September 2020

September Meeting Details

DATE: Tuesday, September 8th
MEETING TIME: 7:00
PLACE: La Posada Recreation Center
MEETING SCHEDULE:
   6:30 ZOOM Waiting Room Available
   7:00 Meeting Intro and Welcome
   7:10 Featured Presentation Followed by Club Activities/Business

Next Member Star Parties

DATE: Thursday, September 17th
TIME: 6:15 PM Setup
PLACE: Canoa Preserve Park
DATE: Thursday, October 15th
TIME: 5:45 PM Setup
PLACE: Canoa Preserve Park

To get directions and up-to-date information on the status of a star party in case a weather issue develops.

If you have a telescope that you don’t know how to use, or are looking to buy a telescope and want to compare different telescopes, join us at a star party and we can give you some help.

September Presentation

WHO: Tom Field
TITLE: You Can Almost Touch the Stars
ABSTRACT: Even if you wanted to touch a star, they’re all impossibly distant. Despite these great distances, astronomers have learned an enormous amount about stars. How? The most common method to study the stars is called spectroscopy, which is the science of analyzing the colorful rainbow spectrum produced by a prism-like device. Until recently, spectroscopy was too expensive and too complicated for all but a handful of amateurs. Today, though, new tools make spectroscopy accessible to almost all of us. You no longer need a PhD, dark skies, long exposures, enormous aperture … or a big budget! With your current telescope and FITS camera (or a simple web cam or even a DSLR without a telescope) you can now easily study the stars yourself. Wouldn’t you like to detect the atmosphere on Neptune or the red shift of a quasar right from your own backyard?! This talk, with lots of interesting examples, will show you what it’s all about and help you understand how spectroscopy is used in research. Even if you are an armchair astronomer, understanding this field will enhance your understanding of the things your read and the night sky. We’ll do a live Q&A after Tom’s 45-minute presentation. know.

ABOUT THE SPEAKER: Tom Field has been a Contributing Editor at Sky & Telescope Magazine for the past 7 years. He is the author of the RSpec software (www.rspec-astro.com) which received the S&T “Hot Product” award in 2011. Tom is a popular speaker who has spoken to hundreds of clubs via the web and in-person at many conferences, including NEAF, the NEAF Imaging Conference, the Winter Star Party, the Advanced Imaging Conference, and others.
Greetings everyone,

I hope everyone is well and staying safe. This has been a trying time for all of us and the near future does not look encouraging. I don’t know when we will be able to get back to live meetings much less any outreach activities. In place of live meetings we will be attempting a meeting by ZOOM. There are a lot of organizations using this method for meetings and it seems to work well. I sent out information as to what you have to do to access the meeting. The ZOOM client is the best method so please have that installed beforehand. Monday I will send out login information so you can join the meeting Tuesday. Hopefully we will not run into any bad snags so bear with us. Hope to see you Tuesday.

Although all public star parties for the foreseeable future will be cancelled, we can still have our club star party at Canoa Preserve Park. But the appropriate precautions must be observed.

1. Social distancing should be observed as best you can.
2. Bring masks in case you might want to talk to someone and may require less than six feet distance from them.
3. Looking through someone else’s telescope is not advised.
4. Finally be sure to check out our website. Joe has done a great job to keep it relevant.

Stay safe,
John Dwyer, President
THE SEPTEMBER SKY

A lot has changed since our last newsletter. We are about to undergo an evening planet bonanza, including three of the finest planets in the night sky at the same time. Jupiter is leading the parade in the southern evening sky. Located in Sagittarius, it reached opposition in July and is now at magnitude -2.5. Saturn is not too far behind. It also reached opposition in July. It is at about mag 0. Then there is Mars. Rising by 8pm by the middle of the month, it is an object you do not want to miss. It reaches opposition around the middle of October. It is now shining a bright red at mag -2. So far there are no global-wide dust storms as there were during its last opposition two years ago. We hope that will hold.

Mercury is also in the evening sky but will be extremely low in the southwest. Uranus, located in Aries, is now in the evening sky not too far behind Mars. It will also reach opposition later in October. Neptune, located in Aquarius, is the final planet in the evening sky. Venus is the sole planet in the morning sky shining brilliantly at mag -4+. It reached greatest western elongation (46°) from the Sun last month.

Our great comet of late spring (C/2020 F3 NEOWISE) is now fading (at about 10th mag) as it races away from us. Another comet (88/P Howell) will be around 8th to 9th magnitude but will be very low in the southwest evening sky.

SEPTEMBER MOON/SUN TIMES

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(WANT CURRENT COMET INFORMATION?)

Go to “The Weekly Information about Bright Comets” site at http://www.aerith.net/comet/weekly/current.html. Comets are listed in brightest to least bright order. Remember, to see a comet without any optical aid, it must be approximately 4th magnitude or brighter. With binoculars, the comet would most likely need to be at least 8th magnitude. Comets below 11th magnitude might be difficult to pick up with other than a large aperture telescope. Visibility can also depend on how diffuse the
Altair is the final stop on our trip around the Summer Triangle! The last star in the asterism to rise for Northern Hemisphere observers before summer begins, brilliant Altair is high overhead at sunset at the end of the season in September. Altair might be the most unusual of the three stars of the Triangle, due to its great speed: this star spins so rapidly that it appears “squished.”

A very bright star, Altair has its own notable place in the mythologies of cultures around the world. As discussed in our previous edition, Altair represents the cowherd Niulang in the ancient Chinese tale of the “Cowherd and the Weaver Girl.” Altair is the brightest star in the constellation of Aquila the Eagle; while described as part of an eagle by ancient peoples around the Mediterranean, it was also seen as part of an eagle by the Koori people in Australia! They saw the star itself as representing a wedge-tailed eagle, and two nearby stars as his wives, a pair of black swans. More recently one of the first home computers was named after the star: the Altair 8800.

Altair’s rapid spinning was first detected in the 1960s. The close observations that followed tested the limits of technology available to astronomers, eventually resulting in direct images of the star’s shape and surface by using a technique called interferometry, which combines the light from two or more instruments to produce a single image. Predictions about how the surface of a rapidly spinning massive star would appear held true to the observations; models predicted a squashed, almost “pumpkin-like” shape instead of a round sphere, along with a dimming effect along the widened equator, and the observations confirmed this! This equatorial dimming is due to a phenomenon called gravity darkening. Altair is wider at the equator than it is at the poles due to centrifugal force, resulting in the star’s mass bulging outwards at the equator. This results in the denser poles of the star being hotter and brighter, and the less dense equator being cooler and therefore dimmer. This doesn’t mean that the equator of Altair or other rapidly spinning stars are actually dark, but rather that the equator is dark in comparison to the poles; this is similar in a sense to sunspots. If you were to observe a sunspot on its own, it would appear blindingly bright, but it is cooler than the surrounding plasma in the Sun and so appears dark in contrast.

As summer winds down, you can still take a Trip Around the Summer Triangle with this activity from the Night Sky Network. Mark some of the sights in and around the Summer Triangle at: bit.ly/TriangleTrip. Discover more about the history and future of Hubble and space telescopes at nasa.gov.

The image on the right was created using optical interferometry: the light from four telescopes was combined to produce this image of Altair’s surface. Image credit: Ming Zhao. More info: bit.ly/altairvsmodel
Compliments: David Prosper of the NASA Night Sky Network, jpd
SONORAN STARRY NIGHTS

S.A.S CLUB OFFICERS

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<td>Chairman of the Board</td>
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<tr>
<td>President</td>
<td>John Dwyer</td>
<td>(520) 393-3680</td>
</tr>
<tr>
<td>Secretary</td>
<td>Michael Moraghan</td>
<td>(520) 399-3352</td>
</tr>
<tr>
<td>Treasurer</td>
<td>John McGee</td>
<td>(520) 207-6188</td>
</tr>
<tr>
<td>Star party Coordinator</td>
<td>Duane Johnson</td>
<td>(520) 303-6920</td>
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<tr>
<td>Newsletter Editor</td>
<td>John Christensen</td>
<td>(520) 869-8983</td>
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<tr>
<td>Webmaster</td>
<td>Joe Castor</td>
<td>(620) 584-4454</td>
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<tr>
<td>ALCOR*</td>
<td>Burley Packwood</td>
<td>(520) 396-3576</td>
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<tr>
<td>NSN** Representative</td>
<td>Duane Johnson</td>
<td>(520) 303-6920</td>
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<tr>
<td>Past President Emeritus</td>
<td>Dan F. Case</td>
<td>(520) 207-6833</td>
</tr>
<tr>
<td>*Astronomical League Coordinator</td>
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<tr>
<td>**Night Sky Network</td>
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WHY JOIN SAS

1. SAS Family Membership Fee is only $15.00 per year.
2. SAS monthly newsletter “The Sonoran Starry Nights.”
3. Top-quality astronomy lectures by local astronomers!
4. SAS Discount for Astronomy Magazine $34.00 for 1yr or $60.00 for 2 yr renewed through our treasurer.
5. SAS Discount subscription rate for Sky & Telescope Magazine $32.95 for 1-year self-renewed.
7. SAS T-Shirts for sale for $10.00—M, L, XL.
8. Member of International Dark-sky Association (IDA) and The Astronomical League.
9. SAS Discount for Astronomy 2020 Calendar $10.00
10. SAS monthly Member Star Parties.
11. SAS Telescope and astronomy book loan programs.
12. SAS outreach to astronomy education in schools.
13. SAS fellowship with other amateur astronomers!

Dues (family or individual) are $15 annually, payable each year in the month you initially joined the club. You will receive a reminder in the monthly newsletter e-mail of your due date. You can either pay at the club meeting or mail it to the club’s address (S.A.S., P.O. Box 1081, Green Valley, AZ, 85622).

SAS WEB SITE

If you want to keep up-to-date with club activities, such as star parties, etc., check out our website at: sonoraastronomicalsociety.org

SAS STATISTICS & FINANCES

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Are you interested in Astrophotography or are you currently involved in imaging the skies? Please plan to join our monthly meeting of the Sonoran Desert Astro Imagers group. Our meetings focus on improving our skills, helping each other, workshops, and field trips. Please send your Name and E-mail address to my address below and we’ll include you in the emailing notices of monthly meetings; “the when and where meeting notice.” Do you have any questions? If so, call me (Larry Phillips) at (520) 777-8027 or email to llp41astro@cox.net.

Clear Skies! Larry Phillips

Since SAS is a member of the Astronomical League, any SAS member may join the Astronomical League for a nominal fee of $7.50. What are the advantages to you of joining the AL?

1. You can receive various observing awards by joining an “observing club” and observing the required number of objects. There are all levels of clubs from beginner to advanced, viewing constellations to deep-sky objects and using either your naked eyes, binoculars, or a telescope. Contact our ALCOR rep Burley Packwood for details.

2. You can get a 10% discount on books purchased through the AL Book Service.

3. You will receive the AL’s quarterly “Reflector” magazine which keeps you up to date on all the AL activities.

More info at www.astroleague.org

SAS is proud to be a member of the International Dark-Sky Association, supporting the reduction in light pollution around the U.S. and the world.

More info at www.darksky.org

The Sonora Astronomical Society is a 501 (c) (3) nonprofit charitable organization! SAS has a CERTIFICATE OF GOOD STANDING from the State of Arizona Corporation Commission for 2009-2011!

To order or renew your Sky and Telescope Magazine at the Club Rate, you can go directly to www.skyandtelescope.com/clubspecial

To order or renew Astronomy Magazine, see the Treasurer.

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EQUIPMENT FOR SALE

One of our club members (John Verderame) is offering a service to sell equipment. Here is John’s info:

"If you have astronomy equipment sitting around collecting dust, or just want to get some cash for your equipment, please contact me! I sometimes buy equipment outright for cash, or if you would like me to help you sell something larger or more expensive, I can do that for a small commission. This is the only way I get new or better equipment, and I did it for the Prescott Astronomy Club too. I sell mainly on Cloudy Nights and eBay, but also sometimes Craig’s List, and have all positive feedback (I go by my actual name on Cloudy Nights if you wish to check me out).

Please call (I don’t do texting) 307-250-2728 or email me at: astroitalian@gmail.com.

Thanks! John Verderame

1. Celestron CPC 1100 Computerized Telescope.

   includes:
   • Starbright XLT optical coating, GPS with SkyAlign for quick & easy alignment, 9x50 finder scope, Telrad finder, and microfocuser.
   • 2” star diagonal with Virtual View swivel adapter, 40 mm x 1.25” Celestron Plossl eyepiece, 13 mm x 1.25” TeleVue, Nagler IV eyepiece, 17 mm x 2” TeleVue, Nagler IV eyepiece, and 2” 2x Barlow magnifier
   • Hand control with 2 line LCD screen
   • 12 V cable & 120 V adapter
   • Compatible with StarSense technology & WiFi
   • Sturdy tripod with 2” diameter steel legs, ergonomic carrying handles, metal carrying case for accessories, manual, and original packaging

In excellent condition was $4400 new, asking $2850 obo

Please contact Murray Croot, at (520) 372-2383 or mcroot@gmail.com for photos.

2. Orion Skyquest xt10i For Sale.

   includes:
   The telescope is an Orion Skyquest xt10i which has a computer that can locate 14000 items in the sky. It is assembled and the mirror and scope have been checked. It comes with a carrying case. It’s never been used. I decided that another telescope would be better suited for me. Original price was $900. Asking $850 which includes the carrying case, a $120 value. I live in Green Valley.

   Contact Ed Matte at EdMatte@msn.com

3. Orion XT8 Plus Dob.

   If you are interested in this scope, contact Robert Shropshire at rshropshire1@aol.com for more information.

PROPERTY FOR SALE

Property w/Observatory and Pad

I may have to sell a five-acre property which contains a small observatory and a second 'pad' with a triad of bolt heads for a telescope pedestal. Property also contains a 1668 sq ft house and a garage. The property is located halfway between Amado and Arivaca.

For more information contact:

Harold L. Mansfield
1275 W. Calle Serrano
Green Valley, AZ 85622
(520) 954-0480
gvpuns@gmail.com
Speaker: Knut Olsen, Ph.D., a staff astronomer at the National Science Foundation’s Optical-Infrared Astronomy Research Laboratory
Subject: “A Tale of Two Galaxies”

While a graduate student at the University of Washington, Dr. Olsen did his Ph.D. thesis on the Large Magellanic Cloud and has been studying the two southern hemisphere’s “clouds” ever since. The Large and Small Magellanic Clouds are dwarf galaxies 160,000 and 200,000 lightyears from Earth, respectively. Because they are relatively close to Earth, they have been the subjects of over 15,000 research papers. The Large Magellanic Cloud (LMC) has the largest star-forming region of any galaxy in the Local Group, The Tarantula Nebula also known as 30 Doradus. It dwarfs the Orion Nebula and if it were as close as Orion, it would be bright enough to cast shadows. How to explain such an active region in a small galaxy?

Stellar evolution. Stars with 9 to 60 solar masses evolve into red supergiants (RSG) and then Type 2 supernovae. Dr. Olsen became involved in the study of them when he was working at the Cerro Tololo Interamerican Observatory in Chile. A fellow astronomer Phil Massey planned to come there but was prevented from doing so when the September 11, 2001, terrorist attack disrupted air travel, so he asked Dr. Olsen to collect RSG data for him.

An example of an RSG is VY Canis Majoris, three billion times larger than the sun, it would extend out to the orbit of Jupiter. Betelgeuse, recently in the news is also an RSG. There was some speculation that recent unprecedented dimming might indicate it would become a supernova. However, its surface temperature remained the same and as it became brighter astronomers theorized the dimming was caused by a huge cloud of dust.

Dr. Olsen imaged the spectra of RSG’s in the LMC to determine their Doppler shift. He compared these to the spectra of a star with a known radial velocity. He could then subtract the radial velocities of the RSG’s. The remaining velocity could then be attributed to the rotation of the LMC. The study confirmed a flat rotation curve, i.e., the outer stars were orbiting as fast as the inner stars. This has been observed in other galaxies where there is not enough observable mass to explain the phenomena. The explanation has been non-observable “dark” matter that provides the mass necessary for the outer stars to orbit so quickly.

Dr. Olsen studied the LMC to determine what Dark Matter is. He imaged the LMC every other night to look for evidence of microlensing caused by dark matter moving in front of a star. By comparing successive images and subtracting out everything that did not change he was left with some bright spots and some puzzling rings. The spots were stars that were changing, possibly the result of microlensing. He was intrigued, however, by the rings. He calculated the rings were moving at the speed of light and were light echoes from Supernova 1987A. The light seen in 1987 came directly toward Earth, while the rings were reflections off clouds of dust, taking longer to reach us. Study of additional imagery revealed more light echoes from Type 1A Supernovae hundreds of years ago. That’s the way science works, Dr. Olsen said. He was looking for evidence of dark matter and instead found exciting new research into ancient supernovae.

Some outlier stars orbit at a 55-degree angle to the LMC’s galactic plane and have less metalicity than other LMC stars. The explanation appears to be these were “stolen” from the SMC. The SMC may have collided with the LMC 300 million years ago in the region that is now 30 Doradus, providing pressure that continues to promote star birth. The collision also left a "Magellanic Stream" of hot neutral hydrogen gas connecting the LMC and SMC and extending more than two degrees across the sky. This investigation of a possible collision distracted Dr. Olsen from his search for dark matter. It also led to the hypothesis that microlensing effects attributed to dark matter could instead be caused by normal matter, debris from the collision.

Will the Magellanic Clouds collide with the Milky Way? That’s uncertain because the mass of our galaxy is not precisely known and the Clouds’ orbits are highly eccentric. The LMC and SMC may have satellite galaxies and together they do have a detectable effect on the Milky Way.

JCM