Huachuca Astronomy Club of Southeastern Arizona

NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

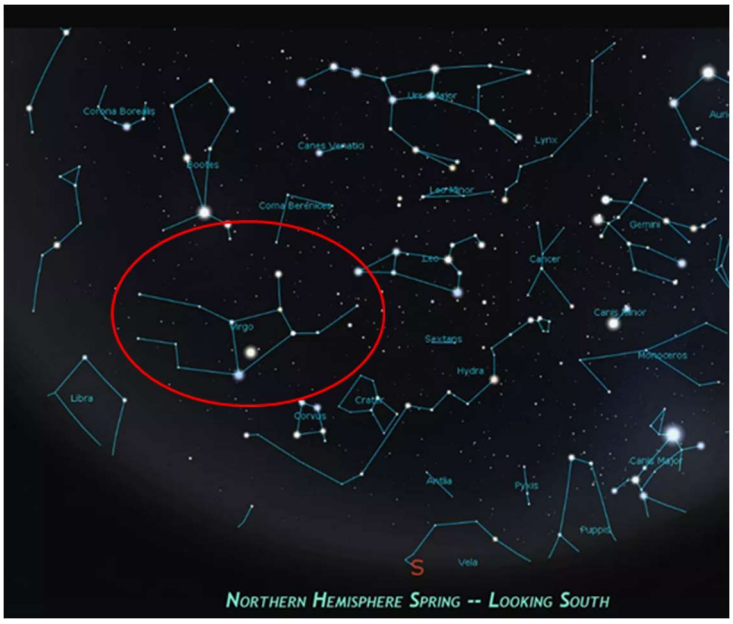
MAY 2023

MAY 2023 PRESIDENT'S NOTE

President's Note;

The last several months of my president's notes have been focused on little seen constellations in the night sky. This month looks at a constellation that challenges you to spend time to discover all of its wonders

The constellation is Virgo also known as the Maiden. Its name means "virgin" in Latin. Virgo belongs to the Zodiac family of constellations and was first catalogued by the Greek astronomer Ptolemy in the 2nd century. The Virgo constellation lies in the southern sky. It contains Spica, one of the brightest stars in the night sky. It also contains the autumnal equinox point, which lies close to the star Beta Virginis. This is one of the two points in the sky (the other being in the constellation Pisces) where the celestial equator intersects with the ecliptic.



The constellation Virgo is usually associated with the Greek goddess of justice, Dike. Dike was the daughter of Zeus and Greek Titaness Themis. Virgo is usually depicted with angel-like wings, with an ear of wheat in her left hand, marked by the bright star Spica. She is located next to Libra, the constellation representing the scales of justice. Dike was also sometimes known as Astraeia, daughter of Astraeus, considered father of the stars, and Eos, goddess of the dawn.

In the Babylonian MUL.APIN (c. 10th century BC), part of this constellation was known as "The Furrow", representing the goddess Shala and her ear of grain. Historians Eratosthenes and Hyginus associated the constellation Virgo with Tyche, the goddess of fortune. In other stories, the constellation Virgo is identified with Demeter, the corn goddess Atargatis, the Syrian goddess of fertility, and Erigone, the daughter of Icarius, who hanged herself after her father's death. During the Middle Ages, Virgo sometimes was associated with the Blessed Virgin Mary.

The constellation Virgo has 20 stars with known planets, more than any other constellation. The brightest star in the constellation is Spica, with an apparent magnitude of 0.98 and the 15th brightest star in the sky. Spica is approximately 260 light years distant from our solar system and about 12,100 times brighter than the Sun. The easiest way to find Spica in the sky is to follow the arc of the Big Dipper's handle to Arcturus in the constellation Boötes and continue along the same line to Spica.

The name Spica, which marks the ear of grain held by the goddess, means exactly that, "the ear of grain" in Latin Spica was most likely the star that helped the Greek astronomer and mathematician Hipparchus discover precession of the equinoxes in 127 BC. Nicolaus Copernicus, who was the first to propose a comprehensive heliocentric cosmology, displacing the Earth from the center of the universe, also made numerous observations of Spica while researching precession.

Virgo is the second largest constellation in the sky occupying an area of 1294 square degrees. The only constellation larger in size is Hydra. Notable deep sky objects in Virgo include eleven Messier objects (which are all galaxies): Messier 49 (NGC 4472), Messier 58 (NGC 4579), Messier 59 (NGC 4621), Messier 60 (NGC 4649), Messier 61 (NGC 4303), Messier 84 (NGC 4374), Messier 86 (NGC 4406), Messier 87 (NGC 4486), Messier 89 (NGC 4552), Messier 90 (NGC 4569) and Messier 104 (NGC 4594, Sombrero Galaxy) and the quasar 3C 273. There are major and minor meteor

showers associated Virgo called the Virginids with the Mu Virginids currently occurring (Apr 1 – May 12).

The Virgo Cluster (jokingly called the “Clutter”) contains about 1300 galaxies, possibly even up to 2000. The “Virgo Cluster” is so large that it spans across the constellations Virgo and Coma Berenices. The cluster’s center is located approximately 53.8 million light years away from the solar system. The brightest galaxies were for the most part discovered in the late 18th and early 19th century and can be found in Messier’s catalogue, described as nebulae without stars. The Virgo Cluster is at the center of the “Virgo Supercluster”, a larger cluster of galaxies that also contains the Local Group, which in turn includes the Andromeda Galaxy and our Milky Way.

Now that the we have a break in the clouds and warming temperatures, I hope that you are getting out and viewing the night sky and will take the opportunity to spend time scrolling thru the clutter of the Virgo cluster. Virgo is Right Ascension: 13 hours, Declination: 0 degrees, visible between latitudes 80 and minus 80 degrees and best seen in May at 9 p.m.

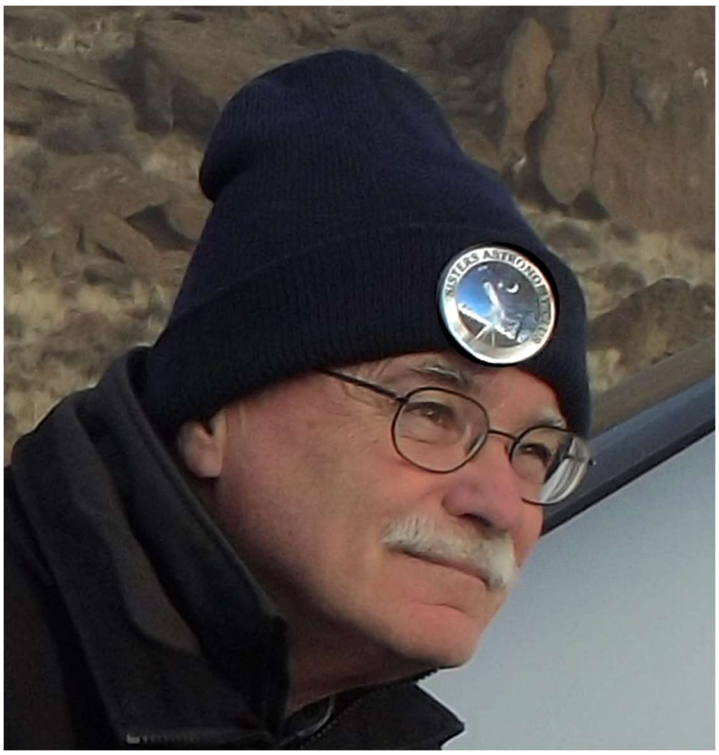
Fun Facts:

Globular Clusters outline the extent of the galactic Halo around the center of the Milky Way, though there are some beyond it The Milky Way has more than 150 Globular clusters from 10 to 300 light-years across. The Omega Centauri Cluster, a globular cluster the Ptolemy cataloged, is the brightest, largest and most massive in the galaxy with tens of millions of stars. Every galaxy of sufficient mass in the Local Group has an associated system of globular clusters, as does almost every large galaxy. Some giant elliptical galaxies (particularly those at the centers of galaxy clusters), such as M 87, have as many as 13,000 globular clusters. Globular clusters form at the same time from a single giant molecular cloud so they have roughly the same age and composition. Globular clusters are generally composed of hundreds of thousands of low-metal, old stars. Most globular clusters remain gravitationally bound together for time periods comparable to the lifespans of most of their stars. The Hubble telescope took measurements every 6 months for 2 years looking specifically at the NGC 6397 globular cluster located in the constellation Ophiuchus and has an age of 13.4 billion one of the oldest “surviving” globular clusters.

Local Group: The Milky Way is part of the “Local Group”. This group measures 5 million light years across and is rather flat shaped. All the galaxies in the Local Group are bound together by mutual gravitational attraction and all are orbiting a common center of gravity. You would have to travel several million light-years outside of the Local Group to get to the nearest galaxies beyond it.

Richard Lighthill - Speaker at the May HAC Meeting

Richard Lighthill is a retired minister who has had an on and off interest in astronomy as a hobby since his middle school years. Growing up in the Apollo program era was key to developing his interest in space. With the 1980 total solar eclipse over Goldendale, WA his interest in astronomy was revitalized. As a professional portrait photographer and owner of his own camera store his focus in astronomy became astrophotography. Prior to the 2017 total solar eclipse he built his own 8x8 roll-off roof observatory which he expanded to 16x8 with two piers. He was an active participant in the Citizen CATE project (with the NSO (https://nso.edu/citizen-cate/) for the total solar eclipse of 2017 from central Oregon in which he provided key data used in the final report on its study of the inner corona of the sun.



An avid amateur astrophotographer, his subject matter ranges from solar & lunar to deep space objects including submitting data and images of the transit of Mercury for the Citizen ToM project (Citizen Science with the Transit of Mercury) to test Sir Edmond Halley’s theory of measuring the distance of the Earth to the Sun using the transit of Mercury.

He has lived in the Sierra Vista area for two years and built another roll-off roof observatory with 2 piers at his current location. He is an active participant in Huachuca Astronomy Club's public outreaches and serves on the HAC board as a member at large and also moderates the HAC Facebook page.

Welcome our new members

Daniel and Xochitl of Sierra Vista joined the club at the Earth Day celebration at Veterans Memorial Park (the Farmer's Market). Amber Kamrowski of Sierra Vista joined at the April Public Night. Richard Spencer of Sierra Vista joined at the Astronomy Day celebration at the library. Jay Leblanc of Sonoita is a returning member. Welcome, we are glad you joined.

Congratulations

Congratulations to Vince Sempronio who has earned the first and second level of the Astronomical League's Outreach Award (Outreach and Stellar Outreach).

On May's Calendar

- May 9: MMT Tour. Sign-up were last month. We have 15 members visiting the observatories on Mt. Hopkins.
- May 11: Solar observing at Carr House, 9am to noon
- May 13: Solar Saturday at Patterson Observatory 9am to 11 am
- May 16: Astro Night at Stevenson Elementary in Douglas 5:30pm to 7:30PM
- May 25: Public Night at the Patterson Observatory 8 pm

Watch the HacAstro group on groups.io for new events or changes to the schedule.

A Thank You to Scott Tillman

Special thanks to Scott Tillman for donating the beautiful coins for raffle prizes and for all the issues of Astronomy and Sky & Telescope magazines at the April meeting. These will be available at the Patterson Observatory on the table in front. I was surprised and happy to see that the April 2023 issue of Astronomy magazine was included :) There were so many good article titles to choose from that you can anticipate good reading for some time to come!

Astronomy Day Report

By Ted Forte

Our Astronomy Day event at the Sierra Vista library on Saturday April 29 wrapped up a busy April in which our outreach volunteers participated in 9 events, contributing about 225 volunteer hours and reaching well over 1,000 people!

The event saw Vince Sempronio, Mike Morrison, Mike Perron, Richard and Denese Lighthill and I set up for a rather long day of solar observing. Penny Brondum (who was otherwise engaged in the foundation's golf tournament fundraiser yesterday) stopped by as well. I counted 144 visitors to the scopes.

Thanks to all who participated yesterday and throughout the month. Your efforts are growing the club, inspiring youngsters, spreading good will, and recruiting allies in the fight to preserve our hobby and our dark skies. By my count, at least 28 HAC members have participated in one or more outreach events this month. That's a great turnout, but there's always room for a lot more of us to get involved with doing outreach. Why not you? It's fun, it's important, and it's rewarding. Try it, you'll like it.

The Bucket List –May 2023

by Vince Sempronio

This column highlights interesting non-seasonal nighttime, and sometimes daytime sky events that the reader may not be aware of and may wish to observe. I'll cover one-off events that are special, rare, or uncommon.

Term of the Month:

This month's term is "syzygy". It is a fancy way to say conjunction or opposition. It is pronounced "SIZ-ə-jee"

According to the "The Astronomical Almanac Online!", it is:

1. A configuration where three or more celestial bodies are positioned approximately in a straight line in space. Often the bodies involved are the Earth, Sun and either the Moon or a planet.

2. The times of the New Moon and Full Moon.

It can refer to any of this type of alignment, even occultations of asteroids where the Earth, an asteroid, and a star are aligned. Usually, the celestial bodies are gravitationally bound, though I wouldn't complain if the term was used when two planets were aligned with a bright star.

You won't be able to use syzygy in Scrabble since the game only has two Ys.

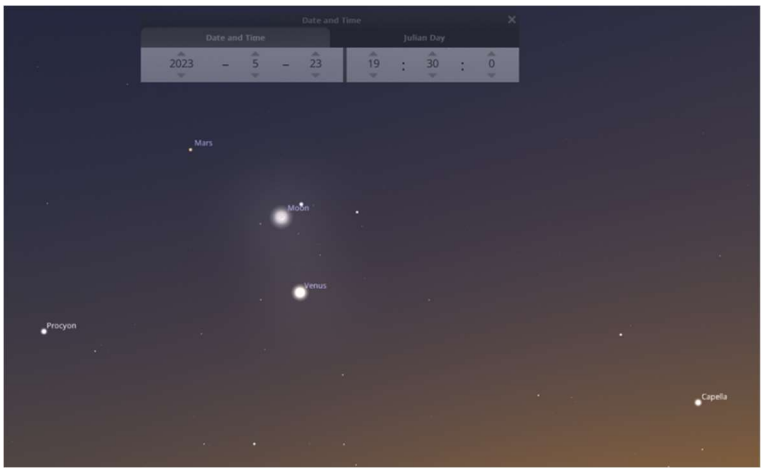
Monthly Events:

On the night of May 1st, the gibbous moon is 3 degrees from Spica (Alpha Virginis). The Moon occasionally occults this bright star, but not this time.

At 5am on May 7th, the fat waxing gibbous Moon will pass 1.5° away from Antares. Antares is another star that the Moon occasionally occults and will do so just after sunset on the night of August 24th. A couple hours earlier on May 7th, the Moon will occult the star Alniyat (Sigma Scorpii at magnitude 3.0). For observers in the Sierra Vista area, the disappearance is near 3am against the bright edge, and reappearance is around 3:37am against the very narrow dark edge. The moon last occulted this star last month on April 23rd, but the event was only visible in parts of Europe and western Asia.

In the wee hours of the morning on May 17th, before 4:30am, the very thin crescent Moon will occult Jupiter. Unfortunately, the disappearance will take place only a couple degrees above the eastern horizon., but the reappearance will occur with the moon much higher. The event also takes place just before sunrise, so overall this is a difficult, but satisfying event.

May 23rd, 7:30pm – A grouping of objects in the evening sky. Mars, Venus, the Moon, and the stars Castor and Pollux form a nice grouping. Procyon is to the left and Capella is to the right.



Trivia Question:

This month's offering comes from a conversation I had with Ted (Forte) last year. The north side of the Patterson Observatory has some clear bricks that allow light to come into the building. If you look at the pattern of the bricks from the outside of the building, they represent a constellation.

When Ted told me this, I went outside and took and look. I drew a blank. So, if you already know the answer, you probably also know the secret handshake, but if you don't, take a look and make your guess.

NASA Night Sky Notes May 2023

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!

How to Choose a First Telescope

A volunteer prepares a Dobsonian telescope with a solar shield to observe a partial eclipse of the Sun in San Francisco on October 23, 2014. Dobsonian telescopes are often the best choice for a first telescope due to their simplicity and ease of setup. Photo Credit: Pablo Nelson/Astronomical Society of the Pacific

A telescope is a great gift for the budding astronomer in your life - or, of course, for yourself! While it may be tempting to go for an ultra-cheap impulse buy spotted while shopping at a local store, or to splurge on a super expensive, deluxe computerized model found online, we urge you to hold off on a major purchase before first doing a bit of research. You might even be able to try out a few potential telescopes with the help of your local astronomy club before making your final decision.

Right off, the best way to start observing the night sky is with your own unaided eyes, the most old-fashioned way to stargaze. The following tips will assume you have been stargazing for a while and want a better peek at the Moon, planets, and stars. A good telescope doesn't work like a video game cheat code that instantly turns you into an expert astronomer, not even with a computerized setup that claims to instantly slew to any one of thousands of targets. You still need to practice your stargazing skills, and a good first telescope or pair of binoculars will help you do just that while expanding your skillset and giving you the confidence to search for more and more celestial sights.

The Moon makes a perfect first target for a new telescope owner. Here, a visitor takes a peek at the FBAC's Astronomy on Wheels Popup Supermoon Watch Party at the San Montego Apartments Photo Credit: Jo Ellen Sutter/Fort Bend Astronomy Club

A first telescope should be easy to use and still be of a high enough quality and power to provide years of use-while not being terribly expensive. Those requirements give a surprising winner for many novice stargazers: a good pair of **binoculars**!

Binoculars, it turns out, are an excellent first instrument for many stargazers due to their ease of use and versatility. Binoculars can be used not just for stargazing but for bird watching and other outdoor activities and can be easily packed away while traveling. Binoculars can easily fit onto carry-on for airline travel, which is an impossible feat for most telescopes. A good pair of binoculars, anywhere from 7x35 to 10x50,will give you great views of the Moon, open star clusters like the Pleiades, the brighter, larger galaxies like Andromeda (from dark skies), large nebula like Orion, and even peeks at Jupiter's moons and some globular clusters once your observing skills improve.

What do those binocular numbers mean? The first number is the magnification, while the second number is the size in millimeters of the lenses. So a 7x35 pair means that these binoculars will magnify 7x, and have lenses 35 mm in diameter. When starting out it is tempting to get the biggest you can find, but try not to get anything much more powerful than a 10x50 pair at first. Larger binoculars with more power often have narrower fields of vision and are heavier. So, while technically more powerful, they are much more difficult to hold steady in your hands and "jiggle" quite a bit-unless you buy binoculars with image stabilization, or mount them to a tripod.

For many objects, binoculars are even the preferred method for viewing them due to their large field of view compared to a telescope. Most telescopes are unable to keep the entirety of the Pleiades or Andromeda Galaxy in their field of view, for instance. Binoculars are also a great investment for more advanced observing, as later on they are useful for spotting objects to observe in more detail with a telescope.

A good pick for a starter telescope retains much of the same requirements as a pair of binoculars: small-ish in size, sturdy, and easy to handle. Many astronomers will recommend avoiding a computerized telescope until you have learned the sky a bit better, as these systems generally require you know the sky fairly well, since their initial setup usually involves their systems pointing to several test stars and asking you to confirm if those are indeed the correct stars, before fine-tuning the focus; these are steps a beginner may find intimidating or confusing.

That's why a small manual telescope often works best for most beginning stargazers- plus you will save quite a bit of money by forgoing electronics. For many, a small reflector telescope on a tabletop or Dobsonian mount (rather than tripod) works out best due to the bare-bones nature of the setup. With a small Dobsonian telescope, you can pick it up, bring it out to your yard, set it down and immediately start observing (though you might want it to cool down a little bit first). Most models in the range of 4.5-8 inches (the size of their light-gathering mirrors) will cost anywhere between $200-$500 and include the telescope tube, the mount or base, a finder scope or red dot finder to help in aiming the telescope, and a couple of good starter eyepieces. An example of a Dobsonian mounted telescope is at the top of this article; they are often compared to "cannons" or "light buckets" because of their appearance. A good recommended size for a first reflecting telescope with this type of mount usually ranges between a 4.5 inch to 8 inch mirror. Those sizes usually give good to great views of the heavens while keeping costs, weight, and size down to easy to manage levels.

A visitor gets a first peek at the Moon at the Chesmont Astronomical Society's InOMN event at Marsh Creek State Park. Photo Credit: Daniel Acker/Chesmont Astronomical Society

The classic "refractor" telescope on a tripod is often what most people think of when a telescope is mentioned-like in the image above. These telescopes use lenses rather than mirrors to gather light, and require very little maintenance compared to reflector type telescopes, which may require a bit of adjustment, or collimation, of their mirrors every now and again. Refractors tend to be larger and more expensive than similarly powerful reflectors, however, and are often aimed at the higher end of the market, and so for many folks would not make a good first telescope simply out of cost or size. However, if you find a good deal on a refractor, it can indeed make an excellent starter scope! Just don't buy a cheap one at a local store advertising amazing magnifications of 600x. Those are, to be honest, bad telescopes-truly a deal too good to be true.

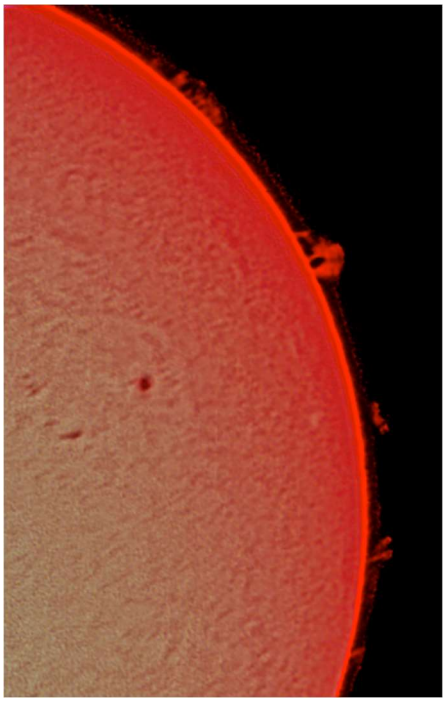
We hope this helps you in your search for a first astronomical instrument! There are many other great guides to finding your first scope or pair of binoculars. Some can be found at the EarthSky, Sky & Telescope, StarDate, Cloudy Nights, and many more. A fair warning: it's easy to get a bit overwhelmed by the wealth of information found in all of the astronomy resources found online!

If you are able to do so real-world advice and experience is still the best for something you will be spending a lot of time with! The best place to go for advice is with your local experts in a nearby astronomy club. You can find a club or star party near you on the Night Sky Network's very own Clubs & Events page. Going to an in-person star party hosted by a local club is a great way to get familiar with telescopes and binoculars. Some clubs and local libraries even have telescope lending programs. Just like with a car, you could take a potential model of telescope out for a "test drive" before deciding to buy.

Pictures from HAC Astro

Moon by Ted Forte

Sun in H-Alpha by Ted Forte

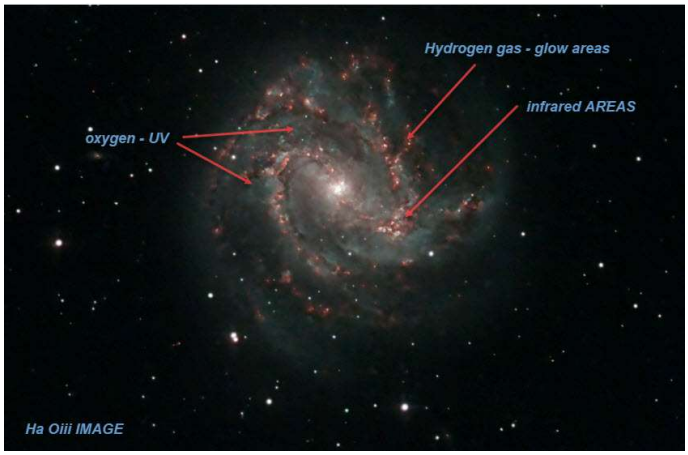


Sun Prominences by Richard Lighthill

NGC 3628 by Richard Lighthill

M101 by Leonard Amburgey

M81 by Leonard Amburgey



M83 by Leonard Amburgey

M83 by Leonard Amburgey

Club Officers and Contacts

President: *Penny Brondum* ***Vice President:*** *Karen Madtes*

Secretary: *Katherine Zellerbach* ***Treasurer:*** *Ted Forte*

Past President: *David Roemer*

Board Members-at-Large

Vince Sempronio *Mark Orvek* *Gary Grue* *Richard Lighthill*

Nightfall Editor: *Cynthia Shomenta* *cindy.jean.lund@gmail.com*

Webmaster: *Ken Kirchner*

Facebook Editor: *Richard Lighthill*

Website: *http://www.hacastronomy.org*

Facebook: *http://www.facebook.com/HuachucaAstronomyClub*

Email: *info@hacastronomy.org*

HAC May-June 2023 Calendar of Events

SU	MO	TU	WE	TH	FR	SA
30	1 May	2	3	4	5 10:34AM HAC Meeting Room A102 7PM Eta Aquarids	6 Eta Aquarid meteors
7 Eta Aquarid meteors	8	9 MMT Tour Mt Hopkins	10	11 Carr House 9AM to noon	12 7:28 AM	13 Solar Saturday 9-11 AM Patterson
14 	15	16 Stevenson Elementary Douglas 5:30P	17 Jupiter/Moon 0.8° Merc/Moon 4°	18	19 8:53 AM	20
21	22	23 Venus/Moon 2°	24 Mars/Moon 4°	25 Patterson Public Night 8:00 PM	26	27 8:22AM
28	29 	30 Venus /Pollux 4°	31	1 June	2 HAC Meeting Room A102 7PM	3 8:42PM
4	5	6	7	8	9 Saturn/Moon 3°	10 12:31PM Solar Saturday 9-11 AM Patterson
11	12	13	14  Jupiter/Moon1.5°	15	16 Mercury/moon 4°	17 9:37PM
18 	19	20	21 Summer Solstice 7:58 AM	22 Patterson Public Night 8:00 PM	23	24
25	26 12:50AM	27	28	29	30	Huachuca Astronomy Club of Southeastern Arizona

All times local MST
Join HacAstro to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: HACAstro+subscribe@groups.io