NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

NOVEMBER 2018

PRESIDENT'S NOTES

IS IT NOVEMBER AGAIN?

Cycles: tides, days, months, seasons, years, eons… They come, go, and repeat. With our relatively short time span, it is easy to overlook them. We try to keep our feet steady on the ground without thinking where they are leading us. Nevertheless, we set our lives by these rhythms. However, they are not as perfect as clockwork, and we never actually return to our starting point, ever. Starting with little cycles we need to add a second here and a leap day there, occasionally, to make time fit better with reality. We look up and things have changed. The Earth's rotation slows down over time, making longer days (daylight and nighttime). As I'm writing this on Tuesday October 23, 2018, Earth's rotation prediction is 24 hours, 0 minutes, 0.0012327 seconds (1.2327 milliseconds); most days are a little longer than 24 hours. A sidereal day, used as the basic time in clock driven telescopes, is approximately 23 hours, 56 minutes and, 4.0905 seconds. That, too, will someday need updating.

You might notice the moon slowly drifting in the eyepiece when observing with a telescope driven at the sidereal rate. The moon is moving as well, as we know, around the earth, but it is always drifting to the east in relation to the stars (about 12 degrees over a 24-hour day). The moon completes one revolution relative to the stars in about 27.3 days (a sidereal month). A lunar month, which is one revolution relative to the sun, is actually about 29.5 days (a synodic month).

Oh, did I mention that the year it takes the earth to make it once around the sun is 365.256 days (1 sidereal year)? That's why a leap year is needed from time to time.

The sun also rotates, but different latitudes of its orb travel at different rates. The sun rotates fastest at its equator. At the equator, it takes 24.47 days to rotate completely around the star, but as you get close to either of the sun's poles rotation can take up to 38 days. Because the sun doesn't have a solid surface these estimates of rotation have been made by using sunspots as indicators of the surface and watching them turn with our star.

Of course, our solar system is orbiting the gravity center of the Milky Way galaxy, wobbling along in and with a lower density area of the Orion Spur of the Orion Arm, between the Sagittarius and Perseus Arms of our Milky Way. The estimate to make one orbit around the Milky Way is somewhere between 225 and 250 million earth years. The Milky Way galaxy has more than ten (we don't know exactly how many) small satellite galaxies that each take at least four billion earth years to orbit our galaxy, if they aren't just passing through it. Oh, and our clump of galaxies are, yes, moving in a local group of more than 50 galaxies that twirl through space! I could go on but I've run out of time or is it space?

Before I go, let me remind you one more time that any member in good standing can run for any board position (except Past President). Board member elections will take place during the November general meeting. Speaking of being in good standing, it's a good time to renew your membership for 2019.

Now get out there and stare.

WELCOME OUR NEW MEMBERS

New members joining in October include Mike Arnold of Sierra Vista, Heather Mark, Deven, Makayla, and Brandon Howell of Ft Huachuca and Jeremy, Alicia and Mia James of Sierra Vista. Welcome! We are glad you joined!

MEMBERSHIP DUES

It's that time again. Most HAC memberships expire each December. The treasurer will be collecting 2019 dues at the November meeting and the December holiday pot luck. If you are not sure when your membership expires you can contact the treasurer (tedforte511 at gmail dot com).

You can pay dues in person by cash or check made out to the Huachuca Astronomy Club, send your check to PO Box 922 Sierra Vista 85636 or pay with your PayPal account or credit card by going to https://www.hacastronomy.org/membership/renew/

Regular (individual) dues are $25, family dues are $35, active duty military family dues $25, active duty regular military dues $20 and student (with student ID) is $10

At the November Meeting

Train Wrecks Across Time: A History of Galaxy Mergers

Dr. Barry Rothberg LBTO

The collision and merging of galaxies is one of the most violent events in the Universe. Galaxy mergers are far from rare, and are responsible for reshaping and creating galaxies, forming millions of new stars, enriching and forging new elements, and birthing and fueling the most powerful and destructive engines in the known Universe.

But galaxy mergers have not only reshaped the Universe over the last 13 billion years, but have also served as a means of reshaping humanity's understanding of astronomy and physics. We will start on a journey beginning several centuries earlier, and see how mergers have helped further the development of astronomical optics, altered and remade our basic understanding of physics, and inspired astronomers to see how the Universe in a new light. We will also see what galaxy mergers tell us about the fate of our own Milky Way galaxy and its inevitable march towards our biggest neighbor, the Andromeda galaxy.

Barry Rothberg originally hails from the far-flung reaches of northern New Jersey. He received his undergraduate degree from Tufts University in Massachusetts, and then crossed the continent and an ocean to receive his Ph.D. from the University of Hawaii. Before coming to Tucson to become a staff astronomer at the Large Binocular Telescope Observatory he worked at the Space Telescope Science Institute in Baltimore Maryland, the Naval Research Laboratory in Washington D.C, and the Leibniz Institute for Astrophysics in Potsdam Germany. His passions include photography and extreme observing with astronomical telescopes. He is also currently an affiliate faculty with George Mason University in Virginia.

The November meeting will be held in the Student Union building, Cochise College at 7 pm on Friday November 9.

To reserve your seat at the outback Steak House for dinner with Barry please RSVP to Bill Howard howardwj51@gmail.com Dinner is at 5 pm.

RASC Handbooks and Astronomy Magazine Calendars

The handbooks and calendars are on order. If they arrive in time, they will be distributed at the November meeting.

2019 HAC Officers and Board of Directors

The November meeting is the time for the election of next year's slate of HAC officers.

From the HAC Constitution:

***Section VI: GENERAL ELECTIONS**: The Board of Directors shall be elected at the annual business meeting in November by secret ballot for a term of one year. Absentee ballots will be accepted no later than the time of voting at the annual business meeting. In the event that the election ballot for the Board of Directors has no contested positions a simple show of hands shall be made to approve or disapprove the board as nominated. In the event that the elections are delayed, the incumbents shall continue to serve until their successors are elected. The candidate for each office, or candidates for the election of Members-at-Large, receiving the majority vote for each office are to be declared the winner(s). A majority is one more than half of the votes cast. Newly elected members of the board shall take office on December 1st following their election at the November General Meeting.*

As of this writing, all of the current board members are willing to continue in their roles and no other candidates have yet been identified. If you wish to serve, please contact one of the current officers to get on the ballot.

Current officers include David Roemer (President), Bill Howard (Vice President), Bert Kelher (Secretary), Ted Forte (Treasurer) and members at large Howard Day, Ken Duncan, Gary Grue and Ken Kirchner. The ninth (unelected) member of the board is the Past President (Bob Gent) who is serving in absentia for the duration of David's service as club president.

Eligibility and duties of the officers can be found on the club website https://www.hacastronomy.org under club info / constitution and by-laws.

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

NASA Space Place Partner Article November 2018

November's Dance of the Planets

By Jane Houston Jones and David Prosper

November's crisp autumn skies bring great views of our planetary neighbors. The Moon pairs up with Saturn and Mars in the evenings, and mornings feature eye-catching arrangements with dazzling Venus. Stargazers wanting a challenge can observe a notable opposition by asteroid 3 Juno on the 17th and watch for a few bright Leonid meteors.

Red Mars gleams high in the southern sky after sunset. Saturn sits westward in the constellation Sagittarius. A young crescent Moon passes near Saturn on the 10th and 11th. On the 15th a first quarter Moon skims by Mars, coming within 1 degree of the planet. The red planet receives a new visitor on November 26th, when NASA's InSight mission lands and begins its investigation of the planet's interior. News briefings and commentary will be streamed live at: bit.ly/landsafe

Two bright planets hang low over the western horizon after sunset as November begins: Jupiter and Mercury. They may be hard to see, but binoculars and an unobstructed western horizon will help determined observers spot them right after sunset. Both disappear into the Sun's glare by mid-month.

Early risers are treated to brilliant Venus sparkling in the eastern sky before dawn, easily outshining everything except the Sun and Moon. On November 6th, find a location with clear view of the eastern horizon to spot Venus next to a thin crescent Moon, making a triangle with the bright star Spica. The following mornings watch Venus move up towards Spica, coming within two degrees of the star by the second full week of November. Venus will be up three hours before sunrise by month's end – a huge change in just weeks! Telescopic observers are treated to a large, 61" wide, yet razor-thin crescent at November's beginning, shrinking to 41" across by the end of the month as its crescent waxes.

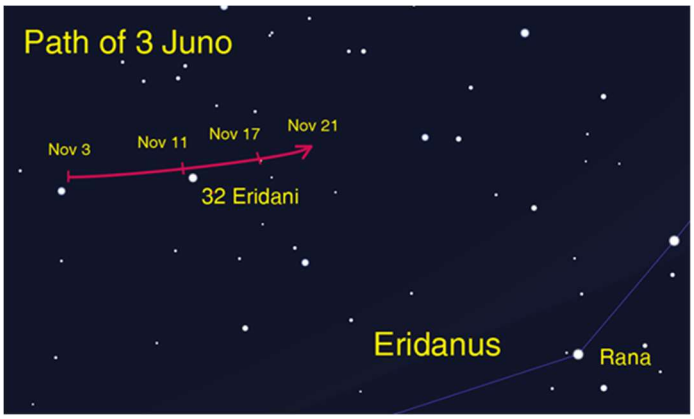
Observers looking for a challenge can hunt asteroid 3 Juno, so named because it was the third asteroid discovered. Juno travels through the constellation Eridanus and rises in the east after sunset. On November 17th, Juno is at opposition and shines at magnitude 7.4, its brightest showing since 1983! Look for Juno near the 4.7 magnitude double star 32 Eridani in the nights leading up to opposition. It is bright enough to spot through binoculars, but still appears as a star-like point of light. If you aren't sure if you have identified Juno, try sketching or photographing its star field, then return to the same area over the next several days to spot its movement.

The Leonids are expected to peak on the night of the 17th through the morning of the 18th. This meteor shower has brought "meteor storms" as recently as 2002, but a storm is not expected this year. All but the brightest meteors will be drowned out by a waxing gibbous Moon.

Stay warm and enjoy this month's dance of the planets!

You can catch up on all of NASA's current and future missions at nasa.gov

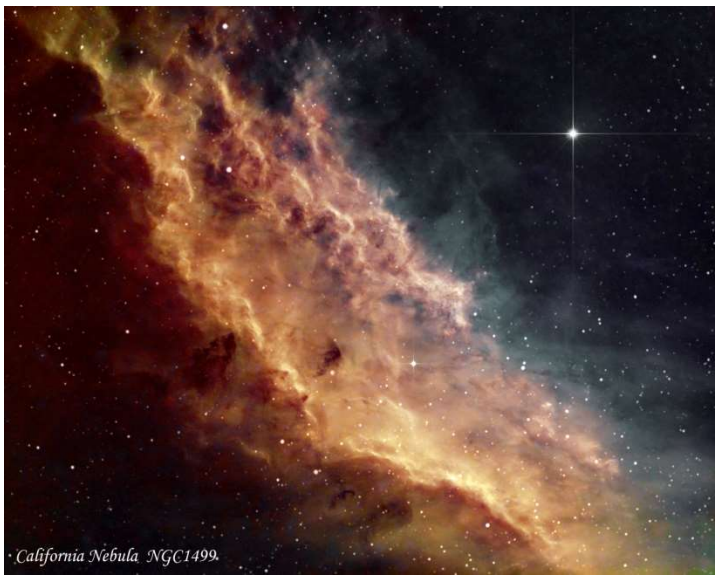
With articles, activities and games NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!



Caption: This finder chart shows the path of the asteroid 3 Juno as it glides past 32 Eridani in November 2018. The asteroid's position is highlighted for selected dates, including its opposition on the 17th. Image created in Stellarium for NASA Night Sky Network.

Pictures from HAC Members

NGC 1499 California Nebula by Richard Pattie



IC1396A Elephant's Trunk Nebula by Richard Pattie

NGC 598 Triangulum Galaxy by David Roemer

Club Officers and Contacts

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Secretary: Bert Kelher
Treasurer: Ted Forte
Past President: Bob Gent

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Farpoint Astronomy http://www.farpointastro.com/
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HAC Nov/Dec Calendar of Events

SU	MO	TU	WE	TH	FR	SA
4	5 Seth Shostak talk: Student Union 7 PM	6 	7 9:02 AM	8	9 HAC Meeting Student Union JCMS 9 AM Patterson Obs	10 Member Star Party at BMO
11 	12	13	14	15 7:54 AM Patterson Public Night 6 PM	16 Leonid Meteors	17 Rune Winnery Star Party Leonid Meteors
18 Leonid Meteors	19 Huachuca Mtn Elem Group 1	20 Huachuca Mtn Elem Group 2	21	22 	23 10:39 PM (Thursday)	24
25	26	27	28 Huachuca Mtn Elem Group 3	29 5:19 PM Huachuca Mtn Elem Group 4	30	Dec 1
2	3	4	5	6	7 12:20AM	8 Member Star Party
9	10	11	12	13 Patterson Public Night 6:00 PM Geminid Meteors	14 Hac Holiday Pot Luck Geminid Meteors	15 4:49 AM Geminid Meteors
16	17	18	19	20	21 Winter Solstice 3:23 PM	22 10:49 AM
23	24	25 	26	27	28	29 2:34 AM
30	31 		2	3	4	

All event times MST. Join Haclist to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: haclist-subscribe@yahoogroups.com