

Southwest Florida Astronomical Society SWFAS



The Eyepiece June 2018

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A MESSAGE FROM THE PRESIDENT

April showers are supposed to bring May flowers, what do May showers bring? Our rainy season! Events this past month were pretty much washed out.

For those at the May meeting, you may recall Tony Heiner, Tom Segur and I talking about an estate sale with an observatory in Port Charlotte. They went there the next day, but determined that the equipment had been left untouched in the observatory for several years and weather had taken a toll on it. I was very surprised to get an email the next week from Ted Van Sickle about a Meade Telescope he wanted to donate. It turns out it was that scope! Tony, Tom and I went up again that weekend. It turns out it was a Meade 12" LX200 on a pier along with a HUGE tripod and accessories. It had been covered and left in the observatory for 5 years untouched! Needless to say, it needs some work. The optics need some cleaning but they don't appear to be in too bad a shape. The forks are another story, the aluminum oxidized heavily and the paint was flaking off to the touch. I have begun dismantling the forks (have a few stuck screws to deal with) and peeling/brushing off the loose paint. (If someone has a sand blasting setup, I could really use that for this!) The original LX-200's were known for a capacitor blowing problem. This unit was no exception, I checked on the electronics before trying any power and discovered that it had blown 3 of the 5 capacitors known to blow but luckily had not melted the plastic keyboard cable that they are notorious for destroying. I have replaced the critical capacitors but until the mount is back together I cannot test it out further.

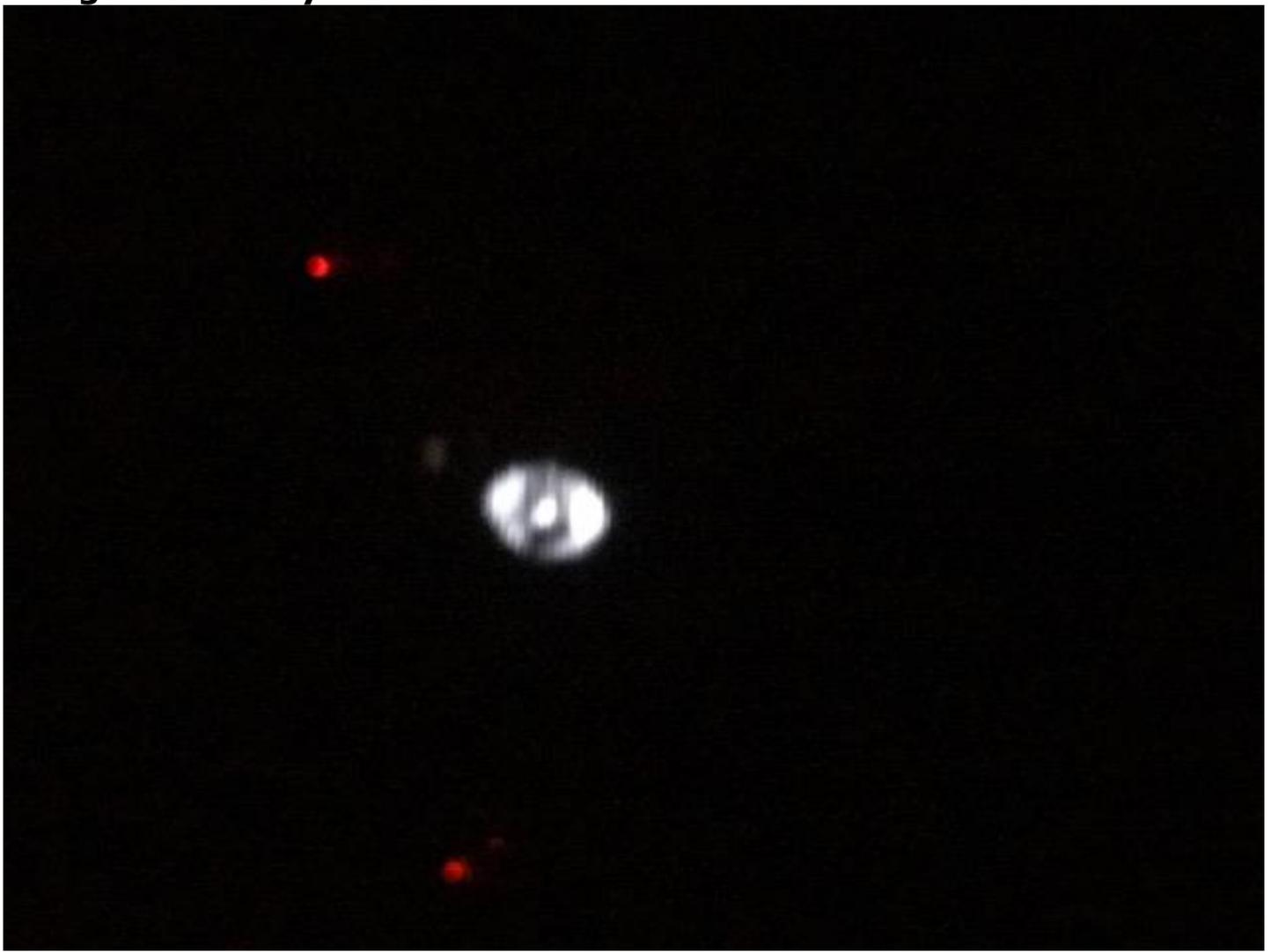
The eyepieces cleaned up good and were surprisingly ok considering the moisture Tom had seen in the case on his first visit. There is an Orion Short Tube refractor along with rings for mounting it piggyback.

Once we get this scope going, we have to consider what to do with it. It is not a portable scope! We do have both the tripod as well as a permanent pier/wedge for it. We may hear at some time from the new owner of the house if he decides not to keep the observatory building.

Ted was a nice gentleman to talk to. It turns out he wrote one of the key books on programming microcontrollers in C. He had lots of stories about his past in astronomy and clubs up north.

Brian

Image from Tony Heiner



Eye Nebula NGC 3242 in Hydra

Program this Month

Antonio Paris, Chief Scientist at the Center for Planetary Science, Assistant Professor of Astronomy at St. Petersburg College, and graduate of the NASA Mars Education Program at Mars Space Flight Center at Arizona State University will be the guest speaker at the June meeting of the South West Florida Astronomical Society. Professor Paris describes his presentation as follows:

"Welcome to Mars! Through the eyes of Curiosity, Opportunity, and the Mars Reconnaissance Orbiter spacecraft, this presentation will introduce you to the geology of Mars and the recent groundbreaking achievements in the exploration of the Red Planet. Our rovers and spacecraft have served as an extension of the human eye, enabling us to explore a far distant world, where no human being has yet walked. Although most of us will never visit Mars, consider this lecture as your personal journey to the Red Planet."

Clearly this is a presentation will not want to miss. Professor Paris' presentation will begin at 7:30pm on Thursday, June 7th, at the Calusa Nature Center and Planetarium. The regular monthly business meeting of the South West Florida Astronomical Society will begin immediately after Professor Paris' presentation.

Michael J. McCauley

Program Coordinator

SWFAS

In the Sky this Month

Moon:

Last Quarter – June 6; New – June 13; 1st Quarter – June 20; Full – June 28

Venus attains its highest sunset altitude this year on June 6th. It brightens to -4.1 magnitude while its illuminated disc reduces to 70%. It passes near the bright stars Castor and Pollux, then on evenings of the 19th and 20th, it shines near M44, the Beehive Star Cluster in Cancer

Mercury is at superior conjunction with the sun June 5-6. By month's end it becomes visible at 0.1 magnitude as it seeks greatest elongation on July 12th.

Jupiter is now visible all night long as it drifts westward in Libra. It shines at -2.5 magnitude most of the month. This is prime viewing time for Jupiter

Saturn reaches opposition June 27 and is visible near the Full Moon at 0.0 Magnitude. Its rings are tilted at near maximum of 27° to our line of sight. It continues to shine above the teapot in Sagittarius.

Mars is rapidly increasing in both size and brightness on its way to opposition in late July. This will be the closest opposition of Mars in 15 years. During June, it will rise at midnight early in month, and 10:30 by end of month. It will brighten from magnitude -1.2 to -2.2 during the month, while its disc size will swell from 15" to 20" wide. Note the timely program for this month.

Uranus and **Neptune** are going to be visible in morning twilight. See <https://is.gd/urnep> for a finder chart.

International Space Station: The ISS is visible in the evening skies over Ft Myers from June 7th to the 14th. Best day will be the 12th with it soaring nearly overhead. See this link for specific times and routes for the ISS: <http://www.heavens-above.com/>

The **Hubble Space Telescope** appears in the evenings from June 9th to 24th.; best viewing dates are 11th to 13th. See this link for specific times and routes for HST: <http://www.heavens-above.com/>

Southwest Florida Astronomical Society, Inc. Event Schedule for 2018

Date	Event	Location	Time/Note
June 7 th , 2018	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm
June 9 th , 2018	Monthly Star Party	Seahawk Park - Cape Coral	Dusk
July 5 th , 2018	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm
July 14 th , 2018	Cape Coral Parks and Rec Day	Austen Youth Center (Near SunSplash)	9 am to Noon
July 14 th , 2018	Monthly Star Party	Seahawk Park - Cape Coral	Dusk
Aug 2 nd , 2018	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm
Aug 11 th , 2018	Monthly Star Party	Seahawk Park - Cape Coral	Dusk (Perseid Meteor Shower!)
Sept 6 th , 2018	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm
Sept 8 th , 2018	Monthly Star Party	Seahawk Park - Cape Coral	Dusk
Oct 3 rd , 2018	Cape Coral Library Program	Cape Coral Library	6pm-7pm
Oct 4 th , 2018	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm
Oct 6 th , 2018	Monthly Star Party	Seahawk Park - Cape Coral	Dusk
Oct 14 th , 2018	Ding Darling Days' Family Fun Day	Ding Darling Wildlife Refuge - Sanibel	8am - 3pm
Nov 1 st , 2018	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm
Nov 10 th , 2018	Monthly Star Party	Caloosahatchee Regional Park	Dusk (Arrive before gate closes, park fee)
Dec 6 th , 2018	Monthly Meeting	Calusa Nature Center Planetarium	7:30pm

All observing events are Weather Permitting. If it is cloudy, we may not setup at all. There may be no way to provide advance notice of cancellation.

Monthly Star Parties: These are held at either Caloosahatchee Regional Park (CRP) off SR78 7 miles east of SR31 or at Seahawk Park in Cape Coral. Other than park fees noted, these are free and open to the public.

CRP has a gate that closes at dusk, you can check the county's website for current gate closing times and the status of the park's Northside entrance as that is where we observe from. (They may close the area if there are issues with the trails.) There is a parking fee of \$1/hr or \$5/day at CRP. Park in the main Northside parking lot. We sometimes setup down the dirt road that goes to the east. That area is grassy and may not be level, so one should walk on the dirt road as much as possible and watch their step.

Seahawk Park is in North Cape Coral off Wilmington Blvd. (Nelson Rd or Chiquita Blvd are the nearest cross streets.) There is a brown sign in the center median at the entrance to the park. (GPS may not get you to the park, as some of the local roads have been closed.) You will make a big J hook before getting to the parking area. Seahawk Park is utilized by the Radio Controlled Planes and they have priority. They are usually done by sunset but may be there before sunrise. Park in the lot and transport your equipment to the concrete staging area before the runway. This park is handicap capable as there is level concrete leading from parking to the staging area.

Big Cypress: The Big Cypress Visitor Center is located off US41 5 miles east of SR29 about 25 miles east of Naples. Big Cypress has earned a Dark Sky Park designation. They hold observing events down the road that extends south of the Visitor Center during the winter months. This is a real dark sky site. Their observing events are free.

Solar Events: We have daytime solar events where one can safely look at the Sun. Things such as sunspots and prominences may be visible. These are free unless tied to another event that may have an entrance fee.

Rotary Park Star Party: This is a free public star party held at Rotary Park at the south end of Pelican Blvd in South Cape Coral. Park to the west of the main building and walk to where we are setup to the east of the main building.

Moore Observatory, FSW Punta Gorda Campus: The campus is located off Airport Rd just east of I-75. Go to the right around the lake and park. The observatory is located down the path along the lake. Besides the telescope in the observatory, additional scopes may be setup around the observatory. This is a free event.

Star Party Etiquette: Bright white flashlights are not welcome. We use red flashlights to preserve our night vision. At the parks, please use just your parking lights if possible. As there may be cords and tripod legs that are hard to see in the dark, we ask that all children be well behaved and cautious around the telescopes. If you need help in moving around in the dark, just ask. Someone will be happy to guide you with a red light. If you have a telescope and need help with it, just ask. Someone will be glad to show you how to use it.

Golden Rules to Telescope Observing: Move your eye to the telescope, don't try to move the telescope to your eye! Ladders/chairs are there for your support, the telescopes do not provide support and should not be touched.

Minutes of the Southwest Florida Astronomical Society – May 3, 2018

The regular monthly meeting of the South West Florida Astronomical Society was called to order at 7:30pm by President Brian Risley at the Calusa Nature Center and Planetarium. Approximately 30 people were in attendance and 8 new visitors were introduced.

In lieu of a guest speaker the Planetarium Program entitled "Explosions that Shape the Cosmos" was shown.

The regular business meeting of the SWFAS was resumed at approximately 8:00pm. President Brian Risley asked for a volunteer to take the meeting minutes in Secretary Don Palmer's absence. Mike McCauley volunteered.

Past and upcoming events listed in the agenda were reviewed and discussed. Brian Risley explained the directions to Calusa Regional Park as many people were unaware of how to get there for our monthly star parties.

Heather Preston addressed the astronomy club and explained that the planetarium was looking for a person to work evenings. There was also a paid position available as planetarium manager/director as well as a volunteer docent position. Anyone interested should contact Heather directly.

President Brian Risley presented three SWFAS members with Night Sky Network awards for their work with the club sponsored outreach programs. John McClean and Mike McCauley were presented certificates and NSN pins while Joe Dermody received his in absentia.

Brian Risley discussed the need to pay the Naples Freenet Website Hosting Fee of \$85.00. Tom Segur approved the motion and was seconded by John McClean. The motion passed on a voice vote.

Heather Preston remarked that the Naples Ritz Carlton was looking for an astronomer to help locate celestial objects during their rooftop astronomy programs for their guests. Anyone interested could contact either Heather or the Ritz Carlton directly.

Brian Risley remarked that the Cape Coral Library is looking for an astronomer to give a presentation in October. Anyone interested in volunteering for this event should contact Brian.

Program Coordinator Mike McCauley told the club that Professor of Astronomy Antonio Paris was scheduled to present to the club at the June meeting. More details regarding Professor Paris' presentation will be forthcoming.

The minutes of the April meeting were accepted and approved. Mike McCauley made the motion to approve the minutes while John McClean seconded the motion.

Treasurer Tim Barrier reported an April ending cash balance of \$1969.62. Jean made the motion to accept the report while John McClean seconded the motion. The motion carried on a voice vote.

SWFAS President Brian Risley adjourned the meeting at 8:36pm.

Mike McCauley, acting Secretary.

Disentangling the History of the Magellanic Clouds

By: [AAS Nova](#) | May 25, 2018

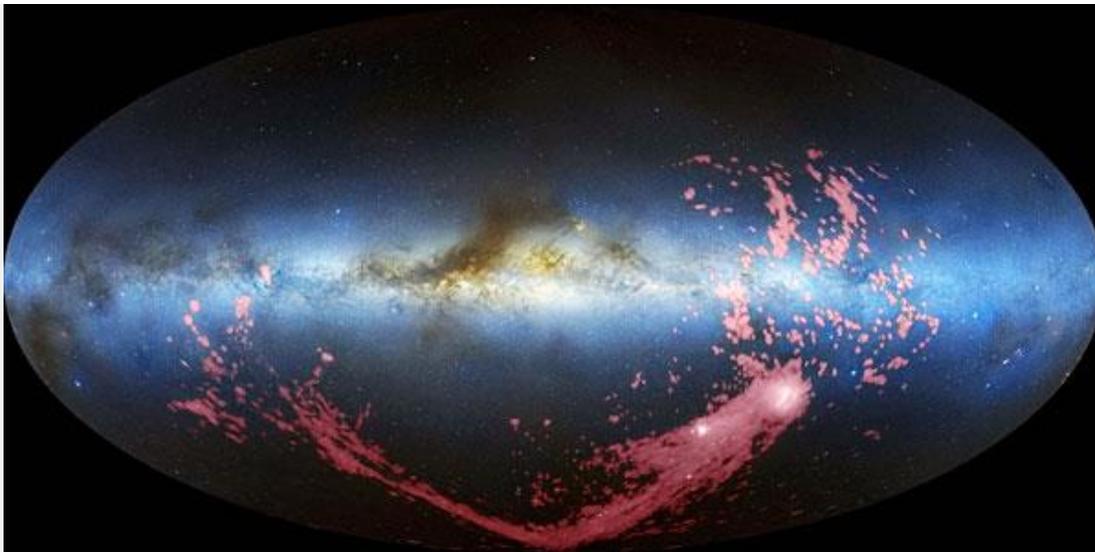
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The Magellanic Clouds — two nearby dwarf galaxies easily visible to the naked eye in the southern hemisphere — are key to understanding the dynamics and evolution of the Local Group of galaxies. Can an in-depth look at these galaxies' outer regions help us make sense of their complicated interaction history?



The Milky Way's largest satellite galaxies, the Magellanic Clouds, have a complicated interaction history. *ESO/S. Brunier*

A Closer Look at Our Galactic Neighbors



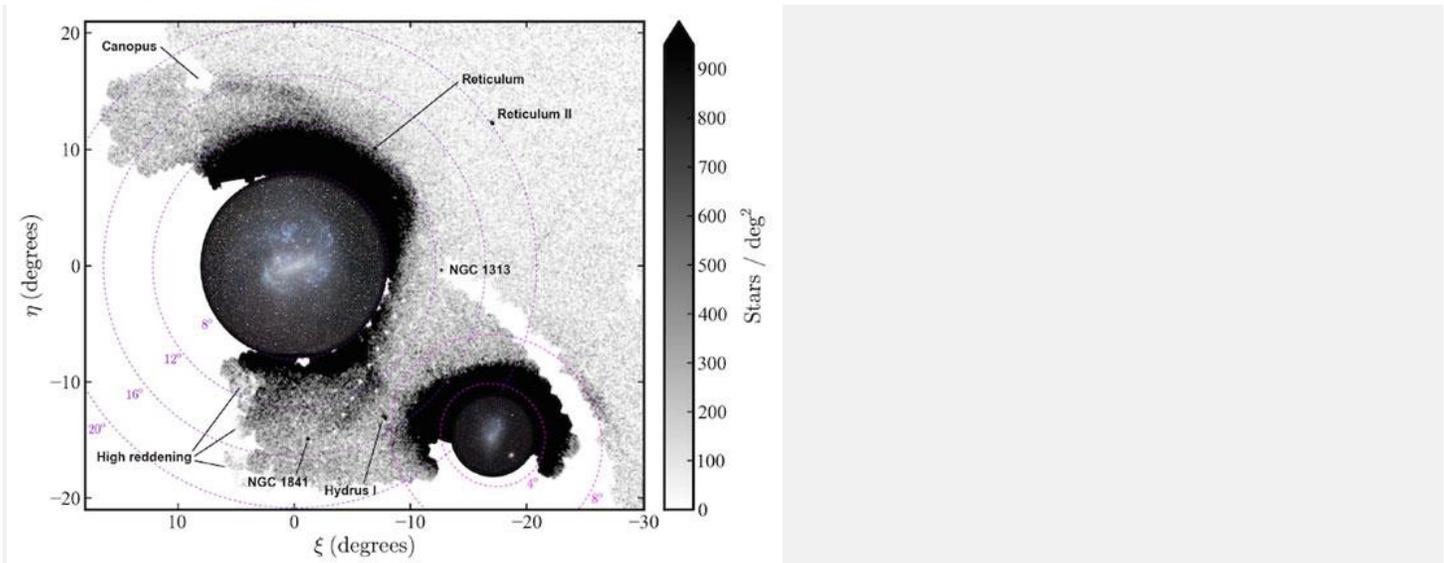
A combined optical and radio view of the Milky Way and the Magellanic Stream, shown in pink. *David L. Nidever, et al., NRAO/AUI/NSF and Mellinger, Leiden/Argentine/Bonn Survey, Parkes Observatory, Westerbork Observatory, and Arecibo Observatory*

The Small and Large Magellanic Clouds (SMC and LMC) have been well studied, but these dwarf satellite galaxies continue to inspire new discoveries. Among them is the origin of the Magellanic Stream — a swath of neutral hydrogen trailing the Magellanic Clouds and spanning more than half a million light-years.

It was originally thought that the Magellanic Stream was the result of tidal interactions during close encounters with the Milky Way, but precise proper motion surveys revealed that the LMC and SMC are either passing near the Milky Way for the first time or are in a long (~4-billion-year) orbit around our galaxy — so the Magellanic Stream must result from interactions between the two galaxies themselves.

How long have the LMC and SMC been interacting, and how have these interactions shaped the two galaxies? A key to understanding the history of these dwarf galaxies is mapping the weakly gravitationally bound stars at their far edges that may be pulled into tidal streams or bulges as each galaxy is distorted by the presence of the other.

Mapping the Edges of Galaxies



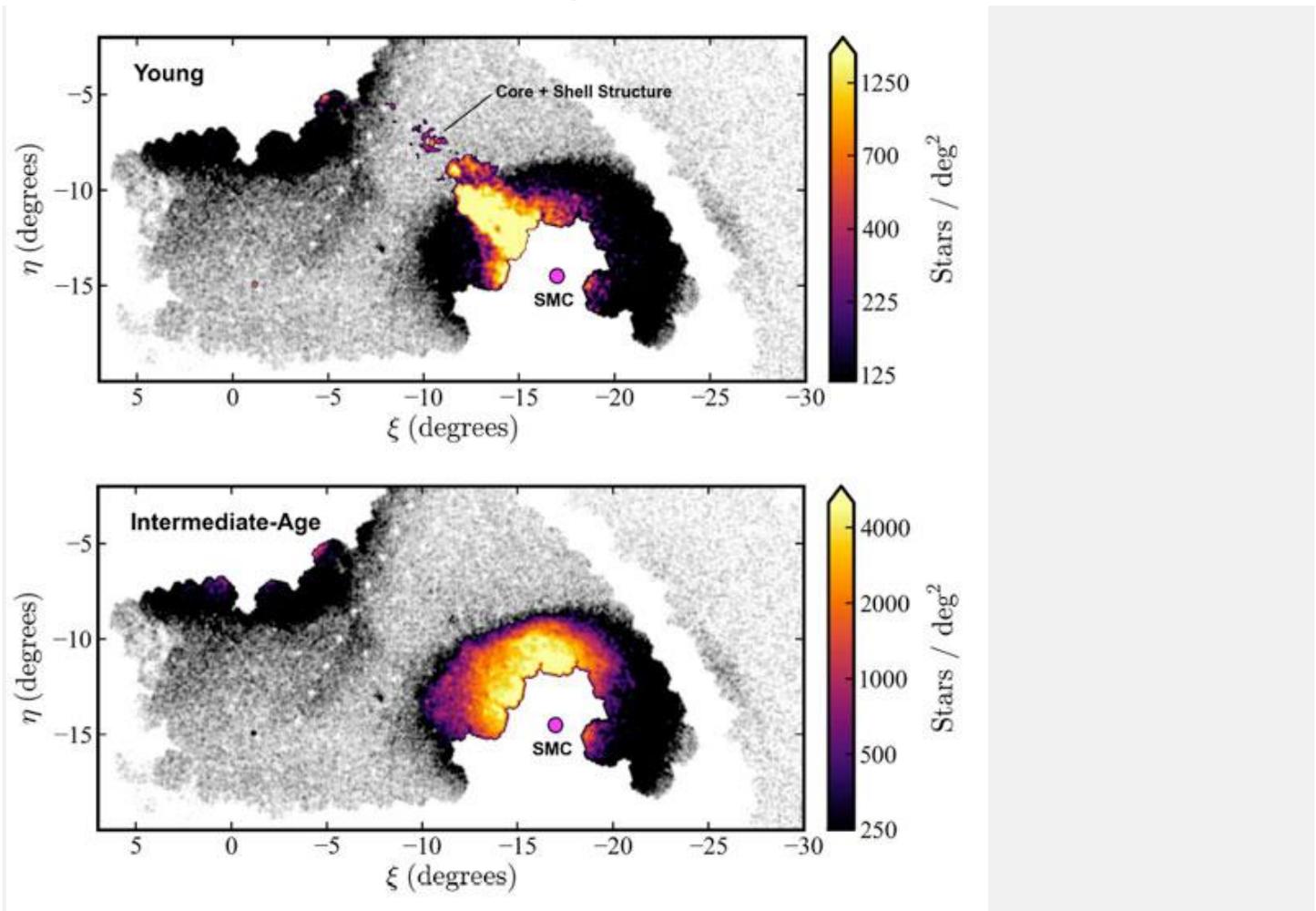
A map of the density of ancient stars surrounding the Magellanic Clouds reveals extended structures to the north and south of the LMC, while the western regions of the galaxy (to the right) are truncated. Click to enlarge. *Adapted from Mackey et al. 2018*

Dougal Mackey (Australian National University) and collaborators used visible and near-infrared images taken by the Dark Energy Camera (DECam) — the workhorse instrument of the Dark Energy Survey — to map the faint outskirts of the LMC and SMC.

Though the purpose of the Dark Energy Survey is to better understand the nature of dark energy through observations of supernovae, weak gravitational lenses, and galaxy clusters, its sensitive imaging system and wide field of view (2.2 degrees in diameter) make it well-suited to exploring the faint fringes of nearby galaxies.

The DECam images of the Magellanic Clouds probed to a surface brightness of 32 magnitudes per square arcsecond, allowing Mackey and collaborators to investigate how different stellar populations are distributed in the outer regions of these galaxies.

Structures Revealed in Faint Starlight



Stellar density maps for young (<1 Gyr) and intermediate-age (1.5–4 Gyr) populations. The young stars trace a bridge between the galaxies, while the intermediate-age stars are offset from the ancient stars in the direction of the LMC. Click to enlarge.

Adapted from Mackey et al. 2018

Mapping the density of stars revealed distinct stellar substructures on the outskirts of the LMC and SMC. While previous studies discovered isolated substructures on the outer limits of the LMC, the panoramic view from this study highlights the interconnected nature of the structures.

One important finding is that the intermediate-age (1.5–4 Gyr) stellar population of the SMC is distinctly offset from the ancient (~ 11 Gyr) stellar population. This result suggests that the Magellanic Clouds may have been gravitationally linked as far back as several billion years — hinting that these galaxies are on their first trip past the Milky Way. Future simulation work may provide a more cohesive picture of the LMC–SMC interaction, helping us better understand how our near neighbors have evolved.

Citation

Dougal Mackey et al 2018 *ApJL* **858** L21. [doi:10.3847/2041-8213/aac175](https://doi.org/10.3847/2041-8213/aac175)

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What Is the Asteroid Belt?

By Linda Hermans-Killiam

There are millions of pieces of rocky material left over from the formation of our solar system. These rocky chunks are called asteroids, and they can be found orbiting our Sun. Most asteroids are found between the orbits of Mars and Jupiter. They orbit the Sun in a doughnut-shaped region of space called the asteroid belt.

Asteroids come in many different sizes—from tiny rocks to giant boulders. Some can even be hundreds of miles across! Asteroids are mostly rocky, but some also have metals inside, such as iron and nickel. Almost all asteroids have irregular shapes. However, very large asteroids can have a rounder shape.

The asteroid belt is about as wide as the distance between Earth and the Sun. It's a big space, so the objects in the asteroid belt aren't very close together. That means there is plenty of room for spacecraft to safely pass through the belt. In fact, NASA has already sent several spacecraft through the asteroid belt!

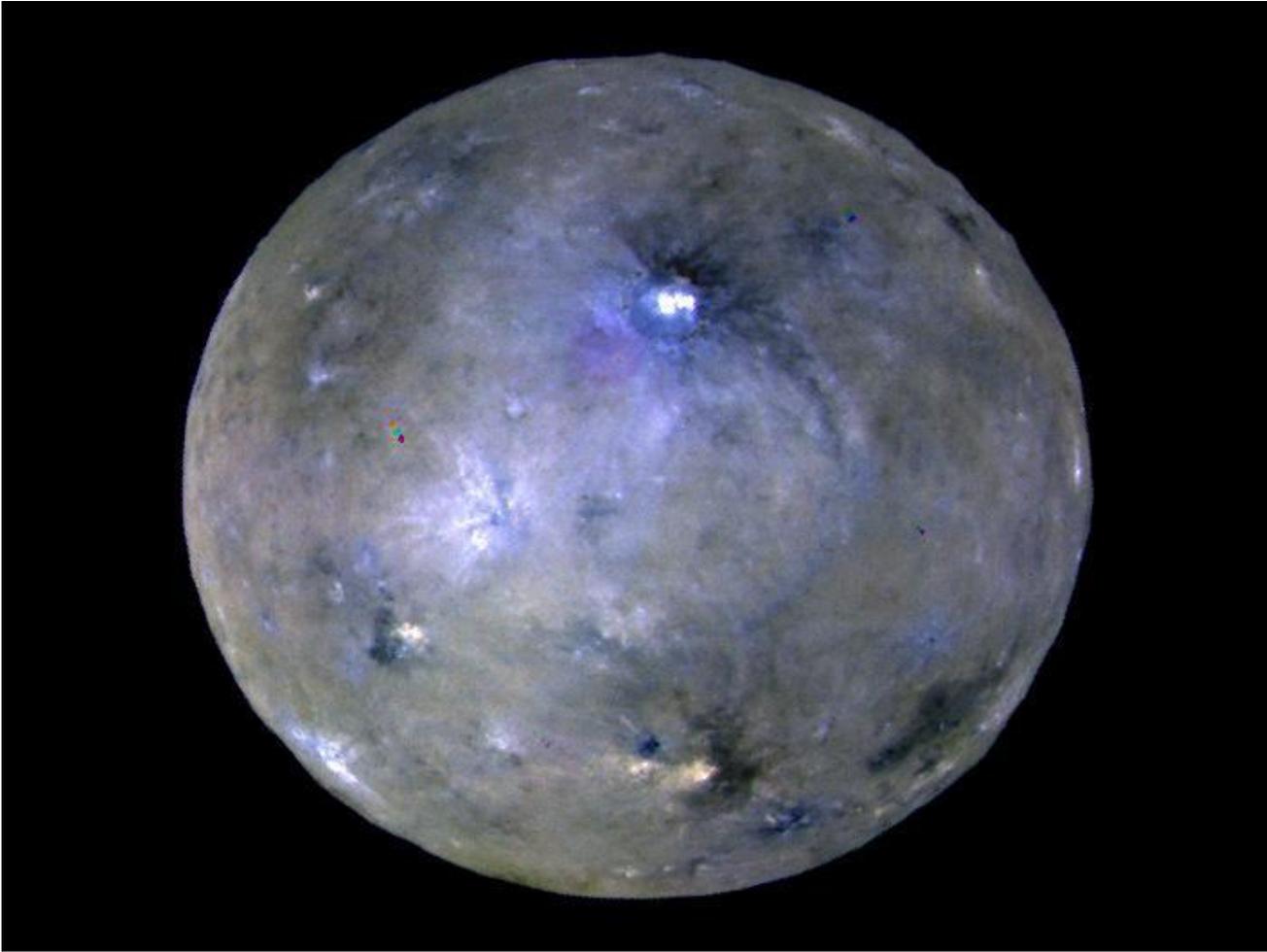
The total mass of objects in the asteroid belt is only about 4 percent the mass of our Moon. Half of this mass is from the four largest objects in the belt. These objects are named Ceres, Vesta, Pallas and Hygiea.

The dwarf planet Ceres is the largest object in the asteroid belt. However, Ceres is still pretty small. It is only about 587 miles across—only a quarter the diameter of Earth's moon. In 2015, NASA's Dawn mission mapped the surface of Ceres. From Dawn, we learned that the outermost layer of Ceres—called the crust—is made up of a mixture of rock and ice.

The Dawn spacecraft also visited the asteroid Vesta. Vesta is the second largest object in the asteroid belt. It is 329 miles across, and it is the brightest asteroid in the sky. Vesta is covered with light and dark patches, and lava once flowed on its surface.

The asteroid belt is filled with objects from the dawn of our solar system. Asteroids represent the building blocks of planets and moons, and studying them helps us learn about the early solar system.

For more information about asteroids, visit: <https://spaceplace.nasa.gov/asteroid>



Caption: This image captured by the Dawn spacecraft is an enhanced color view of Ceres, the largest object in the asteroid belt. Credit: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

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