NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

OCTOBER 2022

PRESIDENT'S NOTES:

The first days of Fall, the end of September and the monsoon season is nearly over. However, looking at the long range forecast we are still going to experience moisture and clouds for several more weeks. I am sure all of you are anxious to get out and view the skies without dodging rain or dealing with "sucker holes" in clouds. I applaud those who have ventured out early in the morning or late at night to continue to capture amazing pictures that are shared with the HAC astronomy group.

At September's meeting, Richard Lighthill brought a selection of his pictures on a thumb drive to share at the meeting during our break. It gave him a chance to see his images on a big screen and us a chance to see more of his images. If others would like to do the same, please let Karen Madtes or myself know so that we can make sure we give credit for the background images and sufficient time for members to enjoy them during our meeting refreshment break.

It was wonderful to hear from Dr. Dani Della Giustina, who has been the Deputy Principal Investigator and Image Processing Lead Scientist for NASA's OSIRIS-REx Asteroid Sample Return mission. She highlighted the challenges and new techniques learned from asteroid Bennu and about the next frontier for the Space craft after successfully sending back the samples from asteroid Bennu. The next mission will continue on to sample another asteroid that will be bigger and closer to the earth.

There are many opportunities for Outreach coming up in the next several months. You don't need to have an expertise or a telescope. We are looking for astronomy enthusiasts. We need people to highlight the displays in the Patterson lobby, greet guests, talk about the astronomy club, etc. Many times, we have large groups of students that just need to be directed between one activity and another. A great way to learn astronomy is during outreach events, looking through different telescopes and listening to members talk to students. We encourage all members to join in our outreach activities.

Welcome our new member

Kal Mannis of Sierra Vista joined in September. Kal is Senior Director of Rural Community Projects - Arizona Science Center. Welcome Kal! We are glad you joined.

At the October Meeting

The October meeting of the Huachuca Astronomy Club will be held on Friday, October 7, at 7 p.m. in room A102, Cochise College Downtown Campus, 2600 E. Wilcox Drive, Sierra Vista.

I am very delighted and impressed with all the data we've been receiving from the JWST, SO many awesome photos!!! Talk about the beauty of creation!!! Impressive! I am really looking forward to Ted's presentation to update us on what is happening with this marvelous tool that has already soared far above all expectations!

Our speaker this month is Ted Forte. Ted is the club treasurer and a NASA Solar System Ambassador. The NASA Solar System Ambassadors program is a public engagement effort that works with motivated volunteers across the nation to communicate the science and excitement of NASA's space exploration missions and discoveries with the people in their communities. He will be talking about his favorite space mission, the James Webb Space Telescope. His talk is titled "The Science of Webb"

November Meeting Preview

For our November HAC meeting we will be hosting Grant Williams, Astronomer, Steward Observatory and Director of MMT Observatory.

Grant Williams is an astronomer on the faculty at the University of Arizona and the current Director of the MMT Observatory. He grew up in rural central NY near the Adirondack Park where the night skies are very dark. He earned a Bachelor's degree in Physics from the University at Buffalo in 1994 and a PhD from Clemson University in 2000. As the Director

of the MMT Observatory, he is responsible for the safe and efficient operation of the 6.5-m MMT Telescope, a joint venture of the University of Arizona and the Smithsonian Astrophysical Observatory. His research focuses on studying the three-dimensional nature of massive stars before and after they explode with the goal of improving our understanding of the characteristics and importance of asymmetries in supernova explosions. He searches for signatures of aspherical stars and supernovae using a technique called spectropolarimetry. He also has a strong interest in instrumentation, observatory operations, and site protection.

Dine Under the Stars

The 20th Dine Under the Stars scholarship fundraiser will be held on the Sierra Vista campus of the University of Arizona from 6 to 9 p.m. on Saturday November 5 by the University South Foundation. Proceeds from Dine Under the Stars goes to fund scholarships for University of Arizona students attending classes in Sierra Vista or Douglas and residing in Cochise County.

The University South Foundation is the owner of the Patterson Observatory. Your purchase of a Dine Under the Stars ticket supports the foundation and the HAC members that serve on the foundation's board of directors. Our continued relationship with the foundation ensures our continued access to the observatory.

Adult tickets are $60 and will be on sale at the October meeting. Make checks payable to "University South Foundation". The event features dinner by Texas Roadhouse and Mimosa Pizzeria, music by Desert Fever, a silent auction, a 50/50 raffle, door prizes, stargazing and more.

We also need astronomer volunteers to man the observatory during the event.

October 1 Events

Saturday October 1, is both National Astronomy Day and International Observe the Moon Night! We will have two events: We will celebrate Astronomy Day at the library with solar viewing from10 a.m. to noon. (Anyone who wants can stay until the library closes at 4 p.m.)

That evening we will open the Patterson Observatory at 6 p.m. to celebrate our natural satellite. We will be open until at least 8 p.m., weather permitting, to view the moon.

Two Events at Kartchner this month

On Saturday October 15, we will conduct a solar observing event at Kartchner Caverns State Park from 9 a.m. to 5 p.m.in celebration of Cave Fest. We may set up at 8 a.m. The park entrance fee will be waived for astronomers with telescopes.

On Saturday October 22 we will hold the Kartchner Star Party. You can come for solar viewing or stargazing or both. We will start the solar portion about noon. There will be a talk in the Discovery Center theater by Dr Michael Nolan of the University of Arizona's Lunar and Planetary Lab at 5:30 pm. He will give a talk on OSIRIS APEX, the follow-on mission to the asteroid Apophis of the OSIRIS Rex asteroid sample return mission. Weather permitting, there will be stargazing after dark until about 9 p.m.

October events at the Patterson Observatory

October 8 is Solar Saturday at the Patterson Observatory. We will conduct solar viewing from 9 a.m. until 11 a.m. Please come by and bring a solar scope if you have one.

Thursday, October 27 is our regularly scheduled Public Night at Patterson. Doors open to the public at 6:30 p.m. Guests need to register at www.universitysouthfoundation.com/patterson-observatory. HAC members do not need to register and all are invited. In the event of cloudy skies, cancelation will be announced on the HACAstro group and on a recorded message available at 520-458-8278 extension 2214

In addition, we have a number of school groups coming to the observatory in October and more requests come in all the time. We welcome any HAC member that can come share their telescopes and their enthusiasm. You don't need to be an expert; you just need to be willing to donate your time. Watch the HACAstro group for updates on the schedule. You can always check the schedule by visiting the calendar on the HACAstro group: https://hacastro.groups.io/g/main/calendar If you are not a member of the HacAstro group, you can join by sending an email to main+subscribe@HACAstro.groups.io

The Patterson Observatory is located on the campus of the University of Arizona, Sierra Vista at 1140 N Colombo Avenue (Behind Cochise College).

Dues for 2023

Most HAC memberships expire in December. It's never too early to pay your annual dues for 2023. Dues remain $35 Family and $25 Individual ($25 and $20 for active-duty military). Students with valid student ID pay just $10. You can pay at the October meeting by cash or check. Make checks payable to Huachuca Astronomy Club.

To pay your dues online using your credit card or Pay Pal account, visit www.hacastronomy.org and pull down the Join menu. You can also mail your dues to PO Box 922, Sierra Vista 85636.

If you have a Pay Pal account, you can use PayPal Direct to send your payment to paypal@hacastronomy.org

If you have a Zelle account with your bank, you can make a dues payment by transferring funds to twforte@powerc.net

2023 Calendars

HAC members are entitled to 50% off on Astronomy Magazine's Deep Space Mystery Calendars. Members can just go online and get their discount by visiting

MyScienceShop.com/ASYClubs and using the code CAL50 at checkout.

2023 RASC Handbooks

We will NOT be ordering the Royal Astronomical Society of Canada Observers Handbooks this year. They no longer offer group discounts. You can purchase a RASC handbook from various online sources including the Astronomical League's on-line store.

Call for HAC Board Candidates

Have you ever wanted to get something going in HAC but felt that you did not have the voice to do it? Now is the time to discover your voice for making your ideas happen. HAC is looking for members with a commitment to supporting the club thru service.

Nominations for the 2023 board of directors will be accepted at the October meeting. It is perfectly acceptable to self-nominate. The HAC board of directors consists of President, Vice President, Secretary, Treasurer and four, member at large seats. A "Past President" is also part of the board but that is an unelected seat determined by formula. All positions on the board are open and we welcome multiple candidates.

If you are interested in serving or know of someone who might be interested, please contact one of the board officers or send the information to HACboard@groups.io for them to follow up.

We are specifically looking for candidates for:

Secretary- The Secretary keeps the minutes of all meetings of the Club. [Note: For the past several years all of our club business has been handled via e-mail. There is no expectation for this process to change in the coming year.] The Secretary is responsible for all correspondence, and keeps copies of all correspondence. The Secretary is responsible for the balloting at the annual election of officers. Also, in the event the Vice President is unable to fulfill his duties, the Secretary assumes the duties of the Vice President.

Facebook Editor - The Facebook editor is not required to be an officer or member of the board. The Facebook editor is responsible for keeping current the HAC Facebook page by accessing and updating the HAC Facebook page on a regular basis.

A complete slate of board candidates will be published in the November Nightfall Newsletter. The Election will be held at the November Member meeting. 2023's officers will be elected by popular vote (or by affirmation in the event of uncontested seats) at the November meeting. You must be present at the November 4 general meeting to cast your vote.

The new board officers take office Dec 1.

Farewell to Howard Day, Member-at-large

Howard Day, member-at-large, for the past several years resigned his position effective Sept 9 following the death of his wife Barb. He is in the process of moving to Northern California to be closer to his children and grandchildren.

HAC will miss Howard and his wife Barb who have been outreach volunteers for many years.

With his move Howard has donated 3 telescopes to HAC: a 13" Coulter Dobson, Celestron C102 HD refractor on a German equatorial mount and an Orion Astroview 120ST EQ refractor on a German equatorial mount which are now at the Patterson for use during our outreach programs.

Welcome Member-at-Large, Vince Sempronio

Vince Sempronio has volunteered to serve the remaining months of Howard Day's member-at-large term. The board accepted Howard's resignation and approved Vince to serve the remainder of the term per the HAC By-laws. We welcome Vince and believe he will be a good addition to the HAC board.

In Vince's own words: "Found my love for astronomy in the mountains of Northern California. Spent most of my adult life in the Washington, DC area and am once again enjoying dark skies here in Southeast Arizona.

I made a career in IT, but astronomy is my first love. Some choose visual, some imaging, but I find asteroid science the most rewarding."

Astronomy Outreach

In September, we have had hints that the monsoon season is nearly over with our first public night of the season and our first Solar Saturday. The exciting thing about our Solar Saturday besides having great views of the prominences on

the sun was that the guests found us thru the Chamber of Commerce events page and Trip Advisor. Members David Roemer and Nancy Hannaford, Bert Kelher, Thomas and Penny Brondum plus Ted Forte manned telescopes.

In addition, we had our first school outreach with the Arizona Arts Academy. The notes back from our guests were all positive about the interaction with the astronomers, the knowledge gained and the unique experience. Thankfully we did have clear skies and balmy temps. There were over 20 students and parents supported by HAC members Thomas and Penny Brondum, Vince Sempronio, Ted Forte and new member Pat Birck.

Steward Observatory's Legacy

by Dwight Hoxie

A long time ago in the desert of southern Arizona there came to be an observatory funded by a bequest from Lavinia Steward of Oracle, AZ.

The observatory was destined to house a 36-inch reflecting telescope by which to view the cosmos. In those primitive days of astronomical instrumentation (circa 1920), the telescope was fitted with an auxiliary "finder" telescope to aid in finding the objects to be observed. The finder telescope on the 36-inch was a 5-inch refractor painted bright red.

Time passed, astronomy advanced and the 36-inch was dismantled and moved to the top of Kitt Peak. Beneath its veneer of red paint, the finder telescope was found to be made of brass and bore the inscription below:

The finder 'scope was a 5-inch Clark refractor made in 1888 by Alvin Clark and Sons, the world's premier manufacturer of astronomical telescopes in the late 19th century. Clark refractors include the 40-inch at Yerkes Observatory, the 36-inch at Lick Observatory and the 24-inch at Lowell Observatory.

The University of Arizona's 5-inch Clark refractor is now housed in commemoration of itself in the Steward Observatory's original building on the Tucson campus. A few years ago, I had the opportunity to visit and photograph this classical example of astronomical history.

I don't know of any discoveries made with the Steward Observatory 36-inch telescope. We graduate students used it for classroom assignments. It was a rather cumbersome beast to use. William (Bill) Hartmann and I used the beast the night of the day President Kennedy was assassinated to fulfill an assignment in Aden Meinel's class on Spectral Classification. Bill is a planetary scientist of some renown who was a leader in the downgrading of Pluto from "planet" to "dwarf planet."

NASA Night Sky Notes September 2022

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!

Fomalhaut: Not So Lonely After All

David Prosper

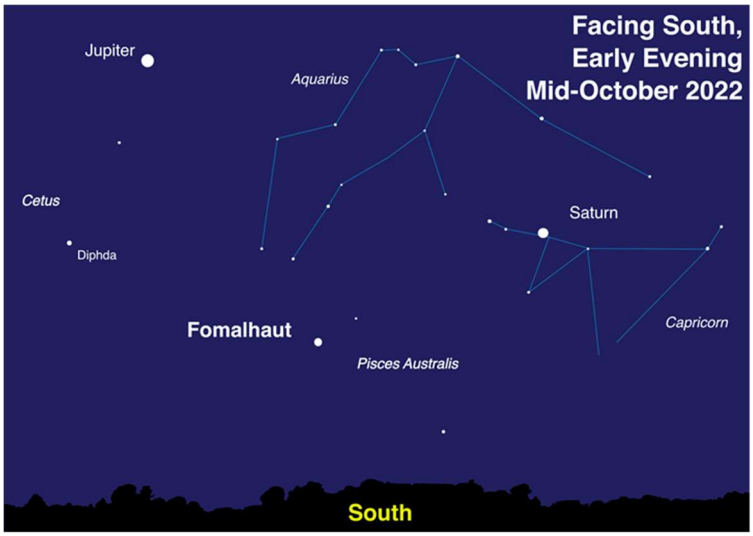
Fall evenings bring a prominent visitor to southern skies for Northern Hemisphere observers: the bright star Fomalhaut! Sometimes called "The Autumn Star," Fomalhaut appears unusually distant from other bright stars in its section of sky, leading to its other nickname: "The Loneliest Star." Since this star appears so low and lonely over the horizon for many observers, is so bright, and often wildly twinkles from atmospheric turbulence, Fomalhaut's brief but bright seasonal appearance often inspires a few startled UFO reports. While definitely out of this world – Fomalhaut is about 25 light years distant from us – it has been extensively studied and is a fascinating, and very identified, stellar object.

Fomalhaut appears solitary, but it does in fact have company. Fomalhaut's entourage includes two stellar companions, both of which keep their distance but are still gravitationally bound. Fomalhaut B (aka TW Piscis Austrini, not to be confused with former planetary candidate Fomalhaut b*), is an orange dwarf star almost a light year distant from its parent star (Fomalhaut A), and Fomalhaut C (aka LP 876-10), a red dwarf star located a little over 3 light years from Fomalhaut A! Surprisingly far from its parent star – even from our view on Earth, Fomalhaut C lies in the constellation Aquarius, while Fomalhaut A and B lie in Piscis Australis, another constellation! – studies of Fomalhaut C confirm it as the third stellar member of the Fomalhaut system, its immense distance still within Fomalhaut A's gravitational influence. So, while not truly "lonely," Fomalhaut A's companions do keep their distance.

Fomalhaut's most famous feature is a massive and complex disc of debris spanning many billions of miles in diameter. This disc was first detected by NASA's IRAS space telescope in the 1980s, and first imaged in visible light by Hubble in 2004. Studies by additional advanced telescopes, based both on Earth's surface and in space, show the debris around Fomalhaut to be differentiated into several "rings" or "belts" of different sizes and types of materials. Complicating matters further, the disc is not centered on the star itself, but on a point approximately 1.4 billion miles away, or half a billion miles further from Fomalhaut than Saturn is from our own Sun! In the mid-2000s a candidate planetary body was imaged by Hubble and named Fomalhaut b. However, Fomalhaut b was observed to slowly fade over multiple years of observations, and its trajectory appeared to take it out of the system, which is curious behavior for a planet. Scientists now suspect that Hubble observed the shattered debris of a recent violent collision between two 125-mile wide bodies, their impact driving the remains of the now decidedly non-planetary Fomalhaut b out of the system! Interestingly enough, Fomalhaut A isn't the only star in its system to host a dusty disc; Fomalhaut C also hosts a disc, detected by the Herschel Space Observatory in 2013. Despite their distance, the two stars may be exchanging material between their discs - including comets! Their co-mingling may help to explain the elliptical nature of both of the stars' debris discs. The odd one out, Fomalhaut B does not possess a debris disc of its own, but may host at least one suspected planet.

While Hubble imaged the infamous "imposter planet" of Fomalhaut b, very few planets have been directly imaged by powerful telescopes, but NASA's James Webb Space Telescope will soon change that. In fact, Webb will be imaging Fomalhaut and its famous disc in the near future, and its tremendous power is sure to tease out more amazing discoveries from its dusty grains. You can learn about the latest discoveries from Webb and NASA's other amazing missions at nasa.gov.

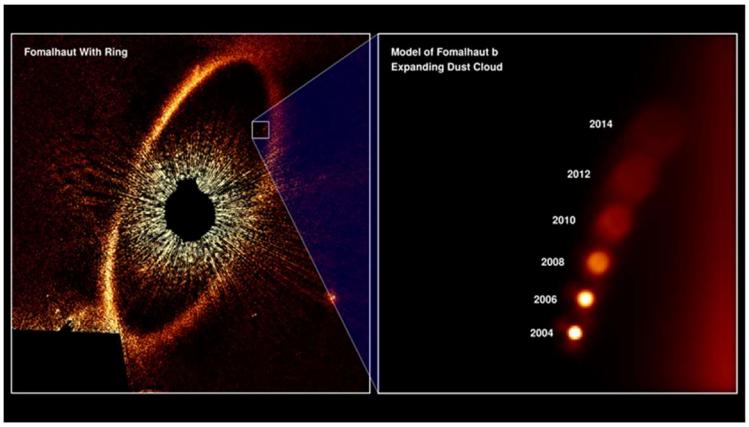
*Astronomers use capital letters to label companion stars, while lowercase letters are used to label planets.



Sky map of the southern facing sky for mid-latitude Northern Hemisphere observers. With Fomalhaut lying so low for many observers, its fellow member stars in the constellation Piscis Australis won't be easily visible for many without aid due to a combination of light pollution and atmospheric extinction (thick air dimming the light from the stars). Fomalhaut is by far the brightest star in its constellation, and

is one of the brightest stars in the night sky. While the dim constellations of Aquarius and Capricorn may also not be visible to many without aid, they are outlined here. While known as the “Loneliest Star,” you can see that Fomalhaut has two relatively close and bright visitors this year: Jupiter and Saturn!

Illustration created with assistance from Stellarium

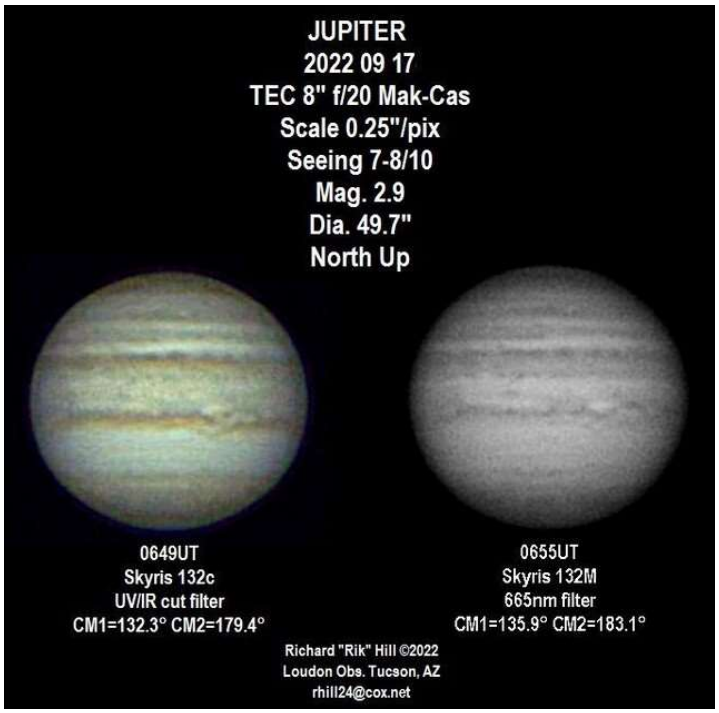


The magnificent and complex dust disc of the Fomalhaut system (left) with the path and dissolution of former planetary candidate Fomalhaut b displayed in detail (right).

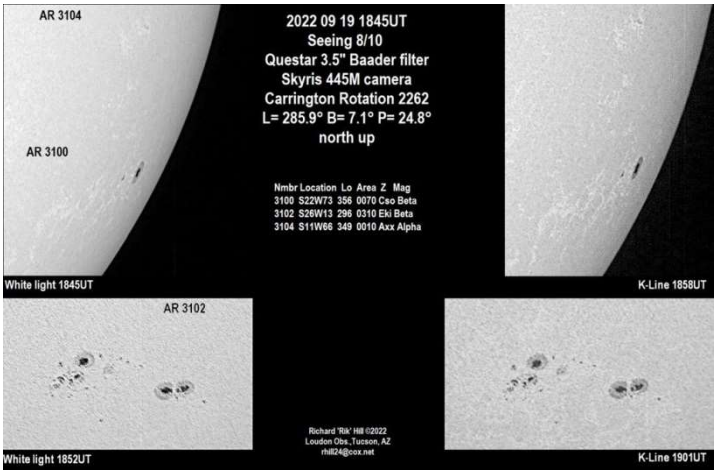
Image credits: NASA, ESA, and A. Gáspár and G. Rieke (University of Arizona) Source: https://www.nasa.gov/feature/goddard/2020/exoplanet-apparently-disappears-in-latest-hubble-observations

Pictures from HACASTRO

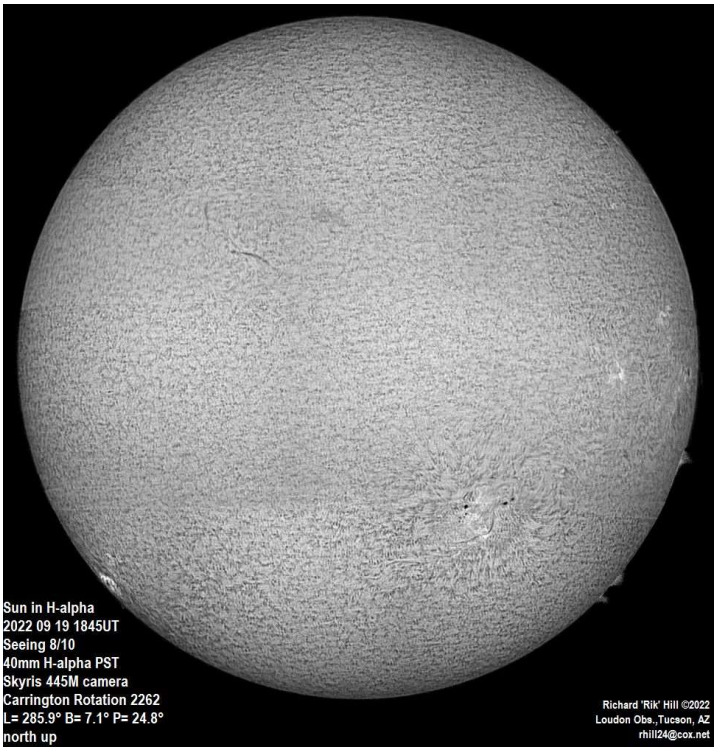
Jupiter by Rik Hill



Sunspots by Rik Hill



Sun in H-Alpha by Rik Hill



To the Moon and Beyond by Richard Lighthill

M8 Lagoon Nebula by Richard Lighthill

M8 and M20 by Mark Orvek

Milky Way by Mark Orvek

Club Officers and Contacts

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HAC Oct Nov 2022 Calendar of Events

SU	MO	TU	WE	TH	FR	SA
25 SEP 1:54PM	**26** Jupiter at Opposition	**27**	**28**	**29** Patterson Public Night 6:30PM	**30**	**1 OCT** Astronomy Day at the Library 10am Observe the Moon at Patterson 6pm
2 5:14PM	**3**	**4**	**5**	**6**	**7** HAC Meeting 7PM Room A102	**8** Solar Saturday at Patterson 9am
9 1:55PM	**10** 	**11**	**12**	**13**	**14** Physics students at Patterson 6:30PM	**15** Cave Fest at Kartchner 9AM to 5PM
16	**17** 10:15AM Home schoolers at Patterson 1:30PM	**18**	**19**	**20**	**21** Orionid meteors	**22** Kartchner Star Party Noon to 9 PM Orionid meteors
23	**24**	**25** 3:49AM	**26**	**27** Patterson Public Night 6:30PM	**28** Home school teens at Patterson 5:30PM	**29**
30	**31** 11:37PM	**1 Nov**	**2**	**3**	**4**	**5** Dine Under the Stars 6-9PM
6 Daylight Savings Time Ends	**7**	**8** 4:02AM Total Lunar Eclipse Election Day	**9**	**10**	**11** Home Schoolers at Patterson 10am **Veterans Day**	**12** Solar Saturday at Patterson 9-11 AM
13	**14**	**15**	**16** 6:27 AM	**17** Leonid Meteors	**18** Adaptive Adult Rec at Patterson 6pm Leonid Meteors	**19**
20	**21**	**22**	**23** 3:57PM	**24** 	**25**	

All times local MST
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Send an email to: HACAstro+subscribe@groups.io