

Southwest Florida Astronomical Society SWFAS



The Eyepiece December 2016

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A MESSAGE FROM THE PRESIDENT

Another year has gone by.

It is time for some new blood in our officer/Coordinator ranks. The following positions need to be filled. Treasurer, Newsletter Coordinators, Astronomical League Coordinator (ALCOR).

Treasurer requires presence at most meetings, monthly reports, receiving dues and dealing with about a half dozen regular expenses as well as periodic expenses for supplies.

Newsletter Coordinators need to be familiar with Word (or equivalent). You do not have to be present at all the meetings.

ALCOR requires quarterly maintenance of an Excel spreadsheet of members that is sent to the AL and handle communications with the AL. The spreadsheet maintenance is adding new members and cleaning it up at final dues renewal. You will get member updates via email from Pres/Treas. You do not need to be present at the meetings.

If there is any position (either above or any other officer position) you are interested in, please contact me before the meeting, especially if you will not be present at the meeting.

We also need someone to do the annual Treasurer's audit. This is not too involved and requires a simple report on the review of records.

The business meeting will be following the speaker presentation.

We have some interesting observing plans for December and January. On December 3rd, several of us are planning to go down to Big Cypress (Ochopee) for the observing event down there. If you are interested in going, please let me know, as we will probably be caravanning down and some people may need rides. Luke Gommermann who puts this on will be our speaker at the January meeting. This is a public event, but we can stay late. This is located a few miles east of the US41/SR29 intersection. We will be setting up at the end of the road that goes behind the visitor center off US41. You can drive to where the scopes are to be setup. We are looking at leaving by 3pm as it will take over an hour to get there.

We also have an observing event at Fish Eating Creek campground in Palmdale (US 27/SR 29 intersection) on January 21st. This is a nice dark sky spot. This will be open to the public that is staying at the campground. Again, we will probably caravan out there early afternoon and again, we can stay late. If anyone wants to camp there, you will need to get in touch with the campground, as this is their busy season.

This gives us several dark sky events.

As for regular star parties, there has been discussion about moving them to Seahawk Park as primary site vs Caloosahatchee Regional Park. This needs to be discussed and a decision made so that we can properly schedule them with the parks.

We have the annual Public Star Party at Rotary Park scheduled for March 3rd and STEMtastic/Edison Day of Discovery is on Feb 11th.

Brian

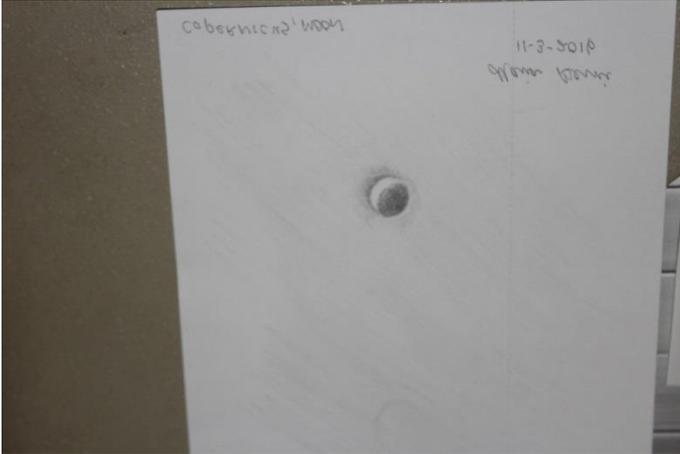
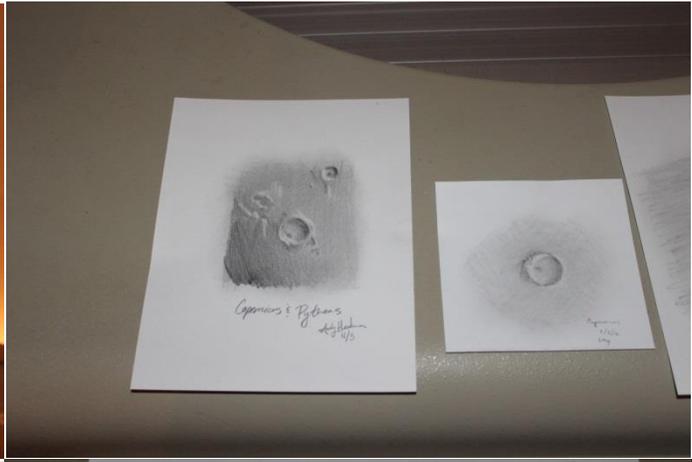
December Program – On Thursday, December 1st, 2016, FGCU's Dr. Ken Watanabe, will once again present to the South West Florida Astronomical Society. He will discuss some of his experiences working at the NASA Goddard Space Flight Center and his present research on Terrestrial Gamma-ray Flashes (TGFs). Dr. Watanabe, and his FGCU students, have observed over 600 Sprites using optical cameras installed on the roof of the FGCU library. Studying the possible correlations between these Sprites and TGFs will enhance understanding of physics behind the TGFs. Potential ways that SWFAS can join and contribute to this project will be discussed as well. Dr. Watanabe's presentation will begin at 7:30pm on Thursday, December 1st, at the Calusa Nature Center and Planetarium. The Public is invited.

January Program – On Thursday January 5th, 2017 Luke Gommermann of the National Park Service/Big Cypress National Preserve will be our speaker. Big Cypress just earned official Dark Sky Park status.

Past Events

Astronomical League President, John Jardine Goss, was our guest speaker at the monthly meeting on November 3rd. The Astronomical League is largely a volunteer-run organization. Mr Goss made his visit as a personal trip with him and his wife. Club officers enjoyed an evening meal with John and his wife Genevieve the evening before our meeting. His presentation provided an understanding of the goals and activities of the Astronomical League. The league provides annual awards for amateur astronomers. It also provides structured approaches to observing that result in certificates for completing the observing programs. His demonstration on lunar sketching provided guidance on how sketch, then after drawing materials were distributed we all were invited to try our hand at sketching a lunar crater that he showed. An important point was emphasized during the exercise; we see more during our observing if we have a specific goal when viewing our objects in the telescope. This makes the experience more rewarding if we look for points of interest and try to capture them in our sketches. Perhaps we should keep that in mind whether we're sketching or not. Most in the audience appreciated the exercise and gained more than was originally expected. See some of the sketches we drew below.





Following is the note our Program Coordinator received from John Goss after the event.

Hi Michael,

It was great meeting you all! Thank you for the wonderful hospitality you showed Genevieve and me.

And thank you for all you and your fellow officers have done to bring amateur astronomy to the Fort Myers area. Because of people like you, the SWFAS is able to be the important and vibrant community asset that it is!

Remember, our hobby is like no other. Only we experience the wonder, beauty, and mystery of the universe as it truly is. Amateur astronomy is special, indeed!

Clear skies,

John Jardine Goss

Astronomical League President

www.astroleague.org

On Nov 4th, we went out to Seahawk Park for a Friday Night Star Party and had about 25 people total IIRC. The skies were nice and we observed the Moon, Mars, Saturn, Venus, Uranus and Neptune as well as a large number of other objects. It was a very nice event.

On November 12, Tom Segur, Tony Heiner, and Ron Madl provided a Star Party for the National Asphalt Pavement Association on Gasparilla Island. We were essentially the after-banquet entertainment. The site was actually good with few street lights to contend with. We were, unfortunately, only 2 days before the super moon, so moon light was a real problem, but using moon filters, the moon was awesome. We showed a few constellations that were visible and a few globular clusters, some double stars and even the Orion Nebula at the end of the event. There were 20-25 participants in all and they felt it was a real success!

In the Sky this Month

Moon:

December – 1st Quarter - 7th; Full – 13th; Last Quarter – 20th; New – 29th.

The Planets:

Venus is a beacon in the southwestern evening sky setting 3 to 4 hours after sunset through the month. Its disc grows to 22" while the illuminated portion decreases to 56%. Magnitude will improve to -4.4 this month.

Mercury is also visible for the first half of the month dimming from -0.5 to about 0.0 magnitude.

Mars continues moving eastward, now into Capricornus. It still shines a distinct red, but is shrinking in disk size to only 6" while decreasing magnitude from +0.6 to +0.9.

Jupiter is high in the sky at dawn, having risen at 2:30 am at first of the month and at 1 am by months end.

Saturn joins Jupiter in the dawn sky this month.

The Geminid meteor shower peaks on the evening of December 13th and should be active at least one night before and after, as well. Unfortunately, it coincides with a full moon, so we'll only be able to see the brightest meteors.

International Space Station: The ISS is visible in the evening skies over Ft Myers December 18th – 23rd with the best view at -3.3 magnitude on evening of the 21st.

The **Hubble Space Telescope** appears in the evening from November 29th through December 4th with best view and brightest magnitude of +0.8 visible on 11/29th & 30th and 12/1.

See this link for specific times and routes for both: <http://www.heavens-above.com/>

Future Events Star Party and Event Schedule

Date	Event	Location	Time	Info/Contact
December 1 st	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm	Brian Risley
December 2 nd	Public Observing	Moore Observatory	FSW, Punta Gorda	Tony Heiner
December 3 rd	Big Cypress Observing	Big Cypress Welcome Center Ochopee	7pm - ?	Luke Gommermann
December 17 th	Solar Observing	Ponce DeLeon Park, Punta Gorda	9 am - noon	Tom Segur
Jan 5 th , 2017	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm	Brian Risley
Jan 6 th , 2017	Public Observing	Moore Observatory	FSW, Punta Gorda	Tony Heiner
Jan 21 st , 2017	Big Cypress Observing	Big Cypress Welcome Center Ochopee	7pm - ?	Luke Gommermann
Jan 21 st , 2017	Fish Eating Creek Observing	Fish Eating Creek Campground Palmdale	5pm-?	Brian Risley
Feb 2 nd , 2017	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm	Brian Risley
Feb 3 rd , 2017	Public Observing	Moore Observatory	FSW, Punta Gorda	Tony Heiner
Feb 10 th , 2017	Big Cypress Observing	Big Cypress Welcome Center Ochopee	7pm - ?	Luke Gommermann
Feb 11 th , 2017	STEMtastic/Edison Day of Discovery	Harborside Event Center	10am-3pm	Brian Risley
Feb 25 th , 2017	Burrowing Owl Festival	Rotary Park Cape Coral	10am ?	Brian Risley
Mar 2 nd , 2017	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm	Brian Risley
March 3 rd , 2017	Public Star Party	Rotary Park Cape Coral	6pm-10pm	Brian Risley
March 3 rd , 2017	Public Observing	Moore Observatory	FSW, Punta Gorda	Tony Heiner
March 25 th , 2017	Big Cypress Observing	Big Cypress Welcome Center Ochopee	8pm - ?	Luke Gommermann

Minutes of the Southwest Florida Astronomical Society – November 3, 2016

submitted by Don Palmer, secretary

The regular monthly business meeting of the Southwest Florida Astronomical Society was called to order at 7:32 pm by President Brian Risley in the Calusa Nature Center Planetarium.

Forty-one people were present, including six new members and visitors.

The past events listed in the printed agenda were reviewed.

Upcoming events listed on the printed agenda were discussed.

Ron Madl reported the Nature Center is working on getting a new director. The Haunted Walk was successful.

Bruce Dissette made a motion, seconded by Ed Sidor, to approve the minutes of the October 6 meeting as e-mailed. The motion carried on a voice vote.

Treasurer Tony Heiner reported a September balance of \$1601.33. Ron Madl made a motion, seconded by Mike McCauley, to approve the report. The motion passed on a voice vote.

Tony reported an October balance of \$1584.38. Bruce Dissette made a motion, seconded by Joe Senich, to approve the report. The motion passed on a voice vote.

Viewing Coordinator Bruce Dissette announced the 2017 monthly star party dates will be in the December newsletter.

A varied array of scope accessories from an estate are for sale. See Tom Segur in the lobby. Two telescopes are also for sale in Punta Gorda.

A Mariner Middle School teacher would like a daytime program on the Mars missions. No firm date yet. Contact Brian Risley if interested.

The business meeting was adjourned at 7:58pm.

The evening program was presented by John Jardine Goss, national president of the Astronomical League. He enumerated the benefits of membership and described various awards the League confers, and programs the League offers. He told of several observing programs members can participate in and complete.

He then gave a presentation on sketching the Moon. He went over the reasons for and benefits of sketching, and described techniques. Everyone was given supplies, and practiced the techniques by making sketches of craters.

Planet-forming Disks Revealed in Striking Images

By: Monica Young from S & T

Three teams of astronomers used the SPHERE instrument on the Very Large Telescope to image protoplanetary disks around nearby stars and catch planet formation in action.



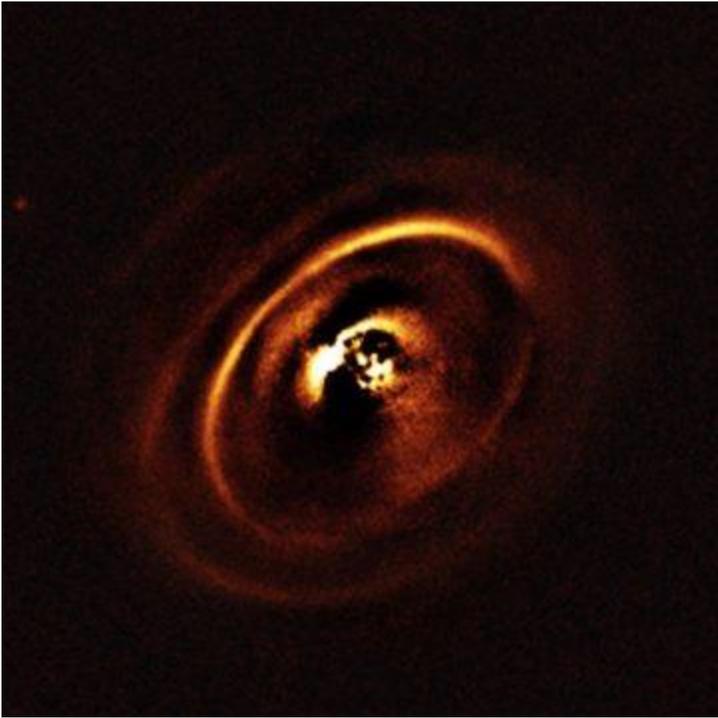
The SPHERE instrument on the Very Large Telescope recently captured three planet-forming disks that lie between 450 and 600 light-years away from Earth. ESO

If Earth is the cradle of humanity, then where did the cradle come from?

The question of how planets form has long stymied astronomers, in part because the process is so difficult to see. The seeds of planet formation occur under a shroud of dust and gas, within a young star's *protoplanetary disk*. As planets form and as the star ignites fusion and brightens, the gas is dispersed, leaving behind a debris disk of dust, planetesimals, and full-blown planets.

But change doesn't happen all at once. Over a period of several million years, the stars and their disks transition. This is the time when forming planets can exert gravitational influence on the disk, creating rings, gaps, and spiral arms.

The Very Large Telescope in Chile is offering a glimpse of that fleeting transition with the Spectro-Polarimetric High-contrast Exoplanet REsearch (SPHERE), which captures red and infrared wavelengths. The instrument blocks the light from young stars with a coronagraph, then uses extreme adaptive optics to counter atmospheric turbulence and reveal fine details within the stars' surrounding disks. Three teams, whose papers were published online on November 9th in *Astronomy & Astrophysics*, used SPHERE to shed light on transition disks around young, nearby stars.



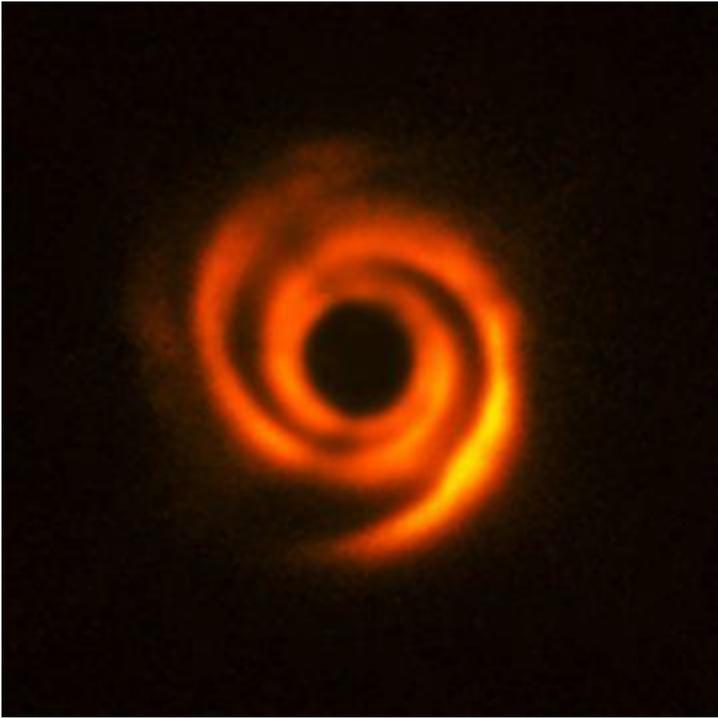
RX J1615 *ESO*

The young star known as RX J1615 (short for RX J1615.3-3255) lies 600 light-years away in Scorpius. It has about the mass of the Sun, but unlike our ancient star, it's only 1.4 million years old. When Jos de Boer (Leiden University, The Netherlands) and his team took a closer look with SPHERE, they discovered two rings and two arcs (which might be segments of full rings) in the star's outer disk, and a large gap between the outer and inner disks. Planets could carve rings and gaps, but it's not yet clear if that's the case here. The team pinpointed five candidate companions, but they'll need follow-up observations to see if any of these are really in orbit around the star and influencing the shape of its gas-and-dust disk.



HD 97048 *ESO*

In the constellation Chamaeleon, 500 light-years from Earth, lies the 2 to 3 million year old star HD 97048. Previous observations had already shown that it had a large transition disk that extends some 600 astronomical units (a.u.), which would reach past the Kuiper Belt if placed around our Sun. When Christian Ginski (also at Leiden University) led a team in examining SPHERE observations of the system, they again found concentric rings and gaps within the disk, which they say could have been sculpted by planets less massive than Jupiter.



HD 135344B *ESO*

The oldest of the three baby stars, HD 135344B is somewhere between 4 and 16 million years old. SPHERE observations reveal spiral arms and a 25 a.u. cavity in the center. (Since SPHERE detects light that has scattered off of dust grains, SPHERE does not see the dust-free inner disk.) A massive planet, or multiple less massive planets, might be gravitationally twisting the disk into spiral arms.

What's even cooler is that SPHERE detected dark streaks, probably shadows, along the spiral arms. Tomas Stolker (University of Amsterdam, The Netherlands) and colleagues suggest that an inner disk inclined by 22 degrees to the outer arms could cast such shadows. One of the shadows flickers, becoming visible only in a later observation — perhaps a sign that the inner disk is evolving.

The questions these studies address — how do disks form planets? how do planets shape their disks? — remain open, but these beautiful images of protoplanetary disks and many more like them will eventually draw a more complete picture of planet formation.



Dimming stars, erupting plasma, and beautiful nebulae

By Marcus Woo

Boasting intricate patterns and translucent colors, planetary nebulae are among the most beautiful sights in the universe. How they got their shapes is complicated, but astronomers think they've solved part of the mystery—with giant blobs of plasma shooting through space at half a million miles per hour.

Planetary nebulae are shells of gas and dust blown off from a dying, giant star. Most nebulae aren't spherical, but can have multiple lobes extending from opposite sides—possibly generated by powerful jets erupting from the star.

Using the Hubble Space Telescope, astronomers discovered blobs of plasma that could form some of these lobes. "We're quite excited about this," says Raghvendra Sahai, an astronomer at NASA's Jet Propulsion Laboratory. "Nobody has really been able to come up with a good argument for why we have multipolar nebulae."

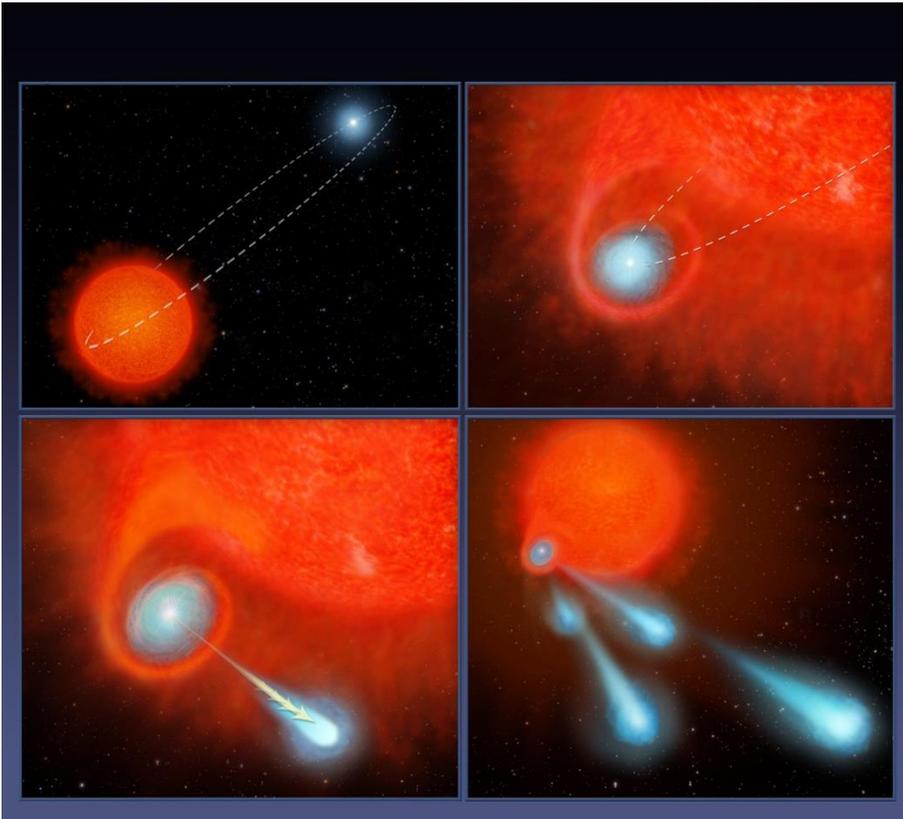
Sahai and his team discovered blobs launching from a red giant star 1,200 light years away, called V Hydrae. The plasma is 17,000 degrees Fahrenheit and spans 40 astronomical units—roughly the distance between the sun and Pluto. The blobs don't erupt continuously, but once every 8.5 years.

The launching pad of these blobs, the researchers propose, is a smaller, unseen star orbiting V Hydrae. The highly elliptical orbit brings the companion star through the outer layers of the red giant at closest approach. The companion's gravity pulls plasma from the red giant. The material settles into a disk as it spirals into the companion star, whose magnetic field channels the plasma out from its poles, hurling it into space. This happens once per orbit—every 8.5 years—at closest approach.

When the red giant exhausts its fuel, it will shrink and get very hot, producing ultraviolet radiation that will excite the shell of gas blown off from it in the past. This shell, with cavities carved in it by the cannon-balls that continue to be launched every 8.5 years, will thus become visible as a beautiful bipolar or multipolar planetary nebula.

The astronomers also discovered that the companion's disk appears to wobble, flinging the cannonballs in one direction during one orbit, and a slightly different one in the next. As a result, every other orbit, the flying blobs block starlight from the red giant, which explains why V Hydrae dims every 17 years. For decades, amateur astronomers have been monitoring this variability, making V Hydrae one of the most well-studied stars.

Because the star fires plasma in the same few directions repeatedly, the blobs would create multiple lobes in the nebula—and a pretty sight for future astronomers.



This four-panel graphic illustrates how the binary-star system V Hydrae is launching balls of plasma into space. Image credit: NASA/ESA/STScI

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