions and to use the Observatory Site. Regular and Student Members receive a subscription to *The Reflector*. *The GuideStar*, the monthly publication of the Houston Astronomical Society is available on the web site. Associate Members, immediate family members of a Regular Member, have all membership rights, but do not receive publications. Sustaining members have the same rights as regular members with the additional dues treated as a donation to the Society. *Sky & Telescope* and *Astronomy* magazines are available to members at a discount.

Membership Application: Send funds to address shown on last page of *GuideStar*. Attention - Treasurer, along with the following information: Name, Address, Phone Number, Special Interests in Astronomy, Do you own a Telescope? (If so, what kind?), and where you first heard of H.A.S. You can also join (or renew at the organization web site, www.astronomyhouston.org.

Table of Contents

- 3 President's Message
- 4 July/August Calendar
- 5 Observations of the Editor
- Novice: Telescopes - The Schmitt-Cas
- 6 Fred Gassert - Kansas Observer
- 9 Observatory Corner
- 10 A New Galactic Yardstick
- 11 Astronomical League Convention
- 12 The Texas 45 Summer 15
- 14 Barnard 68 - Dark Nebula

Other Meetings...

Johnson Space Center Astronomical Society meets in the the Lunar and Planetary Institute on the 2nd Friday of each month. Web site: www.jscas.net

Fort Bend Astronomy Club meets the third Friday of the month at 8:00 p.m. at the Houston Community College Southwest Campus in Stafford, Texas http://www.fbac.org/club_meetings.htm.

Novice meeting begins at 7:00 p.m., regular meeting begins at 8:00 p.m. Website: <http://www.fbac.org>

North Houston Astronomy Club meets at 7:30 p.m. on the 4th Friday of each month in the Teaching Theatre of the Student Center at Kingwood College. Call 281-312-1650 or E-mail bill.leach@nhmccd.edu. Web site: www.astronomyclub.org

Brazosport Astronomy Club meets the third Tuesday of each month at the Brazosport planetarium at 7:45 p.m. The Brazosport planetarium is located at 400 College Boulevard, Clute, TX, 77531. For more information call 979-265-3376

GuideStar deadline

for the August

issue

is July 15th

President's Message

by Bill Pellerin, President

Meeting Date is July 11

To avoid conflicting with members' plans for Independence Day, the members voted, based on a recommendation of the board, to move the July meeting to July 11. I look forward to seeing you all at the meeting.

HAS Organization Status

Thanks to some legal work, done by HAS member Scott Mitchell, the status of the Houston Astronomical Society as a non-profit educational organization has been confirmed by the State of Texas. This work was in addition to the work done with the Colorado County taxing authority to assure that the organization was not liable for property tax for our observing site. The board of directors greatly appreciates Scott's contribution of time and expertise on this issue.

The Houston Astronomical Society Election

It's only July, but it's probably not too early to be thinking about the 2015 year of the HAS. The nominating committee is obliged by the by-laws to present candidates for the various elected offices of the HAS at the October meeting. This means that it won't be long before the nominating committee will start calling HAS members to assess their interest in holding one of these elected offices.

You can get a jump on the nominating committee by contacting our VP (Rene Gedaly) and expressing your interest in one of the elected offices. There are 4 officers, 5 board members, and 9 committee leaders to be nominated. Read the by-laws to get the list of elected positions. There's a link to the by-laws at the bottom of the home page of the HAS web site.

Astronomical League Programs

The Houston Astronomical Society is a member society in the Astronomical League. This means that part of your dues goes to the league and also means that you can participate in the AL Observing Programs. As Rene Gedaly mentioned in last month's issue, one of the programs is mine — Observing Stellar Evolution. Steve Goldberg pointed out to me that the program only has 100 objects in it while the SkyTools list has 103 objects. Here's why:

1. Rosette Nebula & NGC2244 -- The program identifies the Rosette Nebula as one object, but says that seeing the Rosette or the embedded cluster (NGC2244) would count. The STX list has both these objects on it.
2. Double Cluster -- I list this as one object in my list, but the STX lists it as two (the two clusters)
3. Veil Nebula -- This is one object in my list but STX has an entry for the Veil West and the Veil East.

Another problem with any list of astronomical objects is that many objects are in multiple catalogs. The good news is that SkyTools has so many catalogs in it that it acts as a translator between catalogs. Some of the objects in the Stellar Evolution list on the AL web site have different catalog names than the same objects in the SkyTools list.

Parking for the HAS Meeting

Parking for the HAS meeting is in a new place due to the construction of the new football stadium. This new parking place will be the permanent location for parking going forward. See the information in this *GuideStar* or on the HAS web site.

Cheers,

..Bill Pellerin

President

**Check the web site:
www.astronomyhouston.org**

The HAS website not only has news and information about our society, but also a variety of features to manage your membership and connect with other club members. Current members can post photos, trade gear, pay dues, manage discount magazine subscriptions, swap stories in the forum, and more.

Questions about the site? Need a hand to get your account set up?

Contact webmaster@astronomyhouston.org.

The HAS web site is the winner of the 2012 Astronomical League award for excellence.

July/August

Calendar



Date	Time	Event
July		
3	10:00 p.m.	Pluto at opposition
4		Independence Day
5	7:00 a.m.	Moon at first quarter
11	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
12	6:26 a.m.	Full Moon
	1:00 p.m.	Mercury at greatest elongation west
16	7:00 p.m.	HAS Board Meeting—Houston Arboretum
18	9:09 p.m.	Moon at last quarter
26	5:42 p.m.	New Moon Prime Night, Columbus Site
August		
3	7:50 p.m.	Moon at first quarter
8	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
10	1:10 p.m.	Full Moon
12	7:15 p.m.	Perseid meteors
17	7:26 a.m.	Moon at last quarter
23		Prime Night, Columbus Site
25	7:12 a.m.	New Moon
28	10:00 a.m.	C/2012 K1 PANSTARRS at perihelion
29	9:00 a.m.	Neptune at opposition

**Send calendar events to Doug McCormick -
skygazer10@sbcglobal.net**

**For the latest information on club events, go to
<http://www.astronomyhouston.org/>**

HAS Board Meeting

HAS Board meetings are scheduled regularly (see the calendar, above). All members are invited to attend these meetings, but only board members can vote on issues brought before the board.

Meetings are held at the Houston Arboretum at 7:00 p.m. on the date specified.



Follow the GuideStar on Twitter at:

 GuideStar HAS

Join Facebook and look for:

Houston Astronomical Society

 Starline

Call 832-go4-HASO (**832-464-4270**) for the latest information on the meeting and other information about activities within the HAS.

Event Notification or Cancellation

- ★ HAS uses [RAINEDOUT.NET](#) to communicate late breaking updates about our various events. . Message delivery is via text messaging and e-mail. There are several ways to subscribe. If you would like to receive these notices via text messaging directly to your phone, subscribe to any of the sub-groups which interest you as follows:

- ★ To receive text messages, send any or all of the following
- ★ (one at a time) to **84483**

- ★ You will receive a confirmation message back for each successful enrollment.

<i>Text Message</i>	<i>Alerts about...</i>
OUTREACH	Public Outreach Events
STARPARTY	Members Only Star Parties (HAS observing site)
URBAN	Urban Observing Events
MEETINGS	HAS Meetings

- ★ You may also enroll your phone numbers or individual e-mail addresses via the website:

★ Here's a shortened link to get you there: <http://goo.gl/evrGsB>

For more information, please visit www.RainedOut.net

- ★ RainedOut notices will also automatically be sent to our e-mail list. Note that regular e-mail list conversations are not part of RainedOut communications and will not be sent to your phone as part of this service. Instructions to sign up for the e-mail list (a great way to keep your finger on the pulse of the club) are found here:

★ <http://www.astronomyhouston.org/about/email-list>

Observations... of the editor

by Bill Pellerin, GuideStar Editor

Outreach at the Arboretum

Bill Flanagan coordinated a star party with the Houston Arboretum on 6/21 (Saturday). The weather was a significant concern and the expectation was that we'd likely be clouded out for the night.

The good news is that we weren't clouded out, although the sky was a bit hazy. We had six telescopes on site and the docents were all very busy with the approximately 170 guests who showed up. We were able to show the guests Saturn, Mars, Albireo, Mizar, and perhaps a few more objects. One of the problems with a bright urban sky is that it's difficult to pick out enough stars to find your way around the sky. Vega in the east and Arcturus overhead were easily visible, but I couldn't even pick out the Big Dipper asterism. Any nebulous objects were not going to be visible. The moon was not in the evening sky.

Nevertheless, we had a great time, the guests were great, and we look forward to the next event.

Summer's here

Officially, summer has begun, unofficially, it began several weeks ago. The impact on our personal observing programs is significant. The Arboretum star party was held on the day of the summer solstice, the day with the longest daylight. The good news, for those of us who long for the dark, is that the daylight fraction of the day gets smaller from now through December.

Summer also brings milky skies and mosquitoes. The first of these problems limits our ability to see deep sky objects and the second limits our tolerance for staying outdoors. Fortunately, the second problem is helped with mosquito repellent and protective clothing.

The good news is that the Milky Way rises earlier and earlier. By middle to late July, the Milky Way rises about 8:00 p.m. The Sun doesn't set until after that time, so we won't be able to see the Milky Way for a while after sunset. Astronomical twilight (meaning that it's as dark as it's going to be) doesn't begin until about 9:30 p.m. on July 26, the day of the new moon.

Until next time...

clear skies and new moons!

..Bill

Novice Presentation—July, 2014

Focus on Telescopes—Schmidt-Cassegrain

By Debbie Moran

In July, we begin a Focus on the Telescope mini-series to be sprinkled throughout the rest of the year which will each include an in depth session on a single type of telescope mount and optics. We will start with Allen Wilkerson's July talk entitled Basic Schmidt-Cassegrain Telescopes. Schmidt-Cassegrain telescopes with their compact size, excellent optics, and ability to follow the object using clock drive have been highly popular among amateur astronomers. Come hear how they squeeze significant light gathering power into a small package, and how to use and maintain them.

In August, we will take a break from the Telescope Series to bring the long awaited astrophotography session with speaker Doug Holland. The series will return in September with Bill Pellerin's talk about refractors.

Just Looking

A *GuideStar* Interview by Clayton L. Jeter

Fred Gassert — Kansas Observer



It's great to meet observers around the country here within this column every month in the *GuideStar*. At this past Texas Star Party, I asked a Kansas observing buddy, Tim Hall if he had an idea of who I might interview from his home state. Instantly he said, Fred Gassert! I asked...why Fred? He explained that Fred was big into outreach and even builds his own equipment. At that point, I knew Fred was to be interviewed.

Let's see what Mr. Gassert is all about. Here's Fred...

The Fred Gassert bio...

Let me introduce myself. My name is Fred Gassert and I live in Wichita, Kansas. I am the current president of the Kansas Astronomical Observers. I've been asked to give you a little history of my astronomy experiences, so here goes...



I first got into Astronomy during the summer of 1998. We did a lot of camping with family and friends so I bought a telescope thinking this would be fun for the kids (as well as me). I bought one that promised 600 Power!! Got it set up and the first night couldn't see anything because the eyepieces that were supposed to be included weren't. The next night, with eyepieces, we saw the moon and little else. The scope was hard to set up and really confusing to operate. A few more attempts and it was shelved.

Fast forward to 2001. As a Girl Scout volunteer I was asked to join them when the KAO members came out to instruct us on the use of the scout's new telescopes. This got me started. I spent every Thursday night at "Starwoods" looking at stars with the scouts and the help of the Kansas Astronomical Observers. The following January I joined the club.

I started with a 4" equatorial mounted reflector and with the advice of some club members, converted it to a DOB mount, added a nice eyepiece and a Telrad and made a nice little scope out of it. My grandson used it until he got his own 8" DOB. When I joined the club I borrowed the club's 10" DOB and realized bigger is indeed better. I bought an 8" SCT and helped the club build their 14" Truss Scope. After acquiring a 16" DOB

with Richard Meredith, I got a 16" mirror and built my own 16" truss and a tracking platform. I also have built a parallelogram mount for my Celestron 15 X 70 Bino's, converted a 13" Coulter into a Truss Tube and built a 10" collapsible scope for the club.

The first deep sky object I remember looking at was Alberio. I thought "How cool". I like looking at the Messier objects and the planets. With the 4" and 10" scope I didn't think there was much else. I still enjoy the Messier objects, the moon and the planets but I also now look for fainter galaxies and globular clusters. For me the hunt, or looking for the object, is as much fun as the find. Up until this last summer my most memorable moment was at the lake with a fifth grader when after looking hard we found Alberio at 2:00 in the morning, by ourselves. But this last summer I did something at Okie-Tex that I will never forget. With the help of my 16" truss telescope, tracking platform, Sky Tools and a slew of quality eyepieces I found and observed M-31 G-1 (a very faint globular cluster in the Andromeda Galaxy). I actually observed something at that advertised 600 power! With tracking superb I even was able to see the background of the object.

In closing I would like to point out that everything I have learned about astronomy and telescopes, I learned as a direct result of being a member of the Kansas Astronomical Observers. I am so thankful that I was there when they

(Continued on page 7)

(Continued from page 6)

came out to "Starwoods" that first time. I've met a lot of wonderful people and have enjoyed all of the outreach and fellowship since I joined. It was an honor to serve as the president of the club and look forward to many more years of club activities. Clear skies to all...

The Fred Gassert interview...

Clayton: Welcome aboard Fred, great having you here for this month's *GuideStar* interview. Looking at your photo with your crafted telescope, is this Dob a kit or your own design?

Fred: It is designed after the 14" club scope we built a couple of years before mine. The club had a mirror donated 20 years ago and they reground it and started a scope project that stalled. 14 years later I asked about it and we resurrected the project and a year later the clubs' scope was completed. About a year later I acquired a 16" mirror and built my own scope. The unique part of both scopes is that the primary mirror adjusts with just two screws instead of the normal three. It has two hinges 90 degrees to one another in the mirror cell and the entire cell is compressing 4 springs. The two adjusting screws can position and hold the mirror in any position.

Clayton: Also in the photo I see your EQ platform. Tell me about this piece of equipment? Is this your design? How accurate does it track?

Fred: The equatorial platform is designed with help from the EQ building group on Yahoo. I built it and with a few modifications over a year's time it will track pretty well for 30-40 minutes. It tracked well enough for me to observe and hold M-31 G-1 at 601 power and keep it in the eyepiece long enough to draw a picture of it.

Clayton: It seems you're very active in the Scouts... can the girls earn a merit badge for astronomy? What exactly is "Starwoods"?

Fred: I have been a Girl Scout leader/volunteer for 20 years now. Yes there are patches they can earn. Starwood is one of the Local Girl Scout Camp sites. It's located pretty close to town. We do a lot of outreach there during the summer. We also go to Camp 4-Winds, which is farther away and has much darker skies. We hold a club only Messier Marathon there every spring.

Clayton: Tell the readers a little about your club...membership, meetings, star parties, etc.

Fred: Our clubs membership runs around 50 members and like most clubs some members are more active than others. We have a couple that live 3 hours away north of our states capital, a couple that live near Oklahoma City and one that lives in Ari-

zona and winters in Alamo Texas. During the winter months we meet at the Great Plains Nature Center here in Wichita and have speakers from the area who come and speak to us about astronomy, meteors, or the weather. From May to September we meet at the Lake Afton Public Observatory. After our meetings we help the public with their scopes and show off the sky with ours. We have an annual club star party we put on for Fall River Reservoir in Eastern Kansas. We have had as many as 22 club members attend that in August. We also plan a Messier Marathon in March and April every year.

Clayton: Does your club have an observing site/observatory? In your area, where would one travel to find a large professional observatory?

Fred: Lake Afton Public Observatory would be the closest. It is just west of Wichita, KS. Some of the universities have them and we are about 2 hours away from Eskridge, KS where Farpoint observatory is located. It is run by NE-KAAL in Topeka, KS

Clayton: When observing, what star atlas (electronic program/hardcopy) do you use?

Fred: Personally I use Sky Tools 3 Standard edition. Some of our club members use the Pro version. It is very easy to set up and use. You can create observing lists like the one we use at Okie-Tex or if you're into it, the Astronomical League Observing Clubs.

Clayton: Do you record notes of what you observe? Have you worked on any of the AL observing programs?

Fred: Using Sky Tool I log all of the objects as I observe them. I have completed the following Observing Clubs, Messier, Binocular Messier, Deep Sky Binocular, Globular Cluster, Lunar 1, Constellation Hunter, Double Star and the Master Outreach Award. I am working on the Herschel 400 and the

(Continued on page 8)

(Continued from page 7)

Carbon Star Award. Once I get those I will get the Master Observer Award. One member of our Club, Chris Lamer just received that distinction.

Clayton: How would you like to see your own astronomy grow?

Fred: I would like to continue to observe and learn about astronomy and pass that knowledge on through continued outreach through the club

Clayton: I've seen you several times at the Okie Tex Star Party. What do you like most about this gathering and do you make other parties throughout the year? Ever make it to the Texas Star Party?

Fred: I like the camaraderie. We generally have around 10 members that come and we enjoy working on the Okie-Tex Lists as well as any AL lists we are working. I enjoy meeting with other people for across the country as well. I like looking at the project others have worked on as well. I got ideas at Okie-Tex and built a real nice Parallelogram Binocular mount that I now use with 4" binos. I've heard a lot about the Texas Star Party from Tim Hall. I have never been, but hope to be able to find the time soon. I know it would be a lot of fun.

Clayton: It seems in recent years that the younger people are not that interested in amateur astronomy. Are you attaining any young club members via the Scouts?

Fred: We have had interest from Scouts but so far the only Scout to join the club is my granddaughter who is in the first grade. Her and her brother who is in fourth grade, have both earned Night Sky Network Outreach pins this year for their help with our outreach program. We also have one High school student who is a club member.

Clayton: Do you have any helpful advice to pass on to observers just starting out in astronomy?

Fred: Get a telescope that is simple to operate. An 8" or 10" dob is more than sufficient to use. Ask for help. If anything most amateur astronomers enjoy spreading the knowledge. Find a local astronomy club and become active in their outreach program. Everything I have learned about astronomy has come from doing outreach.

Clayton: Is there an email address that you have that a Houston Astronomical Society member could contact you for an additional question or two?

Fred: Homeelevator@msn.com

Clayton: Thanks Fred for taking the time to share your interest and thoughts here within our HAS newsletter, the *GuideStar*. We wish you luck with all of your astronomy interests. Please come visit our society when in the Houston area, we'd love to see you.

Fred: Thank you for what you do. Having published a number of

newsletters over the years I appreciate the effort you put into yours. I think this type of article is perfect for club newsletters. If I ever make it that far south I'll look you up. If you're ever in the heartland you do the same.

Clear skies always,

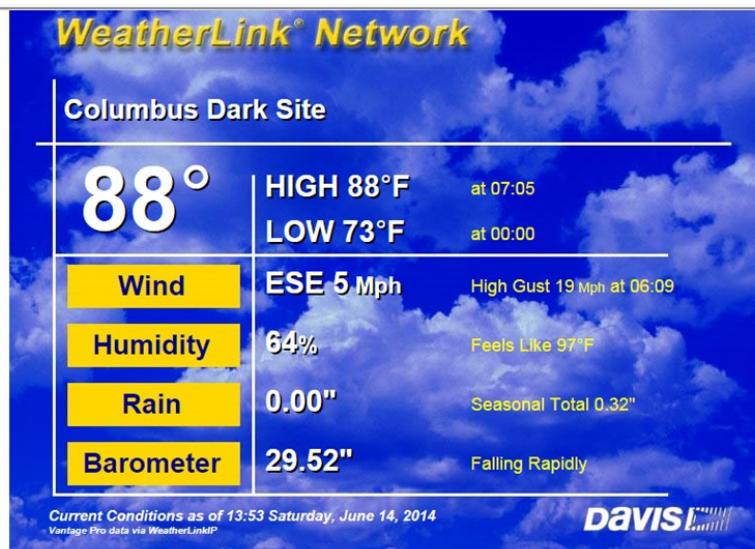
Fred: And clear skies to you as well, maybe we'll see you at Okie-Tex.

Clayton is an avid SCT visual observer and a longtime member of the Houston Astronomical Society. Contact him at: stonebloke@gmail.com

Observatory Corner

By Mike Edstrom, Observatory Committee Chairman

Here it is the new Columbus Dark Site weather station.



The link to the site will be put on the HAS web site soon. We hope to soon be able to raise the funds necessary to add a Sky Cam which will allow you to see the actual sky conditions in real time before you head out to the site.

Private Observatories

As an update on the Private Observatory sites we have now leased 10 of the 12 site if you are interested in one of the last two sites please contact me at medst22531@msn.com.

As you visit the Dark Site we invite you to make suggestions as to improvements you would like to see.

As a safety reminder please read the sign posted on the side of the metal building at the Dark Site which has directions to the hospital and contact information for the sheriff's department it also has the address to the site in case of a medical emergency.

And the Work Goes On

I need to remind everyone that we need to start filling out Log Reports at the site so I can give this information to the Fondren Foundation. The property is on a 99 year lease and part of the Lease agreement is that HAS needs to report every year to the Fondren Foundation that the property is being used. The Log Reports are located in the box in the middle of the field. Just open the cover, fill out the report and then slide it into the slot that is in the inside of the cover and then close the box. It is very important that everyone fill out a

Log Report so that we are showing that the Observing site is being used. Your help on this is very much appreciated.

If you have a Randalls card, and have not done so, please have it coded for the Houston Astronomical Society. Our number is #6618. The Society gets 1% of the gross sales that member spends at Randalls. Randalls totals up the amount spent each quarter and will send us a check if the amount goes over \$2,500, otherwise the total roles over to the next quarter of zeros out at the end of the calendar year. So please link your Randalls card to the Houston Astronomical Society so that the society can benefit from this Randalls program. This is very easy to do, just go to the Courtesy Booth and tell the person there what you want to do.

If you have any suggestions or thoughts for the site, please let me know.

Thank you.

Mike Edstrom

medst22531@msn.com

A New Galactic Yardstick

By Shannon Hall, *Sky & Telescope*, www.skyandtelescope.com

Astronomers have developed a new method to measure distances to bright but faraway galaxies, a tool which will help better constrain the expansion rate of the universe.

The nature of the universe lies within a single constant. Measuring this one number — known as the Hubble constant — tells us the universe's expansion rate, its age, and ultimately, its fate. Now a team of astronomers led by Yuzuru Yoshii (University of Tokyo) has developed an entirely new method to measure this crucial number.

The Hubble Constant

In 1929, Edwin Hubble discovered the universe's expansion by noticing one of the simplest yet surprising relationships in modern astrophysics: the more distant a galaxy, the faster it moves away from the Milky Way.

The constant of proportionality between a galaxy's distance and its speed is a way to characterize the universe, including its expansion rate and age. Yet despite the constant's simplicity, it's extremely difficult to measure accurately. Hubble himself measured a constant seven times greater than the accepted value today, placing the age of the universe at only 2 billion years.

For the past 85 years, astronomers have used our best observatories, including more recently the Hubble Space Telescope and the Planck spacecraft, to tie down the Hubble constant.

Because we can't simply extend a cosmic yardstick to the nearest galaxy and read off its distance, astronomers use "standard candles," objects with a known intrinsic brightness. We understand how light falls off over distance, so if we know both the intrinsic brightness of an object and how bright it appears from Earth, we can easily calculate the distance to that object.

Astronomers have used Type 1a supernovae as standard candles to great success. But they're constantly on the search for new standards that could provide an independent verification of the Hubble constant. That's just good science.

A New Standard Candle

Yoshii and colleagues think they've found a new standard candle: active galactic nuclei (AGN). These supermassive black holes at the centers of distant galaxies gobble down gas at furious rates. The gas heats up and shines brightly in the process, often outshining its host galaxy.

Since AGN are 10 to 100 times brighter than Type 1a supernovae, they could probe much larger distances, marking a giant leap in the cosmic distance ladder. (OK it would still be within the nearby universe.) But AGN can be wildly different beasts — how can astronomers tame them to be standard candles?

It all comes down to dust, says coauthor Bruce Peterson (Australian National University). Dust forms around the black hole nesting at the center of a galaxy, but it can't form too close to the heat of the black hole's accretion disk. Instead, the dust grains can only form in a more distant ring, leaving a gap between the accretion disk and the dust ring. The size of the gap is dependent on the heat, or brightness, of the black hole's accretion disk. Measure the size of the gap, and you'll have a measure of the AGN's intrinsic brightness — and hence its distance.

But astronomers can't see the dust ring itself — it's much too small and far away for current technology to resolve. The trick is to look at how the AGN's light varies over time. The ultraviolet light from the accretion disk must travel across the gap before reaching the inner edge of the dust ring, where it's absorbed and re-emitted in the infrared a short time later. Yoshii's team watched for an "echo," looking for peaks in ultraviolet light followed by peaks in near-infrared emission. The time-delay told them the size of the dust ring.

Of course, no astronomical result comes without a number of assumptions. Here, the team has to assume the properties of the dust — admittedly the largest source of error in the calculations.

Yoshii's team observed 17 AGN for six years on a dedicated 2-meter telescope at the Haleakala Observatory in Maui, Hawaii. When they compared their results (70 – 76 km/s/megaparsec) to the Hubble Space Telescope Key Project (71.4 – 76.2 km/s/megaparsec), they found

(Continued on page 11)

Astronomical League Convention

San Antonio, July 10-12

The HAS is a member of the national Astronomical League organization. Every year they hold a multi-day convention. This year it is in nearby San Antonio. At the convention are lectures, vendors and group banquets.

The speakers are: Don Pettit, astronaut explorer; Don Olson, Celestial Sleuth; Erika Rix, Astro-Sketching; Amanda Bayless, Stellar Binaries; Forrest Mims, Earth's Atmosphere; John Davis, Art in Astro-Imaging; Mike Simmons, Astronomers Without Borders; Larry Mitchell, Deep Sky Objects; William Bucklew, Lowell Observatory; Aaron Clevenson, Supernova 2014J and Laura Allai, Astrophotography.

For a hotel, there is a special room rate of \$99 at the Hilton San Antonio Airport. And don't forget about all the other attractions in San Antonio you can visit, including transportation for a night visit to the Riverwalk.

(Continued from page 10)

remarkably good agreement. (Bonus: the new method extends Hubble's Law from roughly 70 million lightyears to 500 million lightyears.)

But both of these results are slightly in tension with observations of the cosmic microwave background. The Planck spacecraft most recently analyzed the distant universe, extrapolating to a current Hubble constant of $67 - 68.6 \text{ km/s/megaparsec}$, whereas the Hubble Key Project and the results from Yoshii's team calculate Hubble's constant directly from the nearby universe.

The discrepancy might be real — implying a change in the expansion rate, and therefore in dark energy, over time. But this isn't a conclusion to be reached lightly — there is plenty of room for errors in all the measurements.

"It's important to stress that new methods of course do not have the maturity of the old ones," says Bozena Czerny (Copernicus Astronomical Center). "But it's equally important to have them, as many as possible, and to develop them to maturity."

For more information and registration details see this site:

[https://www.astroleague.org/files/alcor/
WhatsUpWithAstroLeagueMarch2014b.pdf](https://www.astroleague.org/files/alcor/WhatsUpWithAstroLeagueMarch2014b.pdf)

Reference:

Y. Yoshii et al. "A New Method for Measuring Extragalactic Distances" *Astrophysical Journal Letters*, 2014

- See more at:
<http://www.skyandtelescope.com/astronomy-news/a-new-galactic-yardstick/#sthash.bq9udi3g.dpuf>

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HAS Texas 45 observing program

The Texas 45 Summer 15. Do it All in One Night

By Rene Gedaly — HAS Texas 45 Program Coordinator

The dog days of summer. For those of us working the Texas 45, this may be a concern. Long summer days bring short summer nights for observing. Take a look at the list below, though, planisphere in hand, and you'll see you can cover the entire list in one, good evening.

Happily, the neighborhood of most every object can be hopped to naked eye and then viewed with binoculars. My planisphere shows all but three list objects. Simple online star charts show the rest: the Saturn nebula and Tom Thumb and Star Queen open clusters. Two objects are constellations: Corona Australis and Delphinus. Corona Australis, the Southern Crown, is tucked up under Sagittarius, just east of Scorpius' stinger. Delphinus is a pretty little constellation that looks like a playful, leaping dolphin. Find it to the east of the Summer Triangle of bright stars Vega, Altair, and Deneb.

Not to be missed are double star Albireo and asterism Cr 399, the Coathanger. Albireo, β Cygni, is the "head" of the constellation Cygnus the Swan and is also part of the Northern Cross asterism. It is widely considered one of the most beautiful double star systems due to the contrasting colors of its A and B stars, bright yellow and green to my eyes. Use a telescope for full effect. The Coathanger is in a relatively empty part of the sky—don't let the scale of the planisphere fool you—and is shaped like its namesake. The line between Albireo and the Coathanger almost bisects the line from Vega to Altair. Some can spot this naked-eye, but use binoculars to see the upside down hanger pop into view.

Many of these objects are bright enough to see from a suburban location,

and you may want to practice spotting them there before heading out to the observatory. Then when good weather is forecast, check the table below in *Planning your Texas 45 observing session*. If it's a go, pack a picnic lunch, get in an afternoon nap in the bunkhouse or under the trees, and make an evening of it. With a planisphere, a few charts, and decent weather, you can knock out the summer list in no time. Even in a single night.

Rene Gedaly

If you're new to the HAS Texas 45 observing program, you'll want to get the observing list, logs, and rules from the website at <http://www.astronomyhouston.org/programs/has-texas-45>. All observations must be made at the HAS observatory site.

The Texas 45 Summer 15: Jul-Aug-Sep

Observe 10 of the 15 objects in this list. You may also log objects from this list at any time of year visible

Cl	Primary ID	Alternate ID	Con	RA 2000	Dec 2000	Mag	Ur. 2	PSA	TLO
Open	M 6 Butterfly Cluster	NGC 6405	Sco	17h40m20.0s	-32°15'12"	4.6	164	58	156
Open	Tom Thumb Cluster	NGC 6451	Sco	17h50m41.0s	-30°12'36"	8.2	164	58	--
Open	M 23	NGC 6494	Sgr	17h57m04.0s	-18°59'06"	5.9	146	56	144
Neb	M 20 Trifid Nebula	NGC 6514	Sgr	18h02m22.0s	-22°59'12"	6.3	145	67	148
Neb	M 8 Lagoon Nebula	NGC 6523	Sgr	18h04m02.0s	-24°23'14"	5.0	145	67	146
Open	M 16 Eagle/Star Queen	NGC 6611	Ser	18h18m48.0s	-13°48'24"	6.5	126	67	142
Neb	M 17 Omega Nebula	NGC 6618	Sgr	18h20m48.0s	-16°11'00"	6.0	126	67	142
Con	Corona Australis	Constellation	CrA	18h38m47.3s	-41°08'51"	5.2	180	69	--
Open	M 11 Wild Duck Cluster	NGC 6705	Sct	18h51m05.0s	-06°16'12"	6.1	125	67	140
Open	Collinder 399	Coathanger	Vul	19h25m24.0s	+20°11'00"	4.8	66	65	139
Dvar	Albireo	Beta 1 Cyg	Cyg	19h30m43.3s	+27°57'35"	3.1	66	64	132
Pne	M 27 Dumbbell	NGC 6853	Vul	19h59m36.3s	+22°43'16"	7.3	66	64	136
Con	Delphinus	Constellation	Del	20h41m36.8s	+11°40'15"	5.7	84	64	--
Pne	Saturn Nebula	NGC 7009	Aqr	21h04m10.9s	-11°21'48"	8.3	123	77	168
Glob	M 15	NGC 7078	Peg	21h29m58.0s	+12°10'00"	6.3	83	75	164

Ur.2: page # in *Uranometria 2nd ed.*; **PSA:** page # in *Pocket Sky Atlas*; **TLO:** page # in *Turn Left at Orion 4th ed.*

Continued on next page...

From previous page...

Planning your Texas 45 observing session

We observers are always at the mercy of the weather so planning ahead is a good way to make the most of our time when clear skies are forecast. The table below gives observing notes specific to the summer object list of the Texas 45.

Saturdays in summer	Moon	Observing notes
7/5	1st Qtr	Completely dark from 01:34 to 04:57. Sunset 20:31, Moon set 01:34. All list objects visible all night. Early morning observing.
7/12	Full	Never completely dark
7/19	3rd Qtr	Completely dark from 21:59 to 01:43. Sunset 20:27, Moon rise 01:43. All list objects visible all night.
7/26	New	Completely dark from 21:54 to 05:13. Sunset 20:24, Moon set 20:06. Objects in Sgr, Sco, Ser, CrA set in the hours before sunrise. Others are visible all night.
8/2	1st Qtr	Completely dark from 00:11 to 05:19. Sunset 20:19, Moon set 00:11. Waning Crescent Moon. All list objects up all night. Early morning observing.
8/9	Full	Never completely dark
8/16	3rd Qtr	Completely dark from 21:31 to 00:25. Sunset 20:07, Moon rise 00:25. Objects in Sgr, Sco, Ser, CrA setting after midnight. Others visible all night.
8/23	New	Completely dark from 21:22 to 05:36. Sunset 19:59, Moon set 18:44. Last good chance for all list objects near or above 30° altitude during full darkness.
8/30	Waxing	Completely dark from 22:51 to 05:41. Sunset 19:52, Moon set 22:51. Waxing Crescent Moon. CrA best visible by 23:30. Catch M6, NGC 6451 before setting near midnight. Other objects in Sgr, Sco, Ser, CrA start setting after midnight.
9/6	Waxing	Never completely dark. Full moon 9/7.
9/13	3rd Qtr	Completely dark from 20:54 to 23:05. Sunset 19:35, Moon rise 23:05. Two hour window to spot all list objects in complete darkness. Objects in Sgr, Sco, Ser, CrA falling below 30° altitude.
9/20	Waning	Completely dark from 20:45 to 04:58. Sunset 19:26, Moon rise 04:58. Waning Crescent Moon. Last chance to view all summer list objects, 9/20 - 9/25. Catch M6, NGC 6451 first. View CrA by 21:00 and get help if needed. New moon 9/24-25.
9/27	Waxing	Completely dark from 21:34 to 05:59. Sunset 19:18, Moon set 21:34. Absolute last chance to view all objects on summer list in one evening. CrA probably too low, dim. M6, NGC 6451 very low. Good chance to catch others if missed earlier. Can still meet requirement to view 10 out of 15 summer objects through mid-November.

Shallow Sky Object of the Month

Barnard 68—Dark Nebula

By Bill Pellerin, GuideStar Editor

Object: Barnard 68

Class: Dark Nebula, Bok Globule

Constellation: Ophiuchus

Magnitude: n/a

R.A.: 17 h 22 m 38 s

Dec: -23 deg 49 min 34 sec

Size/Spectral: 4 arc minutes, about .5 ly across

Distance: 500 ly

Optics needed: Telescope

Why this object is interesting:

This object will require dark skies (no moon), and will benefit from large aperture. Transits about 10:30 p.m. on July 26, prime night at the HAS observing site.

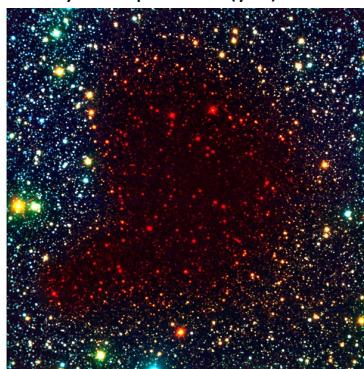
Stars form when a collapsing cloud of hydrogen, helium, and dust finally heats up enough to begin nuclear fusion. There are numerous nebulae in which you can find young stars that have recently ‘turned on’. The object this month is one that represents an even earlier stage in star formation. You’ll be looking at a cloud of gas and dust that is starting its collapse but that has not yet formed any stars.

How can we see this? In this case, the cloud is in a star-rich part of the Milky way, so we get a good look at the cloud because it obscures the stars behind it.

The nebula is kidney shaped, and obviously not spherical (yet). It’s not

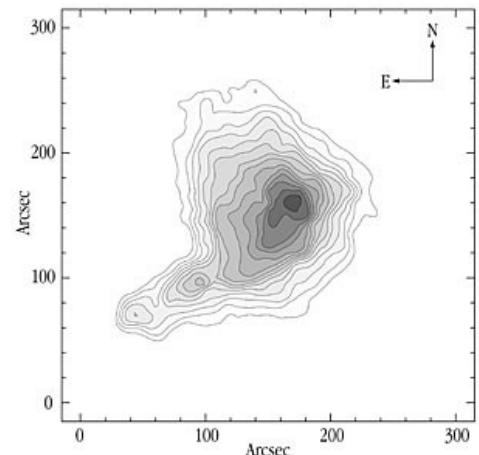


B, V, I



B, I, K

On the left, B68 in visible and near infrared light and on the right in infrared. Notice that the background stars show through the cloud in the infrared image. Credit: ESO (European Southern Observatory)



Map showing the extinction of light by the B68 cloud. The area inside the outermost line reduces starlight by 4 magnitudes; at the center the starlight is reduced by 35 magnitudes. Credit: ESO (European Southern Observatory)

and only become spherical over time.

If you look at an image of B68 in infrared light, you’ll see the stars behind the cloud shining through the cloud, but significantly reddened. This is because the material disperses the blue light from those stars in the same way that stuff in our atmosphere disperses the blue light from the Sun (explaining why the sky is blue). You can get a sense of the density of the cloud as well, and it should be no surprise that the densest part of the object is near the center.

spherical because there hasn’t been enough time for the material that will make the new star(s) to collapse enough to *become* spherical. These things start with irregularly shaped collections of dust and gas

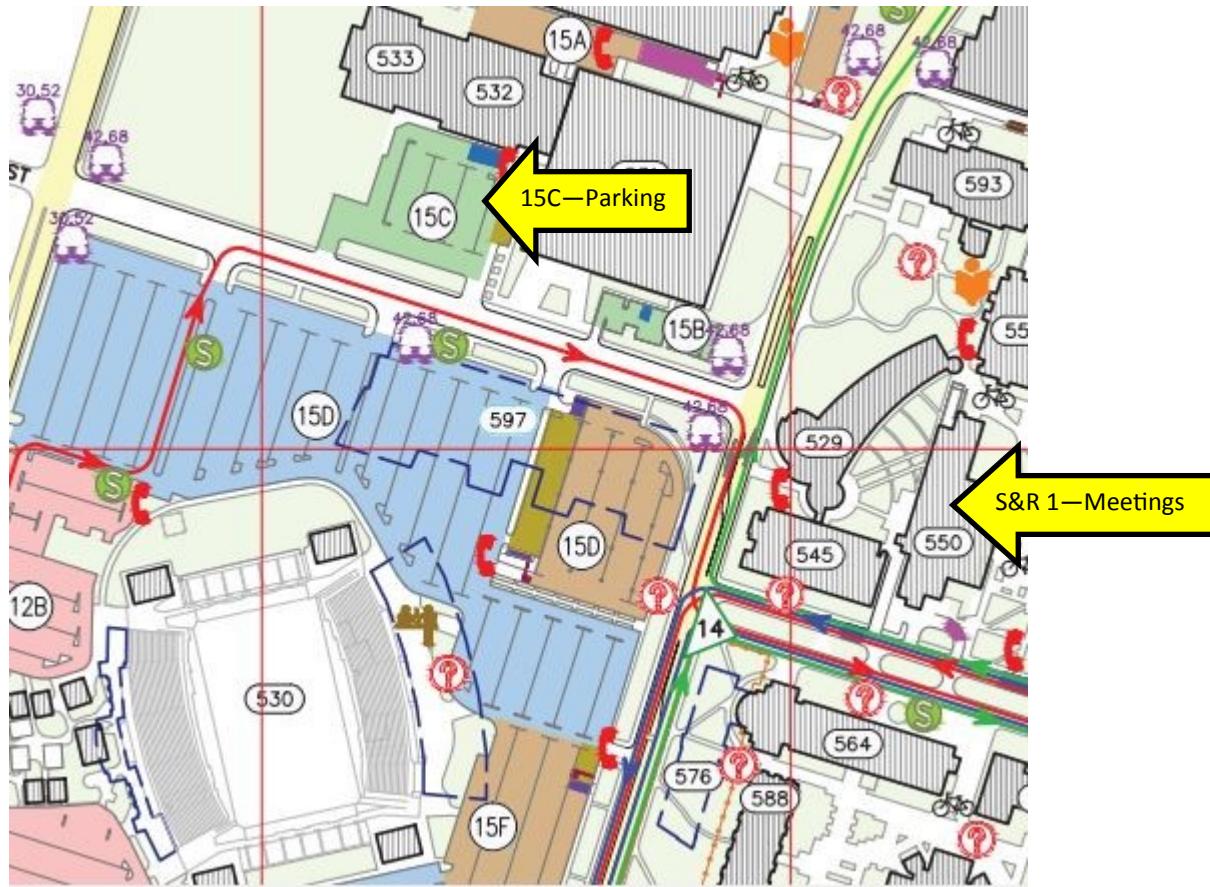
Parking at the University of Houston Main Campus

For the monthly Houston Astronomical Society Meeting

The map below shows the location of the 15C parking lot, west of Cullen Boulevard on Holman Street..

The map is from the University of Houston web site and identifies the lot that is available for parking while attending the Houston Astronomical Society monthly meeting. This parking is available from 6:30 p.m. until 10:00 p.m. on the Friday night of the HAS meeting (usually the first Friday of the month).

This parking is free. If you get a notice from the UH campus police on the night of the meeting, call the UH Security office and let them know that this area has been made available on HAS meeting night by the Parking Department.



Houston Astronomical Society

P.O. Box 800564

Houston, TX 77280-0564

General Membership Meeting

The Houston Astronomical Society holds its regular monthly General Membership Meeting on the first Friday of each month, unless rescheduled due to a holiday or a conflict with other events at the University of Houston.

Board of Directors Meeting

The Board of Directors Meeting is held on dates and at locations scheduled by the board. Information provided to *GuideStar* will be published. The meetings are open to all members of the Society in good standing. Attendance is encouraged.

GuideStar Information

The H.A.S. *GuideStar* is published monthly by the Houston Astronomical Society. All opinions expressed herein are those of the contributor and not necessarily of Houston Astronomical Society. The monthly Meeting Notice is included herein. *GuideStar* is available on the HAS web site to all members of H.A.S., and to persons interested in the organization's activities. Contributions to *GuideStar* by members are encouraged. Electronic submission is helpful. Submit the article in text, MS-Word format via email BillPellerin@sbcglobal.net. Copy must be received by the 15th of the month for inclusion in the issue to be available near the end of the same month. Or, bring copy to the General Membership Meeting and give it to the Editor, or phone to make special arrangements.

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Advertising: Advertisers may inquire concerning ad rates and availability of space.

The Houston Astronomical Society welcomes you to our organization. The HAS is a group of dedicated amateur astronomers, most of whom are observers, but some are armchair astronomers.

The benefits of membership are:

- Access to our 18 acre observing site west of Houston -- a great place to observe the universe!
- A telescope loaner program -- borrow a HAS telescope and try observing for yourself!
- A monthly novice meeting, site orientation meeting, and general meeting with speakers of interest.
- Opportunities to participate in programs that promote astronomy to the general public (such as Star Parties at schools)
- A yearly all-clubs meeting for Houston area organizations
- Meet other amateurs and share experiences, learn techniques, and swap stories

You're invited to attend our next meeting.

You'll have a great time.

Houston Astronomical Society

Meeting on Friday, July 11, 2014

7:00 Novice Meeting, room 116 Science & Research 1 Bldg

8:00 General Meeting, room 117 Science & Research 1 Bldg

University of Houston

Directions to meeting:

From I-45 going south (from downtown)

- exit at Cullen Boulevard
- turn right on Cullen
- turn right on Holman Street; the parking lot is past the Hofheinz Pavilion
- Science and Research is across the street (2nd building back)

From I-45 going north (from NASA/Galveston)

- exit at Cullen Boulevard
- turn left on Cullen
- turn right on Holman Street; the parking lot is past the Hofheinz Pavilion
- Science and Research is across the street (2nd building back)

Parking:

There is Free Parking. See Parking map and detailed information on parking on the preceding page.