

# The Focal Point

The Atlanta Astronomy Club  
Established 1947  
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Editor: Tom Faber

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## July AAC General Meeting

Please join us for the next general meeting of the Atlanta Astronomy Club, to be held on Saturday, July 16th at 3PM at the Fernbank Science Center. A short beginner's program will be presented at 2PM. Our featured speaker will be John Sinclair.

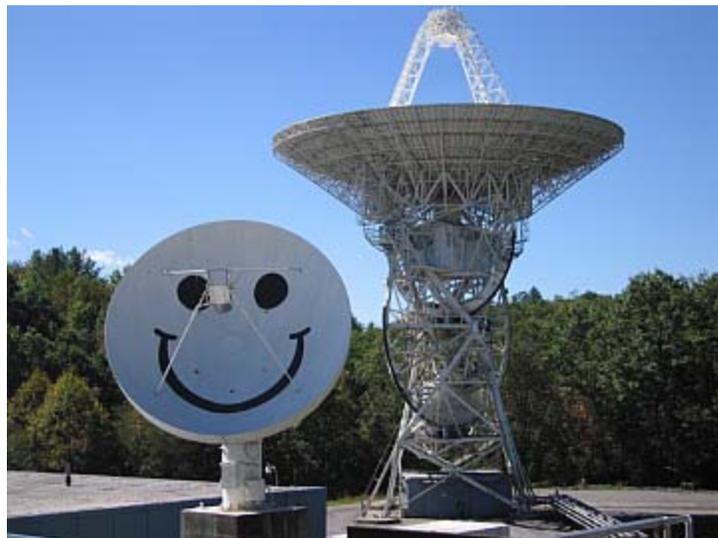
### The Talk

John Sinclair will present a talk titled "Pisgah Astronomical Research Institute - 2016 and beyond." John's talk will be about what is happening at the Pisgah Astronomical Research Institute (PARI), which is located west of Brevard, North Carolina in the Pisgah National Forest. The PARI site was originally built in the early 1960s as a NASA tracking site. The site was no longer needed by NASA and in 1981 was turned over to the Department of Defense. DoD used it to communicate with satellites until 1995 when the facility was closed and its functions were moved elsewhere. In 1999 the Pisgah Astronomical Research Institute took over operation of the site for research and educational purposes. See <http://www.pari.edu/>

### Speaker Bio

As a native of North Carolina, I learned at a young age that the ground beneath us held natural treasures. I've been an avid gem and mineral collector since the 1980's and a meteorite collector, hunter and dealer since 1996. I have an IT degree from Guilford Tech and I'm trained as a bench jeweler. I enjoy hunting for rocks and minerals most everywhere I

travel and for meteorites when I get in a good area to find them. I work at Pisgah Astronomical Research Institute, just north of Brevard, NC as the Curator of Meteorites and Minerals. My current project is helping build a meteorite and mineral museum on the PARI campus.



*The "smiley" face on PARI's 4.6m radio telescope was painted as a joke during the height of the Cold War. The Soviet Union was intensely interested in the DOD base and often sent satellites to photograph the campus. Each Soviet photo contained a "smiley face" as a friendly wave. Today "Smiley" is a student favorite and is used remotely via the internet by middle and high school students and teachers to study radio astronomy. Photo credit PARI.*

## The Next AAC Board Meeting

The next Board of Directors Meeting of the AAC is scheduled for Sunday, August 14th, starting at 3PM at the home of Peter and Sharon, 1057 Trestle Drive, Austell. Contact President Mark Banks or Board Chair Sharon Carruthers for more information. Any AAC member is welcome to attend and address the Board.

## Woodruff Boy Scout Summer Camp

The Woodruff Boy Scout Summer Camp starts on June 9th and runs for 8 weeks. We need volunteers to go up to Woodruff (east of Blue Ridge) on Thursday evenings from 9-11 pm from June 9 – July 28. This is to let the scouts look through telescopes to earn their Astronomy Merit Badge. (You can bring your own scope or use a scope in the warm-up shed.)

Please phone or e-mail me, Sharon Carruthers, at 770-941-4640 or [Treasurer@AtlantaAstronomy.org](mailto:Treasurer@AtlantaAstronomy.org), or email Daniel Herron at [Observing@AtlantaAstronomy.org](mailto:Observing@AtlantaAstronomy.org) if you can commit to one or more evenings.

The remaining dates are: Thursday July 7, Thursday July 14, Thursday July 21, and Thursday July 28.

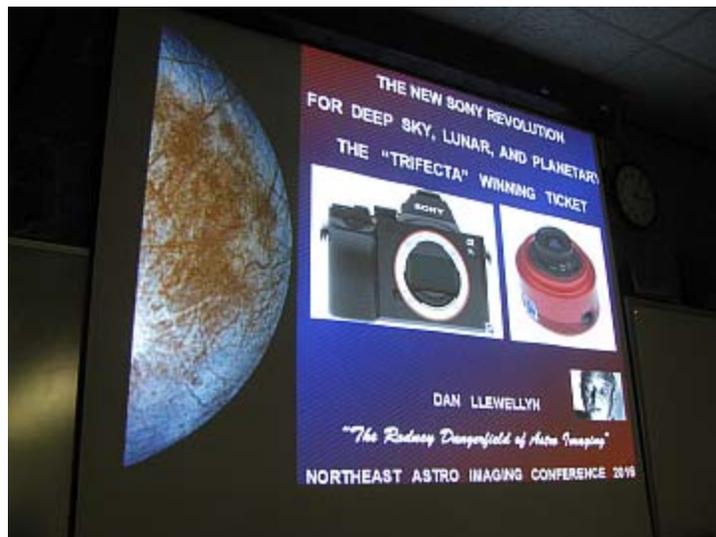
## June AAC Meeting Report

Photos by Tom Faber.

The June AAC general meeting was held on Saturday, June 18th at the Fernbank Science Center. About 50 members and guests were present. President Mark Banks presented a short beginners program at 2PM. The general meeting began at 3PM and our guest speaker was AAC member Dan Llewellyn. Dan presented a very informative talk about the new Sony A7 digital cameras and how they are revolutionizing astrophotography. Because of the A7's very low noise sensor it is now possible to capture images with exposures of less than one minute that previously had required many minutes of exposure time to capture. Not only does this mean less time exposing the image, but the shorter exposure times also greatly reduces the accuracy demands on the mount and guiding system. After his talk Dan answered a number of questions.

After the Q&A session there were announcements by Club officers about upcoming events and activities.

Then after the meeting adjourned a number of attendees went to Athens Pizza for dinner and more astronomy discussions.



## The Astronomical League

As a member of the **Atlanta Astronomy Club** you are automatically also a member of the **Astronomical League**, a nation wide affiliation of astronomy clubs. Membership in the AL provides a number of benefits for you. They include:

- \* You will receive *The Reflector*, the AL's quarterly newsletter.
- \* You can use the Book Service, through which you can buy astronomy-related books at a 10% discount.
- \* You can participate in the Astronomical League's Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others.

To learn more about the Astronomical League and its benefits for you, visit <http://www.astroleague.org>

## The 2016 Peach State Star Gaze

Mark your calendars for the 2016 Peach State Star Gaze which will be held from Sunday, September 25 to Sunday, October 2 at the Deerlick Astronomy Village! Stay tuned to upcoming issues of the *Focal Point* and the AAC web sites for details on the talks, speakers, and other activities that will be held during the Star Gaze. And of course there will be lots of observing under some of the darkest skies in Georgia. The new moon occurs on Friday, September 30. Micki's Kitchen is also scheduled to return with meals, sandwiches, hot coffee, hot chocolate and other drinks, and her famous brownies! See you there!



The AAC field at the DAV during the 2013 PSSG - Photo by Tom Faber.

## The Next Charlie Elliott Meeting

### Meeting Details

*What's left when you take the myth out of mythology?*

Join us July 9th, 2016 at 6:30 p.m. at the Charlie Elliott Conference Center (room to be announced) for an engaging and informative discussion with one of the Charlie Elliott Astronomy founders, Phil Sacco. Phil will focus on commonly held astronomical knowledge before the advent of the telescope. Those who have been to any of Phil's presentations know that he is a highly sought after, dynamic, and engaging speaker. When I met Phil, I was attending my first Charlie Elliott Astronomy meeting and clumsily setting up my first "real" telescope while doing a very poor job of answering questions from a group of inquisitive youngsters. Even though the sun hadn't set and there was nothing to see yet, they wanted to look through the telescope. So, I asked Phil if I could borrow his step stool, which I later learned also served as a clever eyepiece case. Phil kindly obliged and we've been friends ever since. That night, on what we now call Jon Wood Astronomy Field, Phil gave an impromptu "Walk-and-Talk" to a group of 30 captivated visitors about the visible constellations. Not only did we learn where these constellations were in the sky, we learned their significance in cultures that existed many centuries past. For our July meeting, Phil will focus on astronomical knowledge that was

commonly held long before Galileo pointed a telescope at Jupiter. Prepare to be informed and entertained!

After a renewed childhood interest in Astronomy, Phil went on to become an officer of the Atlanta Astronomy Club, serving as President, Vice President, and Observing Supervisor. Phil also served on a national scale as the Southeast Regional Director of the Astronomical League. Today, Phil is the eleventh person to earn the title of Master Observer, one given to those individuals who complete 10 Astronomical League observing programs. There are currently just over 160 Master Observers in the United States.

Phil isn't a Georgia native, but don't hold that against him. He got here as fast he could. Born in New York at a very young age, Phil moved to Georgia as a young boy, eventually earning degrees at Augusta University and Medical College of Georgia, School of Dentistry, graduating summa cum laude. When not talking about or observing the night sky, Phil enjoys games of strategy and making mead using a 2000 year old Roman recipe and performing as a magician.

### All of the Above!

Following the feature presentation, Charlie Elliott Astronomy Observing Supervisor David Whalen will give a short talk about what you can expect to see in the night sky with binoculars and small telescopes as well as the monthly observing challenge.

### Observing After the Meeting

All are invited to Jon Wood Astronomy Field immediately after the meeting (weather-permitting). The event is free and everyone is welcome.

Minutes & Handouts: The minutes, handouts, and presentations from past meetings of Charlie Elliott Astronomy are available for download on our Past Events web page, <http://ceastronomy.org/blog/events>. Monthly sky maps are available from [skymaps.com](http://skymaps.com).

Meeting dates for the remainder of the year are: August 6, September 10 (potluck), October 29, November 19, December 10 (potluck).

## The June Charlie Elliott Meeting

By Valorie Whalen, Charlie Elliott Chapter Recording Secretary

Photos courtesy of Steve Seidentop

Tim Geib, Chapter Director, called the meeting to order at 6:00 p.m. and welcomed everyone. There were thirty-four members and guests in attendance. After an introduction of the incoming board, the meeting's potluck dinner was served. There was no official program.

*Continued on next page*



David Whalen, Observing Director, treated us to another exciting episode of “All of the Above”, which gives a run-down of what you can expect to see in the sky in the coming weeks. The theme of this month's presentation was “The Month of Saturn” with music from all over the map. Included was a presentation on the Summer Solstice and how it affects astronomers. It also included current weather conditions for the Jon Wood Astronomy Field, relative location of each of the planets, along with the sun and moon, and each of their respective rise and set times. He included H-alpha photos of the Sun as of 4/9/2016. Special attention was given to Mercury's greatest Western Elongation on June 5, as well as Mars being in retrograde until July 1. The full list of targets for the month of June is available on the website.

Finally, Ken Poshedly handed out some current issues of the ALPO newsletter.

After the meeting, a quick look at the sky meant that no one would move to the Jon Wood Field to observe due to significant cloud cover. However, a few stayed behind to help a new astronomer figure out her new telescope. During that "on the spot" training, Jupiter was seen peeking through the clouds and an impromptu observation was made, showing a surprising 5 moons!



This month's observing challenge is NGC 6337, the Cheerio Nebula in Scorpius.

This month's astrophotography target is M13, also known as the Hercules Cluster.



## Hubble Reveals Stellar Fireworks in 'Skyrocket' Galaxy

NASA/STScI News Release - June 28, 2016

Fireworks shows are not just confined to Earth's skies. NASA's Hubble Space Telescope has captured a spectacular fireworks display in a small, nearby galaxy, which resembles a July 4th skyrocket.

A firestorm of star birth is lighting up one end of the diminutive galaxy Kiso 5639. The dwarf galaxy is shaped like a flattened pancake, but because it is tilted edge-on, it resembles a skyrocket, with a brilliant blazing head and a long, star-studded tail.

Kiso 5639 is a rare, nearby example of elongated galaxies that occur in abundance at larger distances, where we observe the universe during earlier epochs. Astronomers suggest that the frenzied star birth is sparked by intergalactic gas raining on one end of the galaxy as it drifts through space.

"I think Kiso 5639 is a beautiful, up-close example of what must have been common long ago," said lead researcher Debra Elmegreen of Vassar College, in Poughkeepsie, New York. "The current thinking is that galaxies in the early universe grow from accreting gas from the surrounding neighborhood. It's a stage that galaxies, including our Milky Way, must go through as they are growing up."

Observations of the early universe, such as Hubble's Ultra Deep Field, reveal that about 10 percent of all galaxies have these elongated shapes, and are collectively called "tadpoles." But studies of the nearby universe have turned up only a few of these unusual galaxies, including Kiso 5639. The development of the nearby star-making tadpole galaxies, however, has lagged behind that of their peers, which have spent billions of years building themselves up into many of the spiral galaxies seen today.

Elmegreen used Hubble's Wide Field and Planetary Camera 3 to conduct a detailed imaging study of Kiso 5639. The images in different filters reveal information about an object by dissecting its light into its component colors. Hubble's crisp resolution helped Elmegreen and her team analyze the giant star-forming clumps in Kiso 5639 and determine the masses and ages of the star clusters.

The international team of researchers selected Kiso 5639 from a spectroscopic survey of 10 nearby tadpole galaxies, observed with the Grand Canary Telescope in La Palma, Spain, by J. Sánchez Almeida and collaborators at the Instituto de Astrofísica de Canarias. The observations revealed that in most of those galaxies, including Kiso 5639, the gas composition is not uniform.

The bright gas in the galaxy's head contains fewer heavier elements (collectively called "metals"), such as carbon and oxygen, than the rest of the galaxy. Stars consist mainly of hydrogen and helium, but cook up other "heavier" elements. When the stars die, they release their heavy elements and enrich the surrounding gas.

"The metallicity suggests that there has to be rather pure gas, composed mostly of hydrogen, coming into the star-forming part of the galaxy, because intergalactic space contains more pristine hydrogen-rich gas," Elmegreen explained. "Otherwise, the starburst region should be as rich in heavy elements as the rest of the galaxy."

Hubble offers a detailed view of the galaxy's star-making frenzy. The telescope uncovered several dozen clusters of stars in the galaxy's star-forming head, which spans 2,700 light-years across. These clusters have an average age of less than 1 million years and masses that are three to six times larger than those in the rest of the galaxy. Other star formation is taking place throughout the galaxy but on a much smaller scale. Star clusters in the rest of the galaxy are between several million to a few billion years old.

"There is much more star formation going on in the head than what you would expect in such a tiny galaxy," said team member Bruce Elmegreen of

IBM's Thomas J. Watson Research Center, in Yorktown Heights, New York. "And we think the star formation is triggered by the ongoing accretion of metal-poor gas onto a part of an otherwise quiescent dwarf galaxy."

Hubble also revealed giant holes peppered throughout the galaxy's starburst head. These cavities give the galaxy's head a Swiss-cheese appearance because numerous supernova detonations — like firework aerial bursts — have carved out holes of rarified superheated gas.

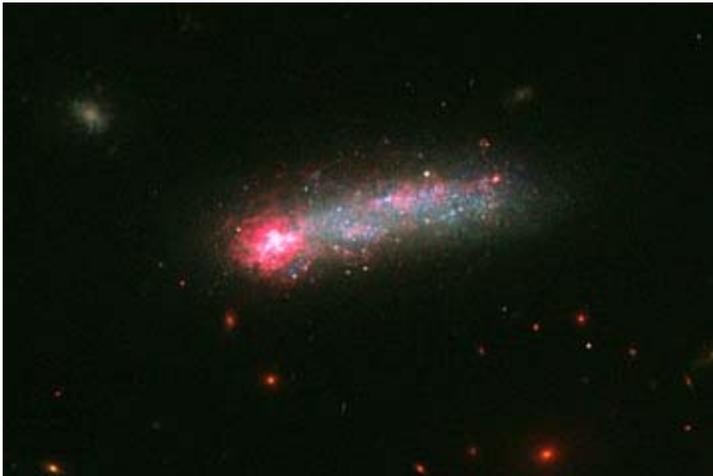
The galaxy, located 82 million light-years away, has taken billions of years to develop because it has been drifting through an isolated "desert" in the universe, devoid of much gas.

What triggered the starburst in such a backwater galaxy? Based on simulations by Daniel Ceverino of the Center for Astronomy at Heidelberg University in Germany, and other team members, the observations suggest that less than 1 million years ago, Kiso 5639's leading edge encountered a filament of gas. The filament dropped a large clump of matter onto the galaxy, stoking the vigorous star birth.

Debra Elmegreen expects that in the future other parts of the galaxy will join in the star-making fireworks show. "Galaxies rotate, and as Kiso 5639 continues to spin, another part of the galaxy may receive an infusion of new gas from this filament, instigating another round of star birth," she said.

The team's results have been accepted for publication in *The Astrophysical Journal*.

Other team members include Casiana Muñoz-Tuñón and Mercedes Filho (Instituto de Astrofísica de Canarias, Canary Islands), Jairo Mendez-Abreu (University of St. Andrews, United Kingdom), John Gallagher (University of Wisconsin-Madison), and Marc Rafelski (NASA Goddard Space Flight Center, Greenbelt, Maryland).



In this Hubble Space Telescope image, a firestorm of star birth is lighting up one end of the diminutive galaxy Kiso 5639. The dwarf galaxy is shaped like a flattened pancake, but because it is tilted edge-on, it resembles a skyrocket, with a brilliant blazing head and a long, star-studded tail.

Kiso 5639 is a member of a class of galaxies called "tadpoles" because of their bright heads and elongated tails. This galaxy resides relatively nearby, at 82 million light-years away. Tadpoles are rare in the local universe but more common in the distant cosmos, suggesting that many galaxies pass through a phase like this as they evolve.

Hubble observations of Kiso 5639 have uncovered the stellar content and bright pink glow of hydrogen at one end of the galaxy. A burst of new stars in a region measuring 2,700 light-years across makes the hydrogen clouds glow. The mass of these young stars equals about 1 million suns. The stars are grouped into large clusters that formed less than 1 million years ago.

Stars consist mainly of hydrogen and helium, but cook up other "heavier" elements, such as oxygen and carbon. When the stars die, they release their

heavy elements and enrich the surrounding gas. In Kiso 5639, the bright gas in the galaxy's head is more deficient in heavy elements than the rest of the galaxy. Astronomers, therefore, think that this new star-formation event was triggered when the galaxy accreted primordial gas from its surroundings, since intergalactic space contains more pristine, hydrogen-rich gas.

The elongated tail, seen stretching away from the galaxy's head and scattered with bright blue stars, contains at least four distinct star-forming regions. These stars appear to be older than those in the star-forming head.

Hubble also revealed giant holes peppered throughout the starburst end. These cavities give this area a Swiss-cheese appearance because numerous supernova detonations — like firework aerial bursts — have carved out holes of rarified superheated gas. Wispy filaments, comprising gas and some stars, extend away from the main body of the cosmic tadpole.

The observations were taken in February 2015 and July 2015 with Hubble's Wide Field Camera 3.

Credit: NASA, ESA, and D. Elmegreen (Vassar College), B. Elmegreen (IBM's Thomas J. Watson Research Center), J. Sánchez Almeida, C. Muñoz-Tunon, and M. Filho (Instituto de Astrofísica de Canarias), J. Mendez-Abreu (University of St. Andrews), J. Gallagher (University of Wisconsin-Madison), M. Rafelski (NASA Goddard Space Flight Center), and D. Ceverino (Center for Astronomy at Heidelberg University)

## HST Confirms New Neptune Dark Spot

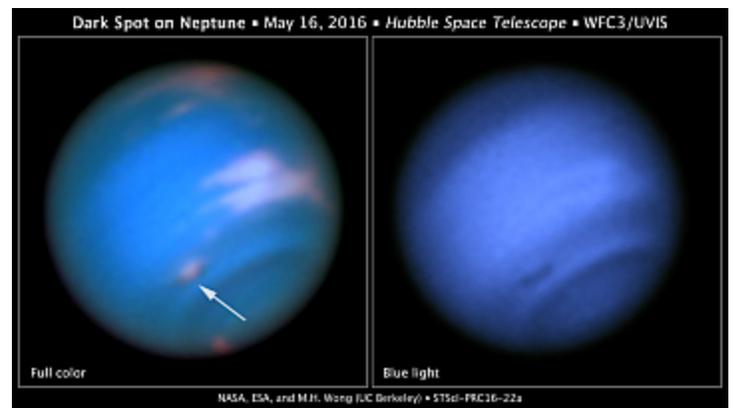
NASA/STScI News Release - June 23, 2016

New images obtained on May 16, 2016, by NASA's Hubble Space Telescope confirm the presence of a dark vortex in the atmosphere of Neptune. Though similar features were seen during the Voyager 2 flyby of Neptune in 1989 and by the Hubble Space Telescope in 1994, this vortex is the first one observed on Neptune in the 21st century.

The discovery was announced on May 17, 2016, in a Central Bureau for Astronomical Telegrams (CBAT) electronic telegram by University of California at Berkeley research astronomer Mike Wong, who led the team that analyzed the Hubble data.

Neptune's dark vortices are high-pressure systems and are usually accompanied by bright "companion clouds," which are also now visible on the distant planet. The bright clouds form when the flow of ambient air is perturbed and diverted upward over the dark vortex, causing gases to likely

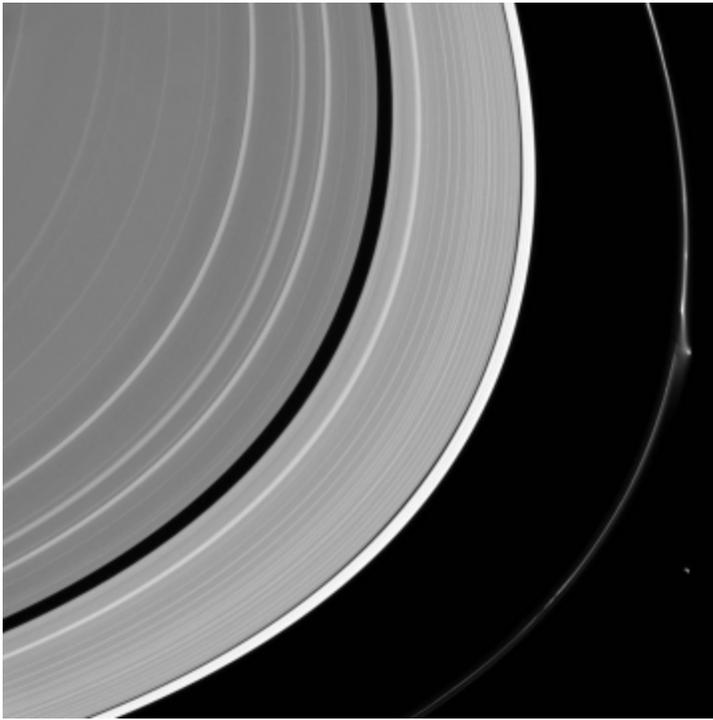
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The full visible-light image at left shows that the dark feature resides near and below a patch of bright clouds in the planet's southern hemisphere. The dark spot measures roughly 4,800 kilometers across. Other high-altitude clouds can be seen at the planet's equatorial region and polar regions.

The image at right shows that Neptune's dark vortices are typically best seen at blue wavelengths. Only Hubble has the high resolution required for identifying such weather features on distant Neptune.

Credit: NASA, ESA, and M.H. Wong and J. Tollefson (UC Berkeley)



## Saturn Moon Not Guilty

NASA/JPL News Release - June 13, 2016

A bright disruption in Saturn's narrow F ring suggests it may have been disturbed recently. This feature was mostly likely not caused by Pandora (50 miles or 81 kilometers across) which lurks nearby, at lower right. More likely, it was created by the interaction of a small object embedded in the ring itself and material in the core of the ring. Scientists sometimes refer to these features as "jets."

Because these bodies are small and embedded in the F ring itself, they are difficult to spot at the resolution available to NASA's Cassini spacecraft. Instead, their handiwork reveals their presence, and scientists use the Cassini spacecraft to study these stealthy sculptors of the F ring.

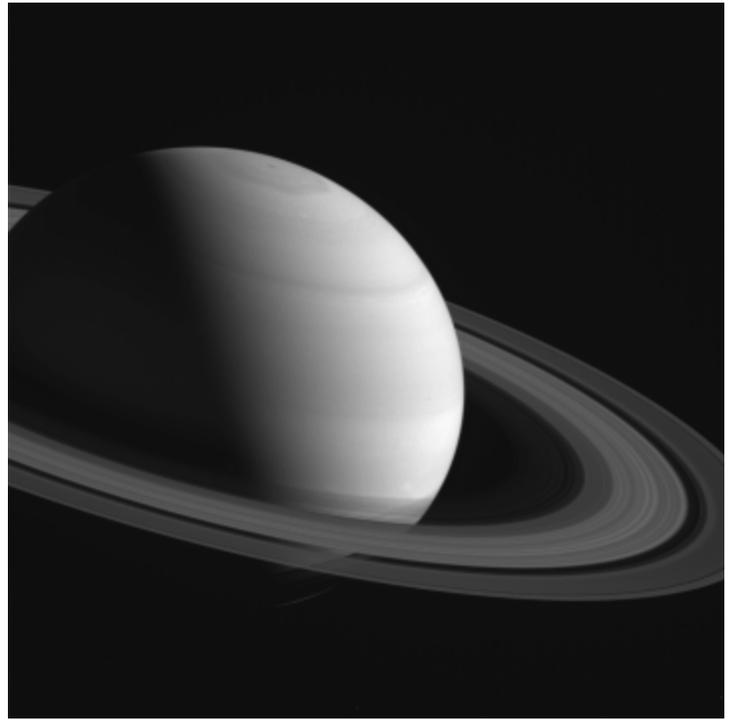
This view looks toward the sunlit side of the rings from about 15 degrees above the ring plane. The image was taken in visible light with the Cassini spacecraft narrow-angle camera on April 8, 2016.

The view was acquired at a distance of approximately 1.4 million miles (2.2 million kilometers) from Saturn and at a Sun-Saturn-spacecraft, or phase, angle of 105 degrees. Image scale is 8 miles (13 kilometers) per pixel.

The Cassini mission is a cooperative project of NASA, ESA (the European Space Agency) and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the mission for NASA's Science Mission Directorate, Washington. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging operations center is based at the Space Science Institute in Boulder, Colorado.

For more information about the Cassini-Huygens mission visit <http://saturn.jpl.nasa.gov> and <http://www.nasa.gov/cassini>. The Cassini imaging team homepage is at <http://ciclops.org>.

Image Credit: NASA/JPL-Caltech/Space Science Institute



## Shadow Below

NASA/JPL News Release - June 20, 2016

As Saturn's northern hemisphere summer approaches, the shadows of the rings creep ever southward across the planet. Here, the ring shadows appear to obscure almost the entire southern hemisphere, while the planet's north pole and its six-sided jet stream, known as "the hexagon," are fully illuminated by the sun.

When NASA's Cassini spacecraft arrived at Saturn 12 years ago, the shadows of the rings lay far to the north on the planet (see PIA06077). As the mission progressed and seasons turned on the slow-orbiting giant, equinox arrived and the shadows of the rings became a thin line at the equator (see PIA11667).

This view looks toward the sunlit side of the rings from about 16 degrees above the ring plane. The image was taken in red light with the Cassini spacecraft wide-angle camera on March 19, 2016.

The view was obtained at a distance of approximately 1.7 million miles (2.7 million kilometers) from Saturn and at a Sun-Saturn-spacecraft, or phase, angle of 92 degrees. Image scale is 100 miles (160 kilometers) per pixel.

The Cassini mission is a cooperative project of NASA, ESA (the European Space Agency) and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the mission for NASA's Science Mission Directorate, Washington. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging operations center is based at the Space Science Institute in Boulder, Colorado.

For more information about the Cassini-Huygens mission visit <http://saturn.jpl.nasa.gov> and <http://www.nasa.gov/cassini>. The Cassini imaging team homepage is at <http://ciclops.org>.

Image Credit: NASA/JPL-Caltech/Space Science Institute

freeze into methane ice crystals. “Dark vortices coast through the atmosphere like huge, lens-shaped gaseous mountains,” Wong said. “And the companion clouds are similar to so-called orographic clouds that appear as pancake-shaped features lingering over mountains on Earth.”

Beginning in July 2015, bright clouds were again seen on Neptune by several observers, from amateurs to astronomers at the W. M. Keck Observatory in Hawaii. Astronomers suspected that these clouds might be bright companion clouds following an unseen dark vortex. Neptune’s dark vortices are typically only seen at blue wavelengths, and only Hubble has the high resolution required for seeing them on distant Neptune.

In September 2015, the Outer Planet Atmospheres Legacy (OPAL) program, a long-term Hubble Space Telescope project that annually captures global maps of the outer planets, revealed a dark spot close to the location of the bright clouds, which had been tracked from the ground. By viewing the vortex a second time, the new Hubble images confirm that OPAL really detected a long-lived feature. The new data enabled the team to create a higher-quality map of the vortex and its surroundings.

Neptune’s dark vortices have exhibited surprising diversity over the years, in terms of size, shape, and stability (they meander in latitude, and sometimes speed up or slow down). They also come and go on much shorter timescales compared to similar anticyclones seen on Jupiter; large storms on Jupiter evolve over decades.

Planetary astronomers hope to better understand how dark vortices originate, what controls their drifts and oscillations, how they interact with the environment, and how they eventually dissipate, according to UC Berkeley doctoral student Joshua Tollefson, who was recently awarded a prestigious NASA Earth and Space Science Fellowship to study Neptune’s atmosphere. Measuring the evolution of the new dark vortex will extend knowledge of both the dark vortices themselves, as well as the structure and dynamics of the surrounding atmosphere.

The team, led by Wong, also included the OPAL team (Wong, Amy Simon, and Glenn Orton), UC Berkeley collaborators (Imke de Pater, Joshua Tollefson, and Katherine de Kleer), Heidi Hammel (AURA), Stacia Luszcz-Cook (AMNH), Ricardo Hueso and Agustin Sánchez-Lavega (Universidad del País Vasco), Marc Delcroix (Société Astronomique de France), Larry Sromovsky and Patrick Fry (University of Wisconsin), and Christoph Baranec (University of Hawaii).

The **Atlanta Astronomy Club, Inc.**, one of the South’s largest and oldest astronomical society, meets at **3:00 P.M.** on the 2nd Saturday of each month at the Fernbank Science Center in Decatur, or occasionally at other locations or times. Membership fees are **\$30** for a family or single person membership. College Students membership fee is **\$15**. These fees are for a one year membership.

Magazine subscriptions to *Sky & Telescope* or *Astronomy* can be purchased through the club for a reduced rate. The fees are **\$33** for *Sky & Telescope* and **\$34** for *Astronomy*. Renewal forms will be sent to you by the magazines. Send the renewal form along with your check to the Atlanta Astronomy Club treasurer.

**The Club address:** Atlanta Astronomy Club, Inc., P.O. Box 76155, Atlanta, GA 30358-1155. AAC Web Page: <http://www.AtlantaAstronomy.org>. Send suggestions, comments, or ideas about the website to [webmaster@AtlantaAstronomy.org](mailto:webmaster@AtlantaAstronomy.org). Also send information on upcoming observing events, meetings, and other events to the webmaster.

## Atlanta Astronomy Club Online

While this newsletter is the official information source for the Atlanta Astronomy Club, it is only up to date the day it is posted. So if you want more up to date information, go to our club’s website. The website contains pictures, directions, membership applications, events updates and other information. <http://www.atlantaastronomy.org> You can also follow the AAC on Facebook by joining the AAC group, and on Twitter at <http://twitter.com/atlastro>.

### AAC Officers and Contacts

**President:** Mark Banks [President@AtlantaAstronomy.org](mailto:President@AtlantaAstronomy.org)

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**Elliott Outreach Coordinator:** Dan Thoman  
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**PSSG Chairman:** Peter Macumber [pmacumber@nightsky.org](mailto:pmacumber@nightsky.org)

**PSSG Co-Chair:** Open

**Sidewalk Astronomy:** Brad Isley  
[sidewalkastronomy@AtlantaAstronomy.org](mailto:sidewalkastronomy@AtlantaAstronomy.org)

**Light Trespass:** Ken Edwards, Contact info TBA

**Woodruff Observ. Coordinator:** Sharon Carruthers  
[Treasurer@AtlantaAstronomy.org](mailto:Treasurer@AtlantaAstronomy.org)

**AAC Webmaster:** Daniel Herron  
[Observing@AtlantaAstronomy.org](mailto:Observing@AtlantaAstronomy.org)

## Calendar by Tom Faber (Times EDT/EST unless noted)

### AAC Events are listed in **BOLD**

- July 4th, Monday: New Moon. Earth at aphelion. The Juno spacecraft arrives at Jupiter.
- July 6th, Wednesday: Mercury at Superior Conjunction.
- July 7th, Thursday: Pluto at Opposition. Moon near Regulus.
- July 9th, Saturday: **CE Chapter Meeting at 6:30PM. See pg 3.**
- July 11th, Monday: Moon First Quarter.
- July 15th, Friday: Moon near Saturn and Antares.
- July 16th, Saturday: **AAC Mtg at Fernbank Science Center 3:00PM.**
- July 19th, Tuesday: Full Moon.
- July 26th, Tuesday: Moon Last Quarter.
- July 27th, Wednesday: Alpha Capricornids Meteors.
- July 28th, Thursday: Delta Aquariid Meteors.
- July 29th, Friday: Moon occults Aldebaran: At Atlanta disappears 5:48AM, reappears 6:40AM.
- July 31st, Sunday: Grouping of Mercury, Venus, and Regulus.
- Aug 2nd, Tuesday: New Moon.
- Aug 4th, Thursday: Moon near Mercury.
- Aug 5th, Friday: Moon near Jupiter.
- Aug 6th, Saturday: **CE Chapter Meeting.**
- Aug 10th, Wednesday: Moon First Quarter.
- Aug 11-12th, Thursday: Perseid Meteor Shower peaks.
- Aug 18th, Thursday: Full Moon.
- Aug 20th, Saturday: **AAC Mtg at Fernbank Science Center 3:00PM.**
- Aug 23rd, Tuesday: Mars, Saturn, and Antares form a near straight line.
- Aug 24th, Wednesday: Moon Last Quarter.
- Aug 27th, Saturday: Venus and Jupiter less than 0.5° apart!

**For more event listings see the calendar at [www.atlantaastronomy.org](http://www.atlantaastronomy.org)**

### Atlanta Astronomy Club Listserv

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### Focal Point Deadline and Submission Information

Please send articles, pictures, and drawings in electronic format on anything astronomy, space, or sky related to Tom Faber at [focalpoint@atlantaastronomy.org](mailto:focalpoint@atlantaastronomy.org). Please send images separate from articles, not embedded in them. Articles are preferred as plain text files but Word documents or PDFs are okay. You can submit articles anytime up to the deadline. **The deadline for August is Saturday, July 23. Submissions after the deadline will go in the following issue.**



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We're here to help! Here's how to reach us:

Newsletter of The Atlanta Astronomy Club, Inc.



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