



Carpe Noctem



The News of Central Texas Astronomical Society

May - June 2017

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Editor: Kent Swarts

Meyer Telescope Upgrade

The Meyer telescope is running on 1990's technology that has limited our ability to get most members involved with projects like double stars, deep space objects, and astro-photography. We have signed a contract with Peter Mack of ACE that will update the 24" telescope instrument package and the control computers later this year. This package will have the following advantages:

Locating Objects: One of the telescope controls is through planetarium software and that gives you "point and click" to go to your favorite objects.

Autofocusing: Focusing has been a pain and now that is automated

Auto guiding: That has been rear impossible because of the size of the guide camera chip and the X/Y positioning mechanism is not reliable.

Weather station: The scope will be better protected through the ability of the weather station to shut it down for excess humidity or strong winds.

Tracking and Pointing: Tracking and pointing will also improve which saves set up time.

Plate Solving: The other "Wow" factor Is the ability to "Plate Solve". Plate solving gives the telescope the ability to recognize where it is at any time by taking a picture of what it is pointed at and syncing the telescope to that know position. That is a time saver for astro-photography as it centers you object on the "crosshairs" of the chip.

All Sky Camera: We also now have an "All Sky Camera" that allows you to know what is going on in the sky if you want to run remotely.

Computers: We will operate the telescope with Windows 10 that will improve our computer security and performance.

What this means is that members can get easily trained and use the telescope to do things like running the Astronomical League's Double Star awards and deep space awards. Friends of the Meyer Observatory can enjoy a better experience when visiting our open house events.

All this cost money and CTAS has begun a "Capital Fund" campaign of \$20,000 to pay for this upgrade. So Members and Friends of the Meyer Telescope, if you would like see CTAS improve this valuable resource and keep it available to members, students and other interested friends, please go to the website and make a donation. You can also send a check to our Treasurer, Dave Eisfeldt. His address is on the website

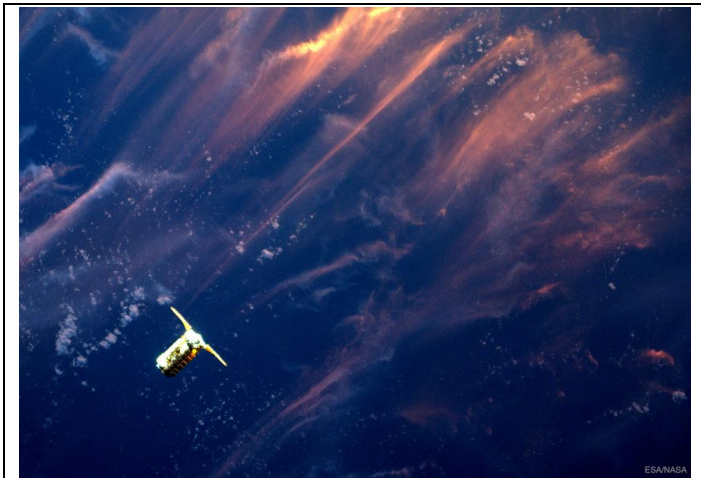
GLOBAL CLUSTER SERPENTIS DOULBE STAR

Photo by Aubrey Brickhouse



International Space Station News

We forget we have five (4 men and 1 woman) astronauts manning the space station, conducting science and launching satellites to study the Earth and its atmosphere. The news is rift in reporting anything going on in space. Well, here is a fascinating tidbit for us astronomers.



The Cygnus supply ship approaches the ISS as clouds and auroras light the sky in the north.

Launching June 1, the Neutron Star Interior Composition Explorer (NICER) will be installed aboard the space station as the first mission dedicated to studying neutron stars, a type of collapsed star that is so dense scientists are unsure how matter behaves deep inside it. A neutron star begins its life as a star between about 7 to 20 times the mass of our sun. When this type of star runs out of fuel, it collapses under its own weight, crushing its core and triggering a supernova explosion. What

remains is an ultra-dense sphere only about 12 miles (20 kilometers) across, the size of a city, but with up to twice the mass of our sun squeezed inside. On Earth, one teaspoon of neutron star matter would weigh a billion tons.

Video of Comet C2015 V2 JOHNSON

By: Willie Strickland

C/2015 V2 (Johnson) is a 6th magnitude Comet appearing in the constellation Bootes. Its orbit is parabolic, and its closest approach to the Sun is 1.6 AU. At the time of this sequence it was 132.8 million km distant, 7.38 light minutes.

Video was shot using the Meyer Telescope.



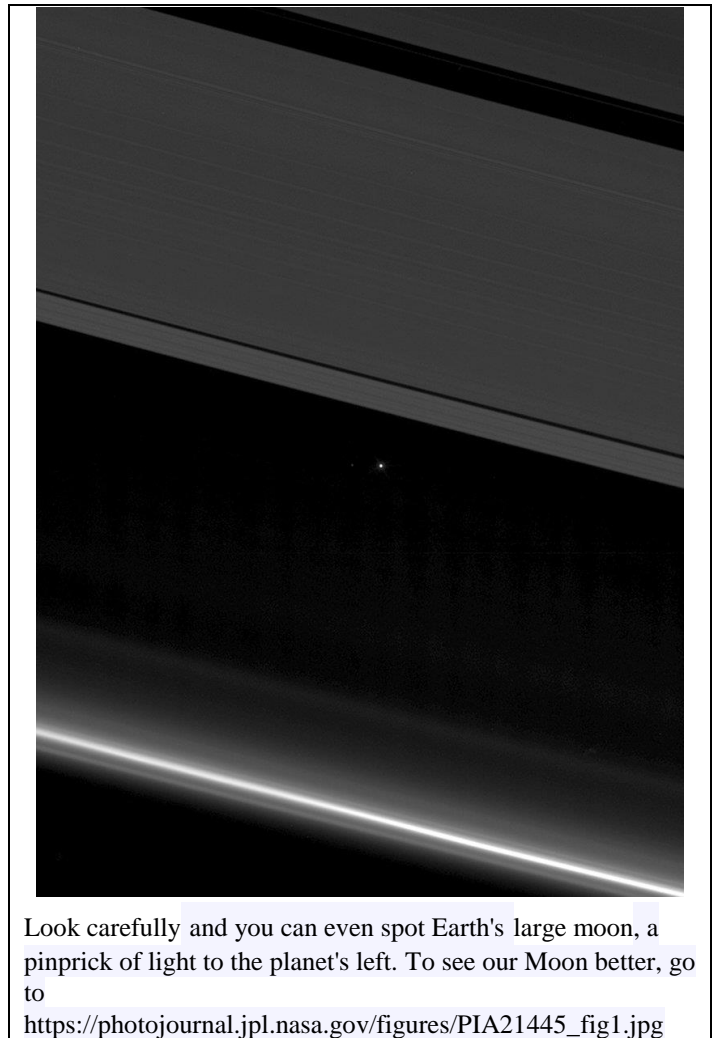
Saturn, Earth and Moon

By: APOD



Notice Saturn's Hexagon Northern Cap

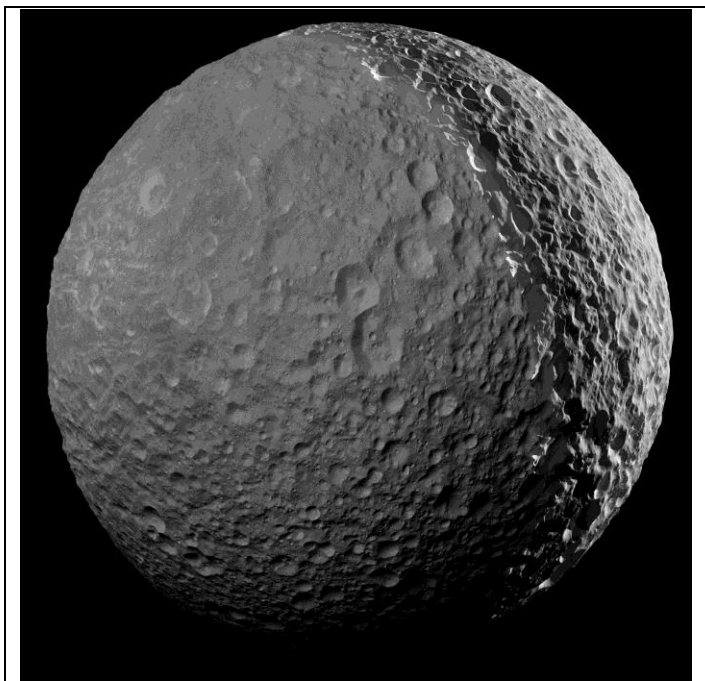
On April 12, as the Sun was blocked by the disk of Saturn the Cassini spacecraft camera looked toward the inner Solar System and the gas giant's backlit rings. At the top of the mosaicked view is the A ring with its broader Encke and narrower Keeler gaps visible. At the bottom is the F ring, bright due to the viewing geometry. The point of light between the rings is Earth, 1.4 billion kilometers in the distance.



Look carefully and you can even spot Earth's large moon, a pinprick of light to the planet's left. To see our Moon better, go to https://photojournal.jpl.nasa.gov/figures/PIA21445_fig1.jpg

Today Cassini makes its final close approach to Saturn's own large moon Titan, using Titan's gravity to swing into the spacecraft's Grand Finale, the final set of orbits that will bring Cassini just inside Saturn's rings.

Peering from the shadows, the Saturn-facing hemisphere of Mimas lies in near darkness alongside a dramatic sunlit crescent. The mosaic was captured near the Cassini spacecraft's final close approach on January 30, 2017. Cassini's camera was pointed in a nearly sunward direction only 45,000 kilometers from Mimas. The result is one of the highest resolution views of the icy, crater-pocked, 400 kilometer diameter moon. An enhanced version better reveals the Saturn-facing hemisphere of the synchronously rotating moon lit by sunlight reflected from Saturn itself. To see it, slide your cursor over the image (or follow this link). Other Cassini images of Mimas include the small moon's large and ominous Herschel Crater.



President's Letter: May-June 2017

We are pleased that we have a signed contract with ACE (Peter Mack's company) to upgrade the 24" telescope Instrument panel and add a new Weather Station. Hopefully, it will be operational by the end of the year. We also announced the fund raiser to supply the funds to pay for this upgrade. I hope all of you will consider a contribution towards paying for it as our goal has been set at \$20,000. If you know people who are not part of the club but are interested in Science and might be potential "Friends of Meyer Observatory" then please send me an email with their contact information and we will send them information about our needs. For those who want to donate by check or credit card, please go to the web site (Donations) and get your donations in as soon as possible.

CTAS will be celebrating our 25th anniversary next year (2018) and we plan to use the upgrade as the focus of our 25th year in Central Texas providing Astronomy opportunities to those who are interested. My first term as your President was when we celebrated the 20th anniversary and, thankfully, most of the former officers and directors will still be around to contribute to the 25th anniversary.

June is the kick off for the first of the summer Star B Que series. It will be at the Meyer Observatory on June 24th. We will begin the evening with the Board and Leadership meeting, a program followed by the Star B Que and then

viewing on the field. Please plan on coming and participating. We have lots of room for telescopes on the field. This is a great opportunity to bring friends who might be interested in joining CTAS. There will be a charge for the Star B Que and the profits from the event are used to pay for the expenses of keeping the Observatory operational. Dr. Eric Rachut (Board Director) and his wife will be the host and cooks for the BBQ.

Our July Membership General Business meeting will be at the Meyer Observatory before the the July Star B Q on July 24th, so put that on your calendar.

Finally, I want to call our membership to awareness and appreciation of those few members that staff our outreach opportunities at the Bell Country Star Parties, the Hubbard Star Parties, the Open Houses and the Private star parties(fund raisers). These are our most important recruitment tools. Please pass along your thanks to Doug Peters and Brandon Lawler for Bell County, Michael Green for Hubbard and Dan Doyle, Johnny Scarborough and Willie Strickland for the Open Houses and for Private Star Parties. If you really want to "up your game" in astronomy, you need to volunteer to help in any of these as you will learn a lot more by leading than by following.

Look forward to seeing all of you at the June Star B Que.

Aubrey Brickhouse

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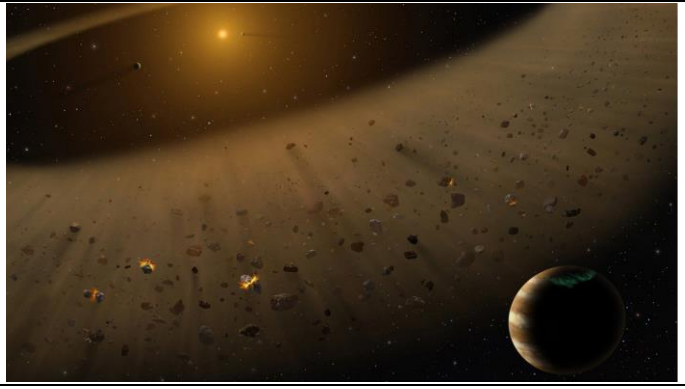
Exoplanet News

SOFIA confirms nearby planetary system is similar to our own

NASA's flying observatory, the Stratospheric Observatory for Infrared Astronomy, SOFIA, recently completed a detailed study of a nearby planetary system. The investigations confirmed that this nearby planetary system has an architecture remarkably similar to that of our solar system.

Located 10.5 light-years away in the southern hemisphere of the constellation Eridanus, the star Epsilon Eridani, eps Eri for short, is the closest planetary system around a star similar to the early sun. It is a prime location to research how planets form around stars like our sun, and is also the

storied location of the Babylon 5 space station in the science fictional television series of the same name.



Using SOFIA, Su and her team ascertained that the warm material around eps Eri is, in fact, arranged in at least one narrow belt rather than in a broad continuous disk.

These observations were possible because SOFIA has a large telescope diameter), which allowed the team onboard SOFIA to discern details that are three times smaller than what could be seen with Spitzer, for example. Additionally, SOFIA's powerful mid-infrared camera called FORCAST, the Faint Object infraRed CAmera for the SOFIA Telescope, allowed the team to study the strongest infrared emission from the warm material around eps Eri, at wavelengths between 25-40 microns, which are undetectable by ground-based observatories.

SOFIA is a Boeing 747SP jetliner modified in Waco, Tx to carry a 100-inch diameter telescope. It is a joint project of NASA and the German Aerospace Center, DLR. NASA's Ames Research Center in California's Silicon Valley manages the SOFIA program, science and mission operations in cooperation with the Universities Space Research Association headquartered in Columbia, Maryland, and the German SOFIA Institute (DSI) at the University of Stuttgart.

Carpe Noctem 20 and 10 Years ago

10 Years ago in CTAS: VOLUME XIV, NUMBER 6 2007 CARPE NOCTEM

Observatory to be Dedicated June 9th 2007. Join CTAS for the Dedication Ceremony. CTAS invites all members and guests to attend the dedication of the observatory on June 9th. This event will honor major contributors and CTAS leaders as well as inform attendees of past and future plans. Special guests will be Charles and

Dorothy Turner who donated the land for the Observatory and Paul and Jane Meyer who made the Observatory possible. (*Note: these were the major funds but many other members and companies made very generous donations that made this possible.*) Special speakers for the evening will be Frank Bash, Former Director of McDonald Observatory, Seth Shostak, Senior Astronomer of the SETI Institute and Shadow Silvas, CTAS member and Valedictorian of Jonesboro High School The dedication will be held at the Bosque Conservatory in Clifton (the old college) with registration and viewing of exhibits beginning at 5:00. The dedication itself will begin at 5:30 and will include dinner. *Note: this event was well attended and the first President of CTAS and his wife, Michael and Lisa Green, brought cake for the following event at the Meyer Observatory.*

20 Years ago in CTAS: VOLUME IV, NUMBER 5 1997 CARPE NOCTEM (MCAC)

The McLennan County Astronomy Club reported that the Comet Hale-Bopp was still a good show. Amateur astronomers are asked to monitor the comet during this time as it will cross the magnetic field plane and that will cause changes in the tail.

The members were treated to an interesting article about Johnny Barton and John McAnally setting up an observing and sketching run on the planet Mars. It gave a "blow by blow" description of capturing, viewing and sketching of Mar's many features.

Mid-infrared Data from SOFIA Shows Ceres' True Composition

Credits: Pierre Vernazza, LAM-CNRS/AMU

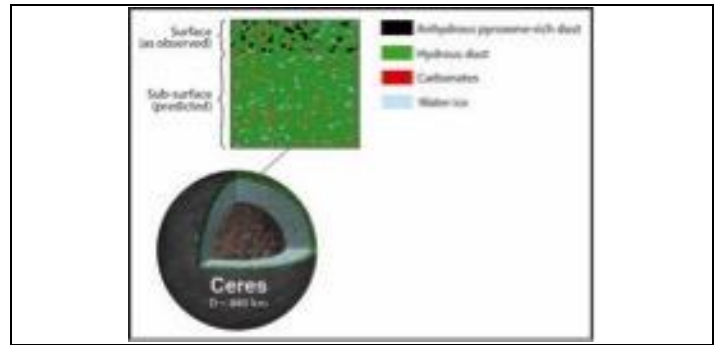
New observations show that Ceres, the largest body in the asteroid belt, is covered by a thin coating of dust coming from a nearby asteroid.

Using data primarily from NASA's Stratospheric Observatory for Infrared Astronomy, SOFIA, a team of astronomers has detected the presence of substantial amounts of material on the surface of Ceres that appear to be fragments of other asteroids containing mostly silicate-rich dust particles. These observations are contrary to the currently accepted surface composition classification of Ceres, suggesting that it is cloaked by material that partially disguises its real makeup.

“This study resolves a long-time question about whether asteroid surface material accurately reflects the intrinsic composition of the asteroid,” said Pierre Vernazza, research scientist in the Laboratoire d’Astrophysique de Marseille (LAM–CNRS/AMU). Our results show that by extending observations to the mid-infrared, the asteroid’s underlying composition remains identifiable despite contamination by as much as 20 percent of material from elsewhere,” said Vernazza.

Astronomers have classified the Ceres asteroid, as well as 75 percent of all asteroids, in composition class “C” based on their similar colors. The mid-infrared spectra from SOFIA show that Ceres differs substantially from neighboring C-type asteroids, challenging the conventional understanding of the relationship between Ceres and smaller asteroids.

The column of material at and just below the surface of dwarf planet Ceres (box) – the top layer contains anhydrous (dry) pyroxene dust accumulated from space mixed in with native hydrous (wet) dust, carbonates, and water ice. (Bottom) Cross section of Ceres showing the surface layers that are the subject of this study plus a watery mantle and a rocky-metallic core.



New Horizons spacecraft: Maybe Pluto is a planet after all.

Our understanding of the Pluto system keeps changing. The spacecraft discovered new moons around Pluto that had a suprisingly complex makeup.

There are also ongoing debates about whether Pluto is a planet. The International Astronomical Union voted to change its status to “dwarf planet” in 2006, following the discovery of several similarly sized objects in the Kuiper Belt.

However, New Horizons principal investigator Alan Stern has repeatedly said he is not in favor of the decision. Stern and others argue that such complexity is more representative of a planet, and plan to make a formal submission to the IAU explaining that in 2017.

Observatory Open House June 17

Hubbard & Belton Star Party June 17

Member Star Party June 24
with Star-B-Que

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