

AUGUST 2017

★ HOUSTON ASTRONOMICAL SOCIETY ★

# GUIDESTAR

FOSTERING THE SCIENCE AND ART OF ASTRONOMY  
THROUGH PROGRAMS THAT SERVE OUR MEMBERSHIP  
AND THE COMMUNITY





## TABLE OF CONTENTS

UPCOMING EVENTS	2
SOCIETY DIRECTORY	3
PRESIDENT'S LETTER	4
ANNOUNCEMENTS	5
ARTICLE   NASA SPACE PLACE ASTRONOMY CLUB	7
ARTICLE   MCDONALD OBSERVATORY	8
LIGHT BUCKET LIST	9
ASTERISMS	11
ABOUT THE GUIDESTAR	12
ABOUT H.A.S.	13
PARKING AT UH	14

## ABOUT THE COVER

White Light image of the solar corona during totality of a solar eclipse.

The image was taken from:  
[https://www.nasa.gov/sites/default/files/thumbnails/image/white\\_light\\_corona.jpg](https://www.nasa.gov/sites/default/files/thumbnails/image/white_light_corona.jpg)

See NASA activities in regards to the August 2017 total solar eclipse at:  
<https://www.nasa.gov/feature/goddard/2017/chasing-the-total-solar-eclipse-from-nasa-swb-57f-jets>

## AUGUST 4, 2017 GENERAL MEETING

### GETTING YOUR HANDS ON REAL ASTRONOMY DATA

By Dr. Luisa Rebull, Research Scientist - Director of the Spitzer Science Center & IR Archive



Luisa grew up in the Washington DC area. She attended the College of William and Mary and received her bachelor in Physics. She then went to the University of Chicago and received her MS and PhD in Astronomy and Astrophysics. After receiving her doctoral, she went to work for JPL in 2000. In 2003, she moved to the Spitzer Telescope project where she started on the Instrument Support team and the Observer Support team. She then became a member of the Community Affairs team which is the liaison between the telescope and the astronomy community. While working for Spitzer, she developed a passion for sharing her scientific experiences with the public. She became the director of the NASA/IPAC Teacher Archive Research Project. This project is aimed at providing high school teachers with authentic research experiences. This experience then can allow them to hone their teaching strategies to better pass on science experiences to their students.

Her primary research interest is in young stars. Particularly how they rotate. Their rate of rotation may have an influence in them developing a solar system (forming planets).

## NOVICE MEETING

### THE AUGUST SKY: WHAT TO SEE AND NOT SEE IN 2017

By Debbie Moran



The Galactic Center – taken by Yuri Beletsky at the VLT site in Chile. <https://apod.nasa.gov/apod/ap131201.html>

August is a fine time to look at the sky. Learn about the Summer Triangle, a star cluster that looks just like ET the Extraterrestrial, the Andromeda Galaxy, the center of our galaxy, Saturn and Jupiter, the annual Perseids meteor shower and why it is not so great this year, what to look for and how to prepare for the partial and total solar eclipse.

## CALENDAR

<b>AUGUST 4</b>	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
<b>AUGUST 7</b>	1:11 p.m.	Full Moon
<b>AUGUST 12</b>	2:00 p.m.	Perseid meteors peak
<b>AUGUST 14</b>	8:15 p.m.	Last Quarter Moon
<b>AUGUST 16</b>	7:00 p.m.	VSIG Meeting, Mendenhall Community Center
<b>AUGUST 19</b>		Prime Night, Dark Site
<b>AUGUST 21</b>	1:30 p.m.	New Moon
<b>AUGUST 26</b>	7:15 p.m.	Novice Lab, Dark Site
<b>AUGUST 29</b>	3:13 a.m.	First Quarter Moon
<b>SEPTEMBER 1</b>	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
<b>SEPTEMBER 5</b>	12:00 a.m.	Neptune at opposition
<b>SEPTEMBER 6</b>	2:03 p.m.	Full Moon
<b>SEPTEMBER 12</b>	5:00 a.m.	Mercury at greatest elongation W
<b>SEPTEMBER 13</b>	1:25 a.m.	Last Quarter Moon
<b>SEPTEMBER 16</b>		Prime Night, Dark Site
<b>SEPTEMBER 20</b>	12:30 a.m.	New Moon
	7:00 p.m.	VSIG Meeting, Mendenhall Community Center
<b>SEPTEMBER 22</b>	3:02 p.m.	Equinox
<b>SEPTEMBER 28</b>	9:54 p.m.	First Quarter Moon

SEND CALENDAR EVENTS TO [DOUG MCCORMICK](mailto:DOUG MCCORMICK)  
 SKYGAZER10@SBCGLOBAL.NET FOR THE LATEST INFORMATION ON CLUB  
 EVENTS, GO TO [ASTRONOMYHOUSTON.ORG](http://ASTRONOMYHOUSTON.ORG)

## OTHER MEETINGS

**JOHNSON SPACE CENTER ASTRONOMICAL SOCIETY** | [jscas.net](http://jscas.net)

Meets in the the Lunar and Planetary Institute on the 2nd Friday of each month.

**FORT BEND ASTRONOMY CLUB** | [fbac.org/club\\_meetings.htm](http://fbac.org/club_meetings.htm).

Meets the third Friday of the month at 8:00 p.m. at the Houston Community College Southwest Campus in Stafford, Texas.

**NORTH HOUSTON ASTRONOMY CLUB** | [astronomyclub.org](http://astronomyclub.org)

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](mailto:bill.leach@nhmccd.edu).

**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.

## HAS MEETINGS

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

### NOVICE MEETING

7:00 P.M. room 117 Science & Research 1 Bldg

### GENERAL MEETING

8:00 P.M room 117 Science & Research 1 Bldg

## 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.



Houston  
Astronomical  
Society



GuideStar\_HAS



STARLINE  
832-go4-HAS0

**DIRECTORS AT LARGE****WALT COONEY**

waltc@astronomyhouston.org

**CHRIS OBER**

chriso@astronomyhouston.org

**MARK FERRAZ**

markf@astronomyhouston.org

**DEBBIE MORAN**

debbiem@astronomyhouston.org

**BRAM WEISMAN**

bramw@astronomyhouston.org

**OFFICERS****PRESIDENT RENE GEDALY**

president@astronomyhouston.org

**VICE PRESIDENT DON SELLE**

vp@astronomyhouston.org

**SECRETARY ROB MOREHEAD**

secretary@astronomyhouston.org

**TREASURER JESSICA KINGSLEY**

treasurer@astronomyhouston.org

**COMMITTEE  
CHAIRPERSONS****AUDIT SCOTT MITCHELL**

audit@astronomyhouston.org

**EDUCATION & OUTREACH****DEBBIE MORAN & JOE KHALAF**

education@astronomyhouston.org

outreach@astronomyhouston.org

**FIELD TR./OBSG STEPHEN JONES**

FTO@astronomyhouston.org

**MEMBERSHIP BILL KOWALCZYK**

membership@astronomyhouston.org

**NOVICE DEBBIE MORAN**

novice@astronomyhouston.org

H:713-774-0924 C:713-562-7670

**OBSERVATORY MIKE EDSTROM**

observatory@astronomyhouston.org

P: 832-689-4584

**PROGRAM JUSTIN MCCOLLUM**

program@astronomyhouston.org

**PUBLICITY BRAM WEISMAN**

publicity@astronomyhouston.org

**TELESCOPE ALLEN WILKERSON**

telescope@astronomyhouston.org

P: 832- 265-4773

**AD-HOC COMMITTEE  
CHAIRPERSONS****AL COORDINATOR DOUG MCCORMICK**

astroleague@astronomyhouston.org

**AUDIO/VISUAL MICHAEL RAPP**

AV@astronomyhouston.org

**GUIDESTAR BOB WIESNER**

guidestar@astronomyhouston.org

**TEXAS 45 COORDINATOR RENE GEDALY**

texas45@astronomyhouston.org

**WELCOMING EVELYN PENILLA**

EvelynP@astronomyhouston.org

**HAS BOOKING STEVE GOLDBERG**

HASbooking@astronomyhouston.org

**VIDEOGRAPHY MARIO MORENO**

VRT@ASTRONOMYHOUSTON.ORG

**WEB TECHNOLOGY MARK FERRAZ**

webmaster@astronomyhouston.org

**URBAN OBSERVING STEVE MUNSEY**

urbanobserving@astronomyhouston.org

**LEADERSHIP DEVELOPMENT ED FRAINI**

EdF@astronomyhouston.org

**WOMEN'S SIG****RENE GEDALY**

ReneG@astronomyhouston.org

**AMELIA GOLDBERG**

AmeliaG@astronomyhouston.org

**IDA REP DEBBIE MORAN**

debbiem@astronomyhouston.org

**ADVISORS****DR. LAWRENCE PINSKY**

University of Houston

**BRIAN CUDNIK**

Prairie View A&amp;M University

**HAS BOARD MEETING**

HAS Board meetings are scheduled regularly. 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 Trini Mendenhall Community Center (1414 Wirt Road) at 6:30 p.m. on the date specified the calendar.

## WHERE WILL YOU BE FOR THE GREAT AMERICAN ECLIPSE?

Many of our members will be stationed all along the center line from Oregon to South Carolina. Will you be closer to home August 21? Get to the Houston Museum of Natural Science. They'll be having an eclipse viewing. Details in this GuideStar.

## HAS SIGS. THERE'S ONE FOR YOU

You know about the WOMEN'S SIG. The Pizza & Planets event in July included food, discussion, and a neighborhood lighting tour. When the clouds parted, we set up in the backyard to view Luna, Jupiter, and Saturn on a 90mm refractor and 8-inch reflector. Then all tried their hand at lunar photography on cellphones. Check it out on the Forums>Special Interest Groups>WSIG.

## But there are others. The VISUAL SIG

meets each month at the Mendenhall Community

Center with lively discussions about observing projects and tips of the trade. This is not a place to talk equipment—unless you're talking about nebula filters to help you see those faint fuzzies.

**You know you'd love a Dobsonian** light bucket but you don't yet own pair of binoculars. Where do you start? The Novice Telescope Lab, also held at Mendenhall, 1414 Wirt Road. Watch the COMING EVENTS calendar on the website for the next date.

**HAS is a family friendly club.** Need proof? We now have a Kids SIG! (We also have a large room in the new bunkhouse for families compliments of the observatory committee.) Outfitted with an Orion tabletop Dob and Nikon 7x35 binoculars, HAS kids can sit at their kid-sized picnic table and work on observing projects of their own. Check the website PROGRAMS tab for details.

## The HAS Texas 45 has an imaging counterpart?!

Come on you astrophotogs, earn your own pin and certificate. Details on the website PROGRAMS tab.

## WHY SIGS? WHY ALL THE PROGRAMS

Many longtime members got turned on to astronomy in the 60s with the space program. Remember 1969? I'm a child of that era and learned to love the stars as a girl. That curiosity about the universe did not end with my generation but its expression has changed immensely for today's hobbyist, many of whom live on the Internet.

Tailoring programs to various segments of our wider community has resulted in major growth in the number of women and girls, fathers and families, and grade school, high school and college students who participate in hands-

on astronomy, which we believe is a gateway science to the other STEM fields.

I suppose we sound like evangelists, and we are. Our outreach program is composed of experienced and getting-there observers and educators who visit clubs, schools, religious groups, museums and all kinds of community groups across Greater Houston giving talks and setting up telescopes in parking lots and fields—hoping for clear enough skies to give everyone who wants it a peek at the universe.

Already we see the beginnings of a new type of hobbyist, one based on the use of robotic telescopes operated from the comfort of one's own home. It's coming to HAS, too, perhaps as soon as 2018.

Astronomy is far from a dying hobby. For all who turn their eyes to the night sky and wonder, the art and science of astronomy awaits.



## DINE AND DIALOGUE EVENT WITH NASA ASTRONAUTS

Since the beginning of rocket flight in the United States, Texas and Texans have played a major part in its development and success.

In honor of Texas participation, The Texas State Historical Association is holding a Dine and Dialog event with NASA astronauts and engineers at the Driskill Hotel in Austin on August 19th starting at 5p.m.

Given NASA's historical importance to the Lone Star State's history, we are hosting an event featuring astronauts and engineers from the agency's formative years and recent past. We think this event will be of interest to the Houston Astronomical Society's members and are hopeful that you could share this information with them.

The event takes place on August 19 at 5 p.m. at the Driskill Hotel in Austin, Texas. Included with the purchase of a ticket is access to the reception, a seat at the panel discussion with the astronauts and engineers, and a steak and lobster dinner catered by the Driskill Hotel.

Featured speakers include:

- **Apollo 7 astronaut Walter Cunningham**
- **Space Shuttle astronauts, Robert L. Crippen, Bonnie J. Dunbar, Michael E. Fossum, and Bernard A. Harris Jr.**
- **Engineers Jerry Bostick and Thomas Moser**

For more information, you are welcome to contact Alex Krueger or our events coordinator Dawn Orsak. You can reach Alex at [Alex.Krueger@tshaonline.org](mailto:Alex.Krueger@tshaonline.org) or you can contact Dawn at [Dawn.Orsak@tshaonline.org](mailto:Dawn.Orsak@tshaonline.org), and you can reach both of them by phone at 512-471-2600. For additional information, you can visit the event's website at: [www.tshaonline.org/nasa](http://www.tshaonline.org/nasa).

Thank you for your consideration, and we look forward to hearing back from you.

Our mission is to deepen the appreciation, understanding, and teaching of Texas history through education programs, publications, and events.

## TRAILER FOR SALE

12 x 6 foot Millenium cargo trailer, with side and double back doors. Extra 12 inches of height. Electrical panel with circuit breakers, AC sockets. Air conditioner / heater. Adjustable open wire shelving over desk. Chair and desk included. Dual scissor jacks.

Has never been used to haul anything. Has served well as office and bunk for owner at the HAS Observatory site.

Needs a new plastic cover for the roof vent and removal of two dead wasp nests from exterior of vent screen. (weatherproof external vent cover in place). Needs clean out of air conditioner hood.

**PRICE: \$2500.**

**CONTACT: PEYTON BARNES, M.D.**

**EMAIL: [SKAEVOLA@HOTMAIL.COM](mailto:SKAEVOLA@HOTMAIL.COM)**

CURRENT EXTERNAL VIEW



CURRENT INTERIOR VIEW



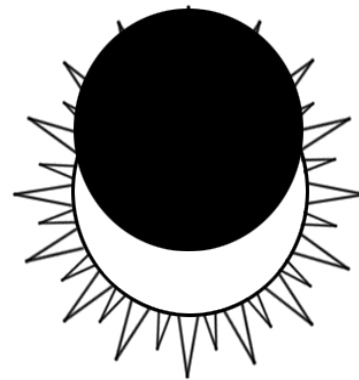
## PARTIAL SOLAR ECLIPSE AT THE HOUSTON MUSEUM OF NATURAL SCIENCE MONDAY, AUGUST 21, 2017

The New Moon of Monday, August 21, 2017, aligns with the Sun and the Earth well enough to cast its shadow toward Earth. The umbral shadow, where the Moon completely blocks the Sun, passes across the center of the USA, causing a total solar eclipse on a path from central Oregon to Charleston, SC. However, Houston is within the penumbra, where the Moon partially blocks the Sun. Therefore we will see a partial solar eclipse, in which the Moon covers almost two thirds of the Sun's disk at most.

At 11:46 AM CDT, look for the Moon to take a 'bite' out of the Sun's disk. The Moon covers the northern (upper) limb of the Sun, since we are south of the umbra. Maximum eclipse, when the Moon covers almost 2/3 of the Sun's disk, is at 1:16. At 2:45, the Moon no longer blocks the Sun. After this, we'll see our next partial solar eclipse in Houston on October 14, 2023.

The Houston Museum of Natural Science is an excellent place to observe this eclipse. We have invited volunteers to set up solar telescopes at both of our campuses, in Hermann Park and in Sugar Land. Each telescope will be filtered to offer you a safe view of the Sun. From noon to 2:00 on August 21, the Burke Baker Planetarium will offer six 15 minute shows about the eclipse. Tickets for these shows will be \$4. The 2:00 Starry Night Express will feature a live feed from Casper, Wyoming, with Museum staff in the path of totality. Even if clouds prevent us from seeing the eclipse outside, you can experience it through our planetarium shows.

If anyone has a telescope they would like to bring to the event, power will be available for their operation.



Eclipse Times	
Eclipse begins AM, CDT	11:46
Mid-eclipse	1:16 PM
Eclipse ends	2:45 PM

For those who don't have a scope, or want more access to the event, the gift shop will be selling eclipse glasses for \$3.95 a pair.

Ken Hayes for HMNS will be on site to coordinate / direct the event.

**CAUTION:** Never look directly at the Sun with the naked eye or through an unfiltered telescope. Permanent eye-damage will result.



This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit [spaceplace.nasa.gov](https://spaceplace.nasa.gov) to explore space and Earth science!

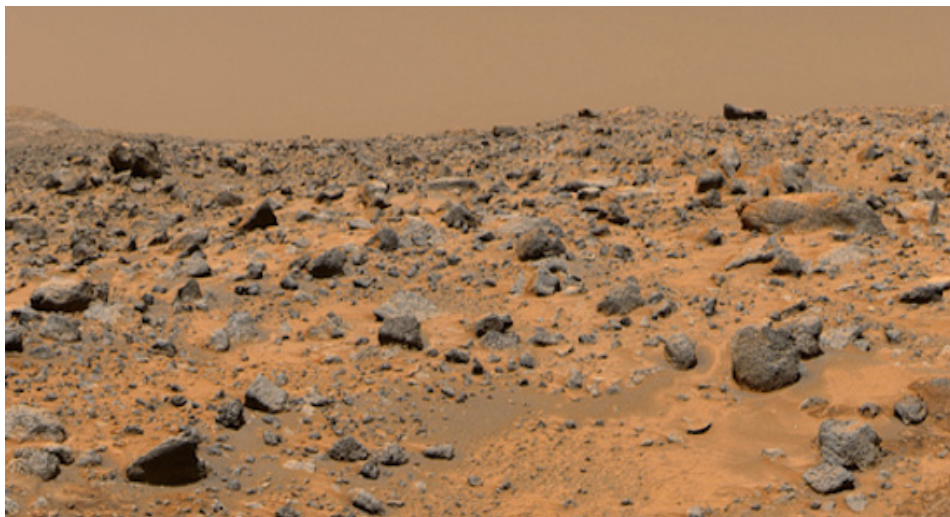
## TWENTY YEARS AGO ON MARS... By Linda Hermans-Killiam

On July 4, 1997, NASA's Mars Pathfinder landed on the surface of Mars. It landed in an ancient flood plain that is now dry and covered with rocks. Pathfinder's mission was to study the Martian climate, atmosphere and geology. At the same time, the mission was also testing lots of new technologies.

For example, the Pathfinder mission tried a brand-new way of landing on Mars. After speeding into the Martian atmosphere, Pathfinder used a parachute to slow down and drift toward the surface of the Red Planet. Before landing, Pathfinder inflated huge airbags around itself. The spacecraft released its parachute and dropped to the ground, bouncing on its airbags about 15 times. After Pathfinder came to a stop, the airbags deflated.

Before Pathfinder, spacecraft had to use lots of fuel to slow down for a safe landing on another planet. Pathfinder's airbags allowed engineers to use and store less fuel for the landing. This made the mission less expensive. After seeing the successful Pathfinder landing, future missions used this airbag technique, too!

Pathfinder had two parts: a lander that stayed in one place, and a wheeled rover that could move around. The Pathfinder lander had special instruments to study Martian weather. These



Caption: The Mars Pathfinder lander took this photo of its small rover, called Sojourner. Here, Sojourner is investigating a rock on Mars. Image credit: NASA/JPL-Caltech

instruments measured air temperature, pressure and winds. The measurements helped us better understand the climate of Mars. The lander also had a camera for taking images of the Martian landscape. The lander sent back more than 16,000 pictures of Mars. Its last signal was sent to Earth on Sept. 27, 1997. The Pathfinder lander was renamed the Carl Sagan Memorial Station. Carl Sagan was a well-known astronomer and science educator.

Pathfinder also carried the very first rover to Mars. This remotely-controlled rover was about the size of a microwave oven and was called Sojourner. It was named to honor Sojourner Truth, who fought for African-American and women's rights. Two days after Pathfinder landed, Sojourner rolled onto the surface of Mars. Sojourner gathered data on Martian rocks and soil. The rover also carried cameras. In the three months that Sojourner operated on Mars, the rover took more than 550 photos!

Pathfinder helped us learn how to better design missions to Mars. It gave us valuable new information on the Martian climate and surface. Together, these things helped lay the groundwork for future missions to Mars.

Learn more about the Sojourner rover at the NASA Space Place: <https://spaceplace.nasa.gov/mars-sojourner>



## DO STARS FALL QUIETLY INTO BLACK HOLES, OR CRASH INTO SOMETHING UTTERLY UNKNOWN?

30 May 2017 | Austin, TX

Astronomers at The University of Texas at Austin and Harvard University have put a basic principle of black holes to the test, showing that matter completely vanishes when pulled in. Their results constitute another successful test for Albert Einstein's General Theory of Relativity.

Most scientists agree that black holes, cosmic entities of such great gravity that nothing can escape their grip, are surrounded by a so-called event horizon. Once matter or energy gets close enough to the black hole, it cannot escape — it will be pulled in. Though widely believed, the existence of event horizons has not been proved.

"Our whole point here is to turn this idea of an event horizon into an experimental science, and find out if event horizons really do exist or not," said Pawan Kumar, a professor of astrophysics at The University of Texas at Austin.

Supermassive black holes are thought to lie at the heart of almost all galaxies. But some theorists suggest that there's something else there instead — not a black hole, but an even stranger supermassive object that has somehow managed to avoid gravitational collapse to a singularity surrounded by an event horizon. The idea is based on modified theories of General Relativity, Einstein's theory of gravity.

While a singularity has no surface area, the noncollapsed object would have a hard surface. So material being pulled closer — a star, for instance — would not actually fall into a black hole, but hit this hard surface and be destroyed.

Kumar, his graduate student Wenbin Lu, and Ramesh Narayan, a theorist from the Harvard-Smithsonian Center for Astrophysics, have come up with a test to determine which idea is correct.

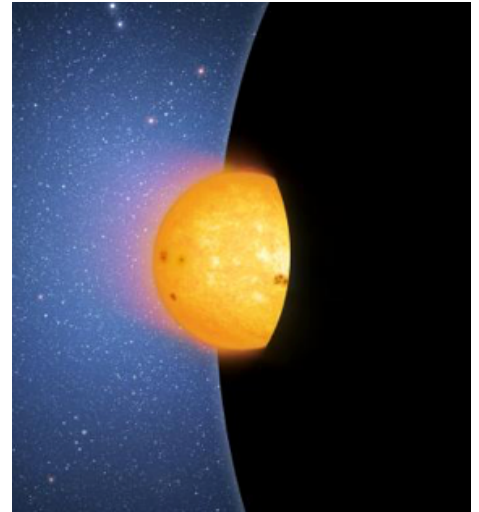
"Our motive is not so much to establish that there is a hard surface," Kumar said, "but to push the boundary of knowledge and find concrete evidence that really, there is an event horizon around black holes."

The team figured out what a telescope would see when a star hit the hard surface of a supermassive object at the center of a nearby galaxy: The star's gas would envelope the object, shining for months, perhaps even years.

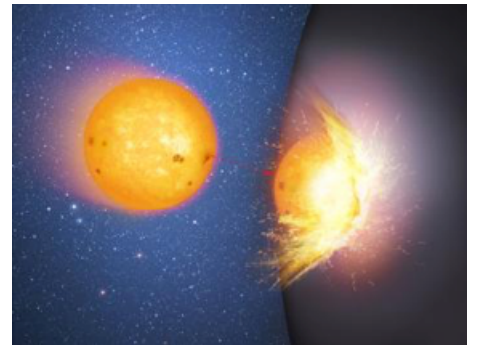
Once they knew what to look for, the team figured out how often this should be seen in the nearby universe, if the hard-surface theory is true.

"We estimated the rate of stars falling onto supermassive black holes," Lu said. "Nearly every galaxy has one. We only considered the most massive ones, which weigh about 100 million solar masses or more. There are about a million of them within a few billion light-years of Earth."

They then searched a recent archive of telescope observations. Pan-STARRS, a 1.8-meter telescope in Hawaii, recently completed a project to survey half of the northern



This artist's impression shows a star crossing the event horizon of a supermassive black hole located in the center of a galaxy. The black hole is so large and massive that tidal effects on the star are negligible, and the star is swallowed whole. The effects of gravitational lensing distorting the light of the star are not shown here. (Mark A. Garlick/CfA)



This is the first in a sequence of two artist's impressions that shows a huge, massive sphere in the center of a galaxy, rather than a supermassive black hole. Here a star moves towards and then smashes into the hard surface of the sphere, flinging out debris. The impact heats up the site of the collision. (Mark A. Garlick/CfA)



In this second artist's impression a huge sphere in the center of a galaxy is shown after a star has collided with it. Enormous amounts of heat and a dramatic increase in the brightness of the sphere are generated by this event. The lack of observation of such flares from the center of galaxies means that this hypothetical scenario is almost completely ruled out. (Mark A. Garlick/CfA)

hemisphere sky. The telescope scanned the area repeatedly during a period of 3.5 years, looking for “transients” — things that glow for a while and then fade. Their goal was to find transients with the expected light signature of a star falling toward a supermassive object and hitting a hard surface.

“Given the rate of stars falling onto black holes and the number density of black holes in the nearby universe, we calculated how many such transients Pan-STARRS should have detected over a period of operation of 3.5 years. It turns out it should have detected more than 10 of them, if the hard-surface theory is true,” Lu said.

They did not find any.

“Our work implies that some, and perhaps all, black holes have event horizons and that material really does disappear from the observable universe when pulled into these exotic objects, as we’ve expected for decades,” Narayan said. “General Relativity has passed another critical test.”

Now the team is proposing to improve the test with an even larger telescope: the 8.4-meter Large Synoptic Survey Telescope (LSST, now under construction in Chile). Like Pan-STARRS, LSST will make repeated surveys of the sky over time, revealing transients — but with much greater sensitivity.

This research has been published in the June issue of the journal *Monthly Notices of the Royal Astronomical Society*.

— END —

Journal Article: Read the research article “Stellar disruption events support the existence of the black hole event horizon” by Wenbin Lu, Pawan Kumar, and Naresh Narayan in the June 2017 issue of *Monthly Notices of the Royal Astronomical Society* here: <https://doi.org/10.1093/mnras/stx542>

Science Contacts:

Wenbin Lu, graduate student

UT Austin Department of Astronomy

512-471-8275

Dr. Pawan Kumar, professor of astrophysics

UT Austin Department of Astronomy

512-471-3412

Dr. Ramesh Narayan, Cabot Professor of the Natural Sciences

Harvard-Smithsonian Center for Astrophysics

617-496-9393

Media Contacts:

Rebecca Johnson, Communications Manager

UT Austin Astronomy Program

512-475-6763

Dr. Peter Edmonds

Harvard-Smithsonian Center for Astrophysics

617-571-7279

---

COURTESY OF THE UNIVERSITY OF TEXAS  
AT AUSTIN **MCDONALD** OBSERVATORY,  
PUBLISHER OF STARDATE MAGAZINE  
[STARDATE.ORG/MAGAZINE](http://STARDATE.ORG/MAGAZINE)

## THE LIGHT BUCKET LIST | PLANNING AND LEARNING

I recently started putting together a list of things astronomical, which I’ve begun calling my Light Bucket List. Places and things to see, things I would like to experience, astro-images I would like to take, observations I would like to make, and people I would like to meet, all of which have a strong connection to my interest in astronomy.

Okay — I admit it. I’ve never been one to keep a diary, and truth be told, my observing log is a bit of a hash up. It only looks good when I’m working on an AL Observing award. I’m sure in this respect, I’m like many amateur astronomers, more into the doing than the logging. So why would I — and why should you — consider putting together a Light Bucket List of your own?

I think for me the number one reason to create a personal Light Bucket List is that it is the best way to set goals for my astronomy activity. Putting together this list is one of the first steps towards doing many of the things astronomical that interest me.

In addition, successfully completing many of the activities requires planning and research, and my list serves as a starting place for both. At the end of the day, a big part of the reward of completing a goal, is the feeling of accomplishment I have in ticking off another item on my Light Bucket List. As a side benefit, the list makes a good place to keep notes on my research and my recollections about how I completed an item on my list, and my thoughts about doing it.



Over the next few months, I will introduce you to some of the observations and experiences of some of our many accomplished members, and maybe a few of the items on my own Light Bucket List. By

doing this, I hope to inspire you to create your own list so you too will feel the reward of accomplishing the items on it.

One of the benefits of membership in HAS, is getting the opportunity to talk with some of our members about their astronomy experiences. Astronomers generally enjoy sharing their knowledge and experience. I learned that early on in my time with HAS.

I met Brian Cudnick at the Columbus dark site observatory, probably in the summer of 2003, during the “closest ever” perihelic opposition of Mars. Over the years, I’ve had the pleasure of observing with Brian on the C-14 in the observatory.

In case you don't know Brian, he has been a life-long astronomer, active for over forty-two years. He works in the Physics Department at Prairie View A&M University where he is the Laboratory Coordinator of the Physics Laboratories, but due to his interest and work on all things astronomical, his unofficial title there is "Resident Astronomer".

Brian has written three books "Lunar Meteoroid Impact and How to Observe Them", "Faint Objects and How to Observe Them" and "The Art and Science of Visual Astronomical Observations".



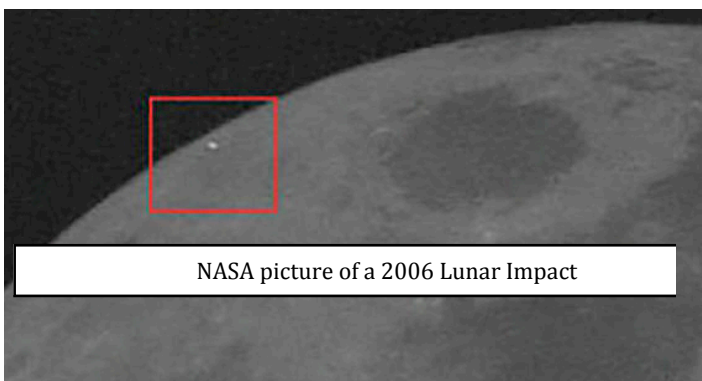
By National Aeronautics and Space Administration (NASA) - Astronet Legacy Site, Public Domain

Brian has been a member of HAS for almost 20 years, serving for many years as our Program Chairman, responsible booking the speakers and coordinating the programs for our monthly meetings. Due to his experience in astronomy and long service to HAS, Brian was elected last year to the position of Advisory Director to HAS.

I asked Brian to share with you one of his observations which he described to me during an observing session with the C-14. It's now on my list too, waiting to be completed.

On July 31, 1999, NASA's Lunar Prospector Mission ended with a flourish, when the satellite was directed to slam into the lunar surface in a permanently shadowed area of the Shoemaker crater at the Moon's south pole. The satellite had recently discovered what was thought to be water ice. The purpose of the crash was to use the energy of the orbiting spacecraft to try to eject enough material, so that it could be observed from Earth, hopefully confirming the presence of water<sup>1</sup>.

Many astronomers, including Brian, made the attempt to observe the lunar impact, but unfortunately for all of their effort, no impact flash was detected. The event did however generate an interest in lunar impacts, and as a result, several observing programs were started.

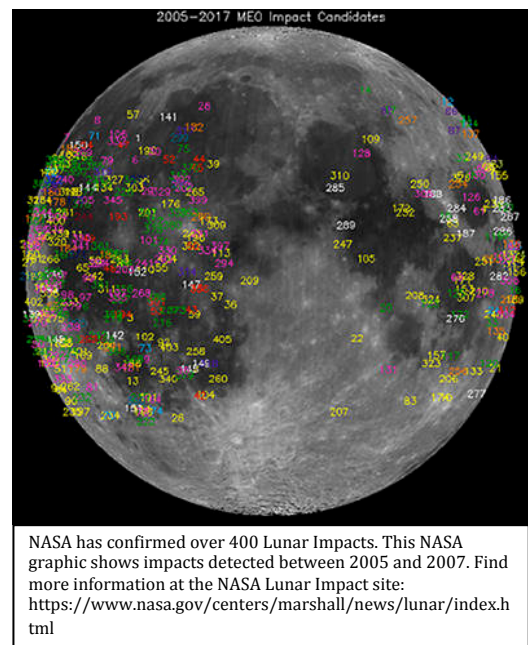


NASA picture of a 2006 Lunar Impact

Soon after the Lunar Prospector crash, Brian continued his interest in observing Lunar impacts. As he describes "I had not thought about such phenomena myself until after I learned that Dr. Goldstein of UT-Austin had plans to continue the search... taking advantage of the expected November 1999 Leonid meteor storm to monitor the Moon's darkened crescent for point flashes of meteoroid impacts." Goldstein had determined that during that meteor shower, the Moon would be well positioned for the observation of these impacts.

Another early adopter of this observing plan was David Dunham, the President of the International Occultation Timing Association. David realized that the members of IOTA as well as other amateur astronomers were well equipped to also monitor the Moon for impact flashes. They already owned a tracking telescope and a video camera they could use to record asteroid or lunar occultations of stars which could be pointed at the dark areas of the Moon in the search for impact flashes. Dunham organized a group of amateur astronomers to monitor the Moon on November 17, 1999 during the period of the Leonids.

At the time Brian said that he "did not have any special equipment so I asked David if I could participate visually in this effort. He gave the ok so I planned to monitor the dark part of the waxing gibbous moon visually through the C14 at the HAS observatory."



While Brian was skeptical of actually being able to make the observation, his persistence paid off. "I did see the flash of a meteoroid impact that astonished me momentarily (though I was fatigued at the time as well). It was bright enough to give 100% certainty to the observation but happened so quickly as to appear almost surreal."



In order for the observation to be valid, it needed to be found to occur at the same time and location on the Moon that Brian reported, on the video of at least one other observer. Fortunately, Brian's observation was confirmed, and that made Brian one of only two or three people ever who has made a visual observation of a Lunar impact.

Brian's successful impact observation led him to become more involved in what would become an active area of planetary science research. He contributed by continuing to observe, and also by helping to organize others to observe as the Meteor Impact Search Coordinator of the Association of Lunar and Planetary Observers.

I learned about Brian's observation very shortly after I became a member of HAS. I had become interested in hooking a video camera to my telescope, and acquired a book on video astronomy. Lunar impact observing was outlined in the book, along with the description of an observing campaign which mentioned a confirmed visual observation by an unnamed individual, whom I later learned was Brian!

As a result of this introduction, I started looking for Lunar impacts myself. I would take note when Brian would announce upcoming opportunities to search for Lunar impacts via our HAS email list server. When I could, I set up my scope and recorded video from my backyard in Katy. I did this for several of the observing opportunities, but I was unsuccessful in recording an impact myself. Observing a Lunar Impact is still on the to do side of my Light Bucket List!

Going through the several hours of video I captured during these observing sessions helped me appreciate how special Brian's visual observation was. As Brian recently recalled, "The plan was concocted by others, I just contributed a few minutes here and there, being skeptical of the ability to see the impact of such a small object from such a large distance." But he did.

"In the fields of observation, chance favors only the prepared mind" – Louis Pasteur

#### Notes:

1. Water was confirmed to exist on the Moon in 2009. A study published in the July 24th Nature Geoscience finds that there may be much more water than we previously thought. For a description of the study see <http://news.nationalgeographic.com/2017/07/water-moon-formed-volcanoes-glass-space-science/>

## ASTERISMS – TEASPOON AND LEMON IN SAGITTARIUS

**Asterism:** a grouping of stars that form a recognizable pattern.

**Constellation:** Sagittarius

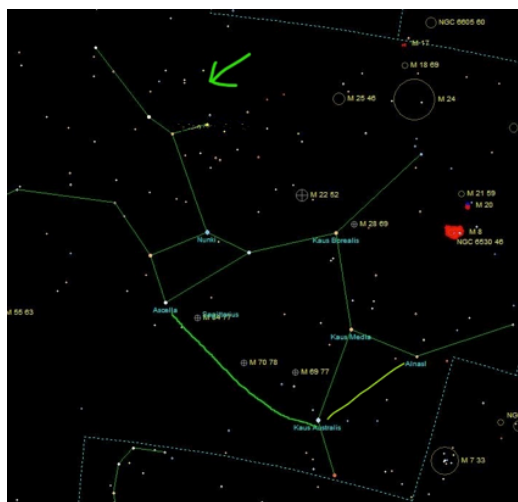
**Right Ascension:** 19 h, 04 m

**Declination:** -24° 44'

**Magnitude:** Naked eye

**Size:** 80 x 40

In the constellation Sagittarius, the Teapot, there are 2 asterisms that share common stars: The Lemon and The Spoon. It is the line of stars to the "upper left" of the Teapot, attached to the "handle" of the Teapot.

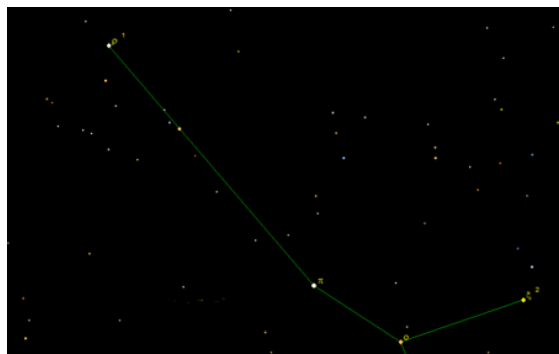


The "Lemon" is the lower 3 stars: Pi  $\pi$ , Omicron  $\omicron$  and Xi  $\xi$ .



The "Spoon" includes the "Lemon" with 2 additional stars at the top. Starting with the "highest star", they are: Rho  $\rho$ , 43 Sgr, Pi  $\pi$ , Omicron  $\omicron$  and Xi  $\xi$ .

Since the Teapot's spout is spewing steam or hot water creating the Milky Way, you need a Teaspoon to put the Lemon in your tea.



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, unformatted MS-Word format via email [GuideStar@astronomyhouston.org](mailto:GuideStar@astronomyhouston.org). 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. **Contact the editor for writing guidelines.**

## EDITING & PRODUCTION:

Bob Wiesner | 713-240-7059

[GuideStar@astronomyhouston.org](mailto:GuideStar@astronomyhouston.org)



THE GUIDESTAR IS THE  
WINNER OF THE  
**2012 ASTRONOMICAL  
LEAGUE**  
MABEL STERNS  
NEWSLETTER AWARD

## MEMBER PROJECTS SPOTLIGHT



*Image courtesy of wikimedia.org*

We want to spotlight the astronomical projects and observations that you are working on.

Send us an email at [GUIDESTAR@ASTRONOMYHOUSTON.ORG](mailto:GUIDESTAR@ASTRONOMYHOUSTON.ORG) and tell us. Whether it be a specific research project in astronomy that you're working on, an astro league observing program, an astrophotography project, or something else, let us know so we can let the rest of the society know.

## GUIDESTAR ADVERTISING POLICIES

### PERSONAL ADVERTISEMENTS

- Members in good standing of the Houston Astronomical Society (HAS) may request that an ad be placed in the GuideStar for personal items (for sale or wanted).
- Items offered for sale must be of interest to amateur astronomers.
- No more than two telescopes may be advertised within any calendar year.
- Ads will not run for more than 3 consecutive months
- Ads will be run on a space-available basis.
- Ads must be provided to the editor in electronic format (email, text file) by the 15th of the month preceding the month-of-issue.

### COMMERCIAL ADVERTISEMENTS

- Advertisement sizes:
  - o Full page = 6.875" w x 9" h
  - o Half page = 6.875" w x 4.25" h
  - o Quarter page = 3.31" w x 4.25" h (allows for column gutter)
- Commercial advertisements will be run in the GuideStar at the following fee schedule:

Size	One time	One quarter (3 consecutive months)
Full page	\$100.00	\$250.00
Half page	\$50.00	\$125.00
Quarter page	\$25.00	\$62.50

- Artwork provided must be in electronic format (image file, PDF, etc.) and must be in the correct proportions to fit the space provided. Contact editor with questions.
- Artwork may be in color or in black and white.
- Items or services advertised must be of interest to amateur astronomers
- Payment for advertisements must be done in advance (pay to the 'Houston Astronomical Society')

## HOUSTON ASTRONOMICAL SOCIETY

P.O. Box 800564  
Houston, TX 77280-0564

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.

## CHECK THE WEBSITE 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](mailto:webmaster@astronomyhouston.org).

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

**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. Access to meeting videos on the HAS web site.
- 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!

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

You can join (or renew at the organization web site, [www.astronomyhouston.org](http://www.astronomyhouston.org). Click the 'Join HAS' Tab. 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.

## 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.

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>.

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

**OUTREACH** Public Outreach Events

**STARPARTY** Members only star Parties

**URBAN** Urban Observing Events

**MEETINGS** HAS Meetings

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

For more information, please visit [www.RainedOut.net](http://www.RainedOut.net).



## 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 Hoeffinz 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 Hoeffinz Pavilion
- Science and Research is across the street (2nd building back)

## 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.

