PAS times

Phoenix Astronomical Society
www.pasaz.org
December 2021
Volume 73 Issue 4

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

David Williams, Ph.D. to Speak Dec 2nd

By David A. Williams, Ph.D., Research Professor at the School of Earth and Space Exploration, Arizona State University

"Rocky, Gassy, Icy, and Dwarf Planets: Exploring the Strange New Worlds of Our Solar System through NASA's Planetary Missions"

Class L, K, or M? Exploring the Strange New Worlds of Our Solar System through NASA's Planetary Missions.

All the Star Trek TV series and movies have visited a wide variety of strange, new worlds, many Earth-like (Class M), but others very different: ice worlds, volcano worlds, gas worlds, and more. How do they compare with the worlds in our own Solar System? Join planetary science professor David Williams, a veteran of many NASA planetary missions, and Deputy Lead for the camera on NASA's upcoming Psyche mission to a metal world, for a discussion of the latest results from our exploration of the Solar System and it's many diverse planets, moons, and asteroids. This presentation will include a look ahead to planetary missions coming in the decade of the 2020s.

Dr. David A. Williams is a Research Professor in the School of Earth and Space Exploration at Arizona State University, Tempe, Arizona. Dr. Williams is the Director of the Ronald Greeley Center for Planetary Studies, a NASA-funded planetary data center at ASU. He is also the Director of the NASA Planetary Aeolian Laboratory, which administers wind tunnels at the Ames Research Center in California. David is currently performing research in volcanology and planetary geology, with a focus on planetary mapping, geochemical, and remote sensing studies. His current research focuses on planetary geologic mapping of bodies across the Solar System, and computer modeling of the physical and geochemical evolution of lava flows in a variety of planetary environments. He was involved with NASA's Magellan Mission to Venus, Galileo Mission to Jupiter, Dawn Mission to asteroid Vesta and dwarf planet Ceres, and ESA's Mars Express orbiter mission. He is a member of the Janus camera team for the ESA Juice mission, and he is currently Deputy Imager Lead and a Co-Investigator on NASA's Psyche Mission, scheduled to launch in 2022. In 2014 David was elected a Fellow of the Geological Society of America, and asteroid 10,461 DAWILLIAMS was named in his honor.

Dr. David Williams.
Photo provided by David Williams.

Nov 4th PAS Meeting with Klaus Brasch

By: Stu Brackney, Pres. PAS

Dr. Klaus Brasch was the guest speaker at our November monthly ZOOM meeting on November 4th.

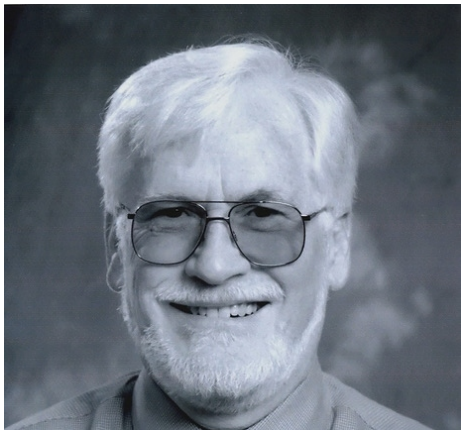
Dr. Brasch's lecture was titled "**The Search for Life in the Universe.**" The search for life in the universe has become a driving force behind much current space exploration, including current and planned missions to Mars, Europa, Enceladus and other bodies in our solar system. A seminal question for humanity, "Are we alone in the cosmos?"

Dr. Brasch entertained us with the history of our cosmos and the various theories of life developing on earth and where it may be found elsewhere.

His thorough presentation, using well structured slides enabled the listener to better understand the theories surrounding the existence of life in our universe. The Q&A session that followed continued to spark our imagination on this topic.

Dr. Brasch earned a Ph.D. at Carleton University in Ottawa, and is now a retired biomedical scientist and volunteer at Lowell Observatory in Flagstaff, AZ. He joined the biology faculty at Queen's University in Kingston, Ontario, where he teamed with noted radio astronomer, Alan Bridle, to offer Canada's first course in astrobiology. In

(See Klaus Brasch Nov 4th on page 3.)



Klaus provided a super presentation at the Nov 4th PAS Virtual Meeting. Photo taken by President Stu.

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Past PAS Recorded Presentations

By Terri Finch, Event Manager

Did you miss a PAS Meeting and wish you could see it? You can get to the link of Past Recorded PAS Meetings with Guest Speakers any time by going to the left hand navigation tool on the PASaz.org website and clicking on "PAS Monthly Meetings." From there a drop down item will appear and please click on "Videos of Speaker Presentations." You will then find recordings of Past PAS Meetings for your viewing pleasure. The collection is in oldest to newest order. Please work your way to the bottom of the collection to find the most recently recorded PAS Guest Speaker Presentation.

As long as PAS can record the PAS Meetings, PAS will continue to add more recordings to this page. Here is the direct link to the recorded PAS Meetings collection: https://www.pasaz.org/pas-monthly-meetings/videos-of-speaker-presentations. Enjoy!

Spring 2022 PAS GUEST SPEAKERS

By Terri Finch, Event Manager
Events@pasaz.org

Due to the Covid-19 pandemic, PAS Meetings are being held via Zoom over the internet. The Zoom link has been added to the calendar listing for that night's meeting and in the Newsletter in the article about the next PAS Meeting. Please visit the PAS calendar at PASaz.org to find out more about these upcoming Meetings and Guest Speakers. If a Meeting will happen In-Person, the Calendar Listing will give you that info. For a complete list of Guest Speakers, visit: https://docs.google.com/document/d/1OO-UpaYNvw3p7JCRXCKSjDcbsK60DnvWOoifbqPrNp8/edit?usp=sharing

Do you have an idea for a guest speaker? Email Paul Facuna VicePresident@pasaz.org the details and contact info for that possible Guest Speaker.

Here are the next scheduled guest speakers at PAS:

V = Virtual Meeting through Zoom

P = In Person at PVCC Main Campus

Jan 20, 2022: TBA

Feb 3: Alex Woronow, "The Stellina Telescope"

Mar 3: TBA

What's Up For December?

By Don K. Boyd, PAStimes Editor

Name	Date	Rise	Set
Mercury	12-15-21	08:15	17:53
Venus	**12/15/21**	**09:42**	**19:44**
Mars	12-15-21	05:43	15:54
Jupiter	**12-15-21**	**11:24**	**22:16**
Saturn	**12-15-21**	**10:30**	**20:52**
Uranus	**12-15-21**	**14:42**	**04:10**
Neptune	**12-15-21**	**12:27**	**00:09**
Pluto	**12-15-21**	**09:43**	**00:09**

All Times Arizona Time

Bold means the object is "visible" in the evening

December 15, 2021

Sunrise: 07:25

Sunset: 17:22

New: December 4

Q1: December 10

Full: December 18

Q3: December 26

Dec 2nd PAS Virtual Meeting

By Terri Finch, Event Manager

Please join PAS in welcoming the return of Dr. David Williams as he enlightens us with this fantastic discussion! Everyone is welcome. PAS is kid friendly. Invite everyone you know to join in this presentation. Doors open virtually at about 7pm, the meeting opens at 7:30pm, and Dr. Williams will begin his presentation after some very brief announcements, about 7:40pm. We would love to have you attend! Here's the link to the Zoom Meeting: https://us02web.zoom.us/j/81512062084?pwd=RmJiR0psRWRuZnR5dHp1eHF5bGNWQT09. ***

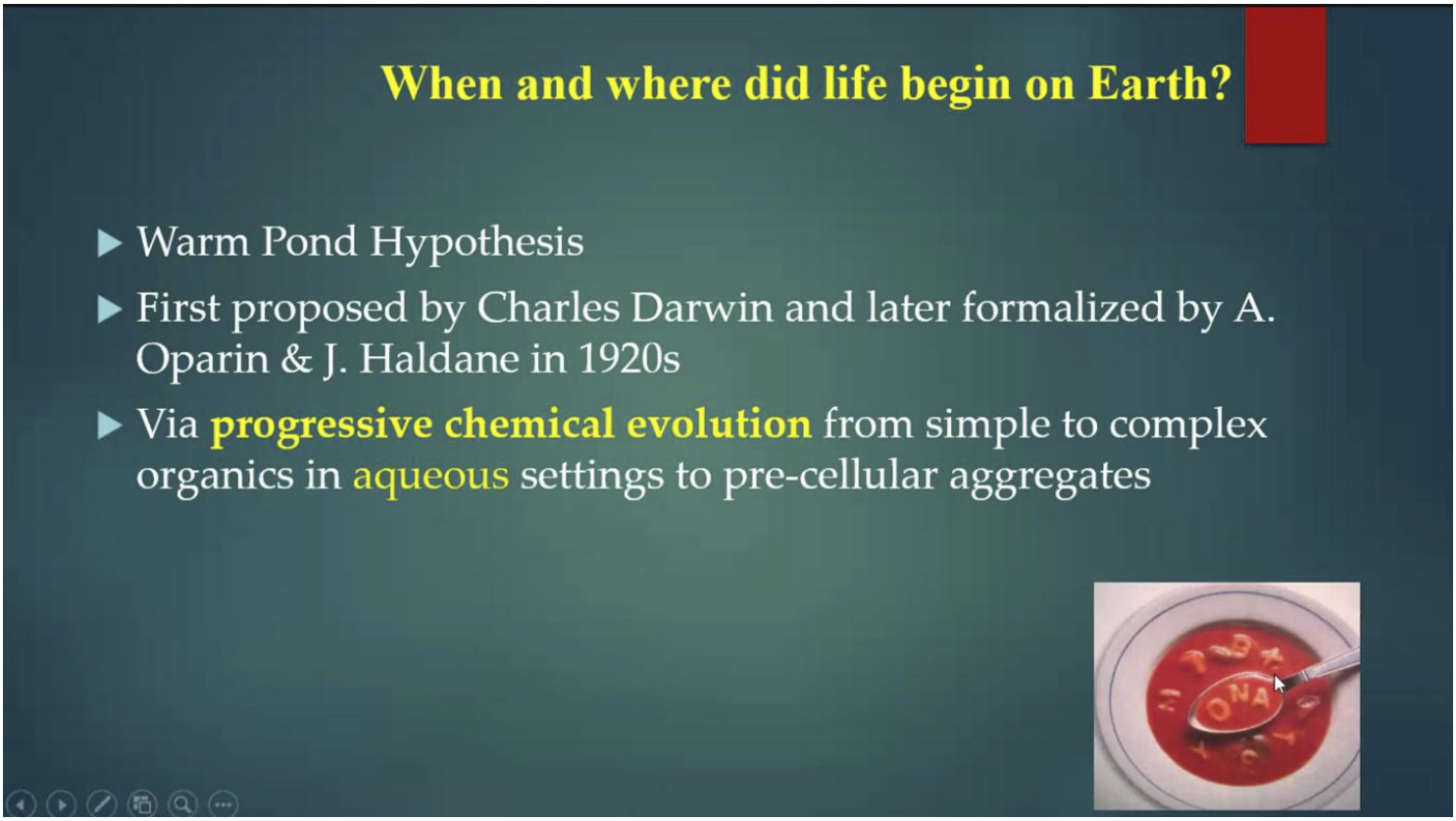
Klaus Brasch Nov 4th Meeting

(Continued from page 1.)

1990 he joined California State University, San Bernardino, where he served as department chair, dean of science and director of campus research.

There were twenty-one attendees at this meeting. We hope to see more attendees at future PAS Meetings. Share the links to our next meetings, and invite everyone you know!

If you missed this lecture, you can view it by visiting our website PASAZ.ORG, PAS monthly Meetings, Videos of Speaker Presentations. Page 2 of this newsletter also has the link to other recorded Zoom presentations. Please enjoy!



"Here Comes the Sun" by Dr. Alex Vrenios

By Terri, Event Manager

PAS appreciates Alex Vrenios. He is a long-time member of PAS and became the first Lifetime member of PAS! He is very active in astronomy and recently fell in love with viewing the sun (safely). The presentation Alex made on August 19, 2021, encapsulated the enthusiasm, research and love Alex has for this topic.

If you missed this meeting, please go visit the Meeting Recordings page of our website www.pasaz.org. You find the past recorded meetings by going to the website, then in the left hand navigation bar you click on "PAS Monthly Meetings" and then a sub-menu will pop up under the meetings as "Videos of Speaker Presentations." Here you can find all the stored past meetings that were recorded during the Covid Pandemic. We hope to continue to record meetings when they are presented virtually, so that anyone who misses a meeting night can go back to this link: https://www.pasaz.org/pas-monthly-meetings/videos-of-speaker-presentations and view them at their convenience as many times as they wish.

Thank you Alex, for an enlightening presentation. I wish to thank everyone who attended this meeting. It is wonderful to have the support and attendance of the PAS members and their guests for our Member presentations.

Alex Vrenios, a long time member of PAS, gave a super lecture on viewing and enjoying the Sun safely. Photo provided by Alex.

PAS Meeting May 20 Mike Marron

By Terri Finch, Event Manager

Mike did a fantastic presentation, very lengthy, informative, and the attendees had tons of questions for Mike at the end. There was a break in the middle of the meeting because of the length of this presentation but Mike just kept going and providing tons of information.

If you missed this meeting or you would like to see the presentation again, please visit the PASaz.org website at this link for your viewing pleasure: https://www.pasaz.org/pas-monthly-meetings/videos-of-speaker-presentations.

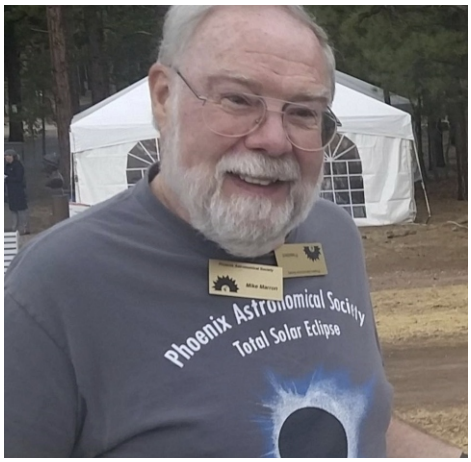


Photo taken by Terri Finch.

Kids Space Camp July 13

By Mark Johnston, Solar System Ambassador

I put on an astronomy presentation for kids at a summer science camp in Chandler called Discoverosity Zone. I spoke to 27 kids from grades 1-5, and included some fun video clips and animations. The kids loved it. One of them solemnly told me afterwards I was the "Grand Master of Astronomy" haha.

Discovery Zone Kids attend Space Camp July 13th with Mark Johnston doing a presentation for them. Mark is now "Grand Master of Astronomy". Photo taken by Mark.

Aug 5th Meeting with Richard Sauerbrun

By Terri, Event Manager & Assistant Editor

"**Automating Your Telescope for Astrophotography**" was the presentation provided by Richard at the August 5th PAS Meeting. It was well planned, informative and very interesting.

If you missed this meeting and would like to see it, there is a recording of it on the PAS website here: https://www.pasaz.org/pas-monthly-meetings/videos-of-speaker-presentations

Many thanks to Richard for doing this wonderful presentation. And thanks to everyone who attended the meeting.

Photo provided by Richard.

Four Seasons Star Party Oct 28

By Mark Johnston, PAS Member

Oct 28 I did a three hour event for PAS at the Four Seasons resort in Scottsdale. I was prepared to provide the full EAA experience but they had limited room and requested just the telescope. Fortunately Jupiter and Saturn were well placed and there were the typical gasps of astonishment at people's first view of Saturn. We were set up beside two large fire pits which created serious air turbulence along with light. Plus there were trees all around so my targeting options were limited but I was able to show M31, the Veil nebula, the double cluster in Perseus, and the globular M15. The participants really enjoyed themselves

The attendees enjoying them selves at Mark's telescope at the Four Seasons Star Party. Photo provided by Mark Johnston.

Place your Astronomy Equipment Ad in this Newsletter

Do you have some astronomy-related items you'd like to sell? Prepare an ad and send it my way so that Don and I can help you sell it through the club newsletter. PAS Members get this service for free. Items you may wish to sell: Books, Star Charts, Telescopes, Eyepieces, Finder Scopes, and more. As long as it is astronomy related, I will happily add it to the newsletter. Please include all items you wish to sell, and what is included with those items. Price them, and provide contact info for the way you wish to be notified, such as email or phone number. I await your submissions to Starstuff@gmail.com.

Ads for items for sale listed in PAStimes Newsletter are written by the seller. PAS is not responsible for the ads and does not guarantee the quality of the items for sale. PAS reminds everyone, you purchase at your own risk, so do your research beforehand.

Ads in PAStimes run for one month and may be renewed on a month-to-month basis, space permitting, as long as the request to run the ad again is submitted by deadline (10th of month). Ads in PAStimes are FREE for PAS members. Non-members are asked to make a small donation to PAS. Non-members may email Terri, Assistant Editor at Starstuff@gmail.com to place their ad and get details on where to send a donation, via check or money order, made out to Phoenix Astronomical Society.

The deadline for the January issue will be Dec. 25th. These items can also be seen with photos on the PASaz.org website here: https://www.pasaz.org/items-for-sale

For Sale: A lot of Astronomy Equipment.
* Asking $1800.00 Takahaski scope
* $250.00 Takahaski Finder Scope #552
* $400.00 Takahaski Extender-Q 1.6x
* $120.00 Takahaski Tube holders of which there are two and a small one
A Starlight 2" Feather Touch Focuser $344.00
B Celestron #94175 Reducer $110.00
C TeleVue 2" Mirror Diagonal DPC- 2002 $120.00
D Meade #918A Diagonal Prism $25.00
E Meade Series 4000 8-24mm Zoom Eyepiece $66.00
F Meade #918A Diagonal Prism $24.00
G Meade Ultra-Wide angle 8.8 $40.00
H Celestron # 93506 1 ¼ Japan $60.00
I Meade #8x50 Finder scope #544 Blue Japan $34.00
J Mack 111 Hyperion Zoom 8-24m $266.00
K Orion 9x50 Right-Angle Image finder $54.00
L ScopeTronix MaxView 40mm Eyepiece $34.00
M Orion Black Right-Angle Correct Image $30.00
N Vixen LV 15mm Lanthanum EyePiece 08626 $36.00
* Celestron Mount with Pelican Case. Also has a Pier made of 1/4" heavy case pipe. The plate is 1/2 inch. Asking $1800.00 for all three.
Contact Marge at lovins50@aol.com to set up a visit to see the items you are interested in. Pick up location will be near McDonald Drive & Granite Reef Rd in Scottsdale.
See ad with photos at this link: https://www.dropbox.com/sh/wwyyi1pfkb11jn9/AABMsoxs-_cvpcagtEhqNnVSa?dl=0

FOR SALE: Meade RCX-400 14-inch telescope. Condition is "like new". Prices listed are the original purchase price – asking price is at end of this Ad:
1. Enhanced diagonal 2-inch Series 5000 ($180)
2. Meade 24mm wide angle eyepiece ($225.00)
3. Meade Model 1220 Field De-Rotator ($600)
4. SBIG ST-7XME CCD Dual Sensor USB Camera with case $2000)
5. Meade manual and other pertinent manuals/software.

Equipment can be seen and picked up from a location in North Scottsdale, Arizona. Prefer not to ship. Local Pickup please.

I will be glad to answer any questions. Total Asking Price for all items listed above is $5,000.00 plus any shipping/packing costs if required. Contact: Richard rjkarizona@cox.net

FOR SALE: $3200.00 MEADE 10" LX200 ADVANCED COMA-FREE CASSEGRAIN TELESCOPE WITH GPS & ACCESSORIES.

Come and see Telescope in Bullhead City, AZ (LOCAL PICK-UP ONLY) PACKAGE DEAL

Contact: Mike, Email: joseph.ascarate@Gmail.com

Leisure World in Mesa Oct 8

By Terri Finch, Event Manager

It was a very cloudy evening. Roger Anzini, Storm Moon, Mike Marron and I met at Leisure World down in Mesa to do an observing event. The forecast said 98% cloud cover all night long during the observing period of 7pm to 9pm. Roger, Storm and I arrived about 5:15pm to set up. According to my weather app, clouds in the west were flowing south to north . Cloud coverage was heave, and for the majority of the event, they were in the way and we could not see the North Star. Roger and I showed the crescent moon and Venus before they set, then Jupiter and Saturn were the highlights. Some people arrived early and came over to look through the scopes before 6pm, and we were done by 8pm. Around 7:30pm, the clouds cleared enough to show Jupiter and Saturn crystal clear.

I wish to thank the Telescope Team for making this a super event! The people at Leisure World were so friendly, interested, and Wow'd by what they saw. It was a very successful and fun event. I also wish to thank our contacts at this event: Karen, Leah and Jamie.

Roger adds: Good Morning Jamie;

Terri, Storm, Mike and I would like to thank you for a wonderful evening of stargazing and meeting tons of new friends. It was great to meet you and your team in person.

The location on the driving range was terrific on that carpet of green grass.

Everyone thanked us for being there and we thanked them all for inviting us.

Thanks for everything, including the parting of the clouds. Best wishes, Roger

Measure the Night Sky

David Prosper

Fall and winter months bring longer nights, and with these earlier evenings, even the youngest astronomers can get star-gazing. One of the handiest things you can teach a new astronomer is how to measure the sky - and if you haven't yet learned yourself, it's easier than you think!

Astronomers measure the sky using degrees, minutes, and seconds as units. These may sound more like terms for measuring time - and that's a good catch! â€“ but today we are focused on measuring angular distance. Degrees are largest, and are each made up of 60 minutes, and each minute is made up of 60 seconds. To start, go outside and imagine yourself in the center of a massive sphere, with yourself at the center, extending out to the stars: appropriately enough, this is called the celestial sphere. A circle contains 360 degrees, so if you have a good view of the horizon all around you, you can slowly spin around exactly once to see what 360 degrees looks like, since you are in effect drawing a circle from inside out, with yourself at the center! Now break up that circle into quarters, starting from due North; each quarter measures 90 degrees, equal to the distance between each cardinal direction! It measures 90 degrees between due North and due East, and a full 180 degrees along the horizon between due North and due South. Now, switch from a horizontal circle to a vertical one, extending above and below your head. Look straight above your head: this point is called the zenith, the highest point in the sky. Now look down toward the horizon; it measures 90 degrees from the zenith to the horizon. You now have some basic measurements for your sky.

Use a combination of your fingers held at arm's length, along with notable objects in the night sky, to make smaller measurements. A full Moon measures about half a degree in width - or 1/2 of your pinky finger, since each pinky measures 1 degree. The three stars of Orion's Belt create a line about 3 degrees long. The famed "Big Dipper" asterism is a great reference for Northern Hemisphere observers, since it's circumpolar and visible all night for many. The Dipper's "Pointer Stars," Dubhe and Merak, have 5.5 degrees between them - roughly three middle fingers wide. The entire asterism stretches 25 degrees from Dubhe to Alkaid - roughly the space between your outstretched thumb and pinky. On the other end of the scale, can you split Mizar and Alcor? They are separated by 12 arc minutes - about 1/5 the width of your pinky.

Keep practicing to build advanced star-hopping skills. How far away is Polaris from the pointer stars of the Big Dipper? Between Spica and Arcturus? Missions like Gaia and Hipparcos measure tiny differences in the angular distance between stars, at an extremely fine level. Precise measurement of the heavens is known as astrometry. Discover more about how we measure the universe, and the missions that do so, at nasa.gov.

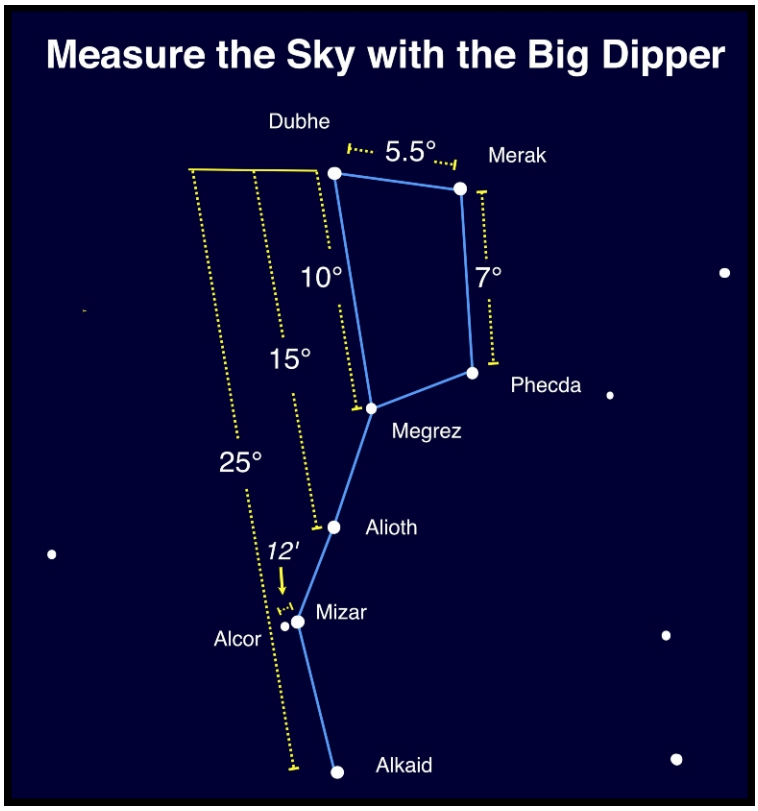
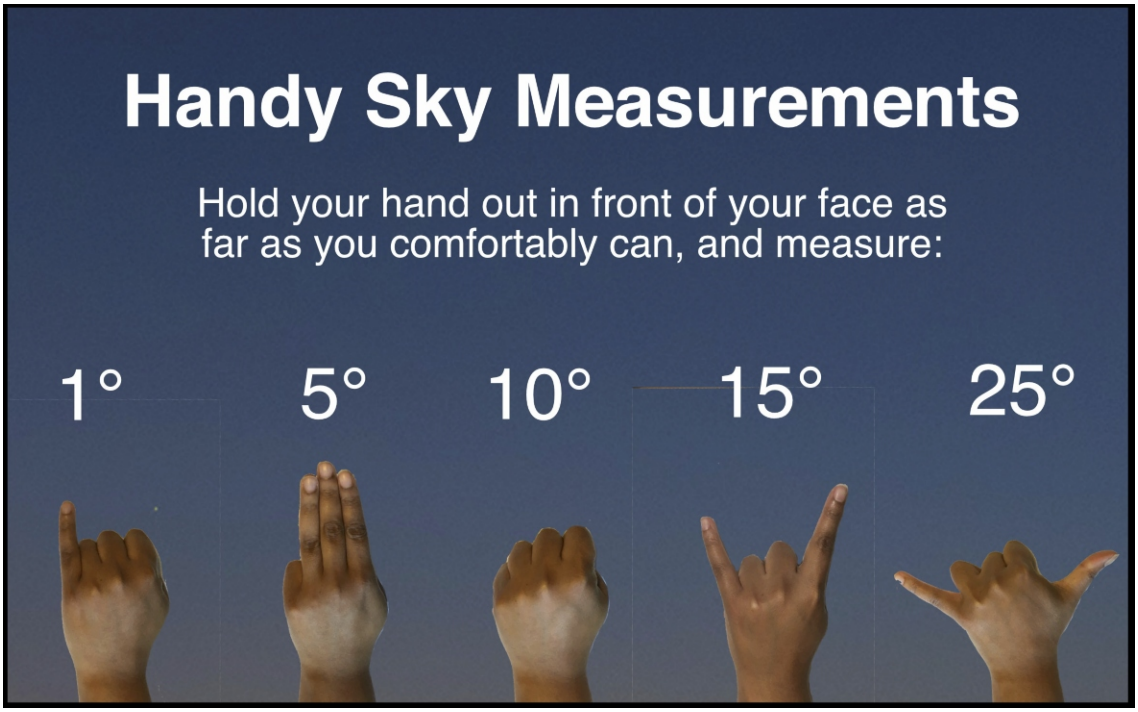


Image created with assistance from Stellarium



The James Webb Space Telescope: Ready for Launch!

Fall and winter months bring longer nights, and with these earlier evenings, even the youngest astronomers can get stargazing. One of the handiest things you can teach a new astronomer is how to measure the sky – and if you haven't yet learned yourself, it's easier than you think!

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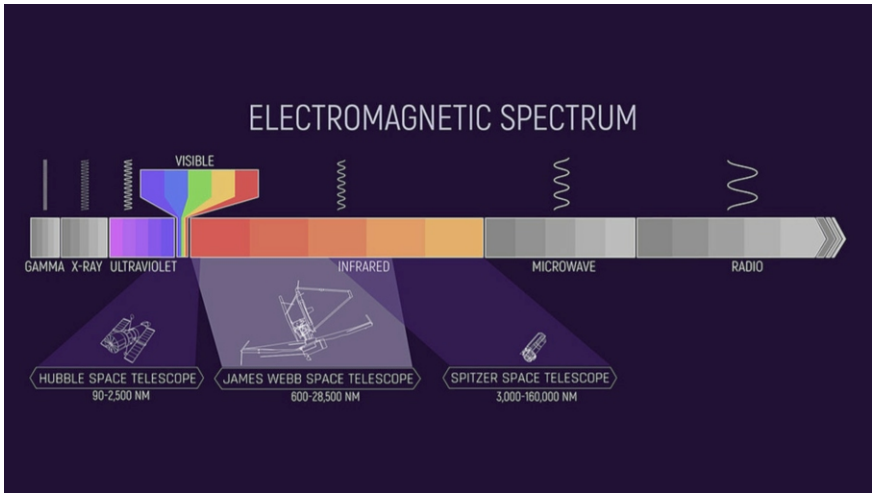
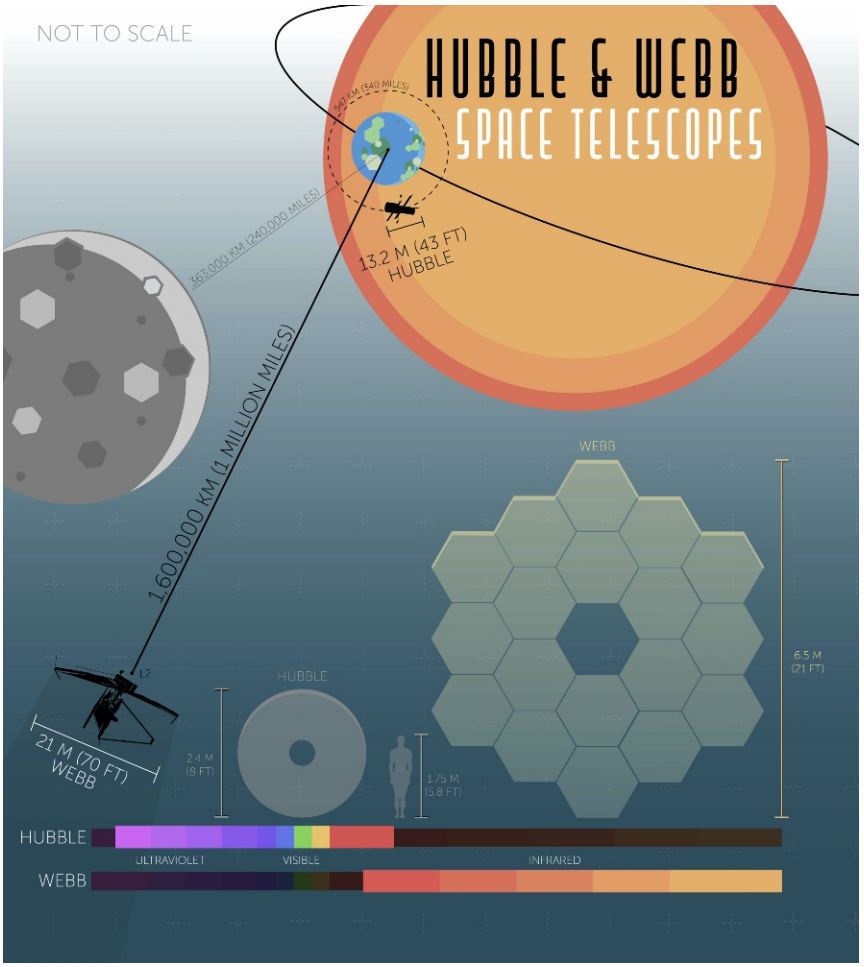
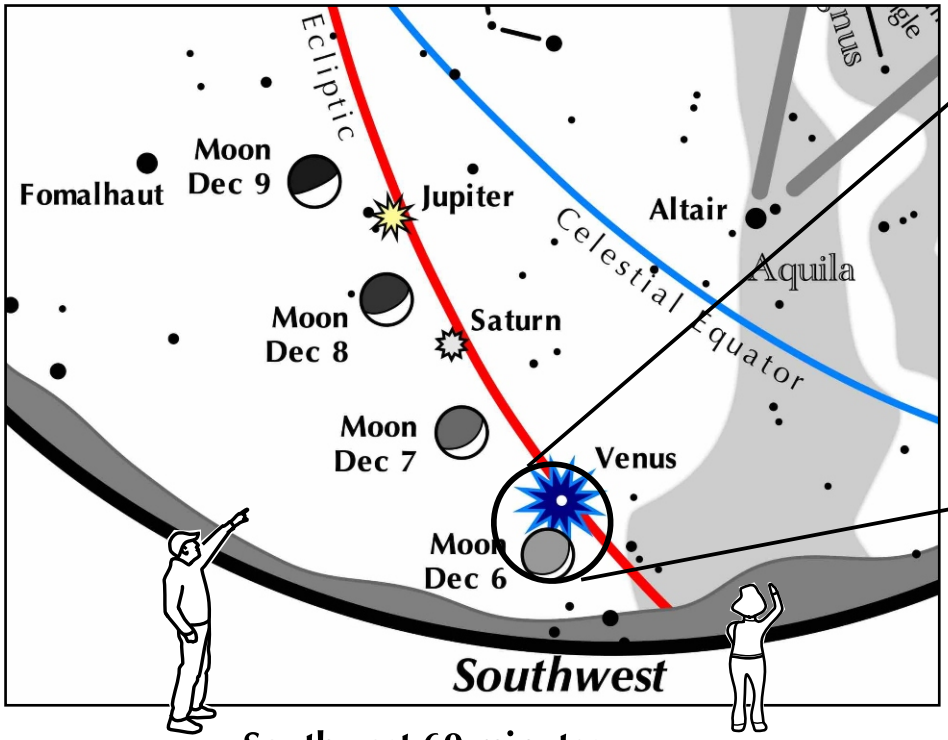


Webb will observe a wide band of the infrared spectrum, including parts observed by the Hubble - which also observes in a bit of ultraviolet light as well as visible - and the recently retired Spitzer Space Telescope. Webb will even observe parts of the infrared spectrum not seen by either of these missions! Credits: NASA and J. Olmstead (STScI)

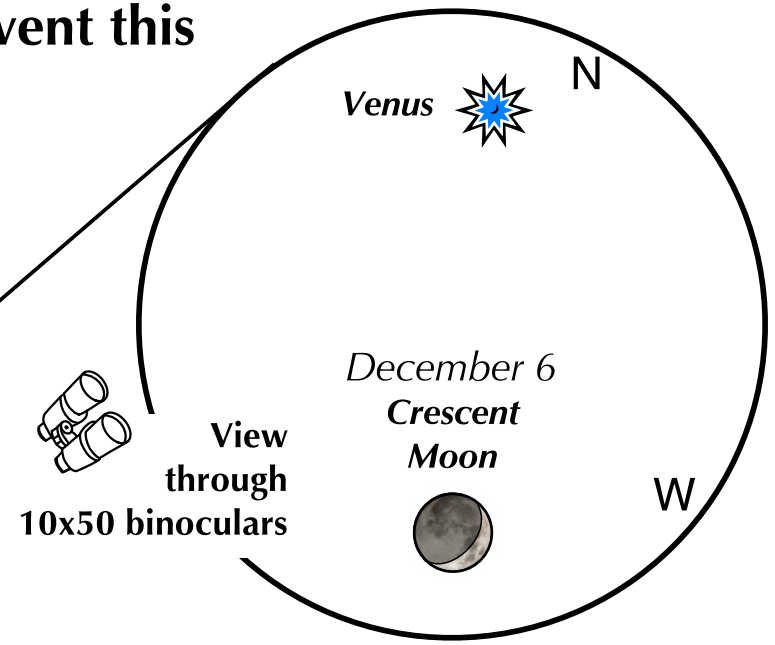


Webb will follow up on many of Hubble's observations and continue its mission to study the most distant galaxies and stars it can - and as you can see in this comparison, its mirror and orbit are both huge in comparison, in order to continue these studies in an even deeper fashion! Credits: NASA, J. Olmsted (STScI)

If you can observe only one celestial event this month, consider this one:



Southwest 60 minutes after sunset in early December



Crescent Moon slides under crescent Venus

Look to the southwest 60 minutes after sunset during the rst week of December.

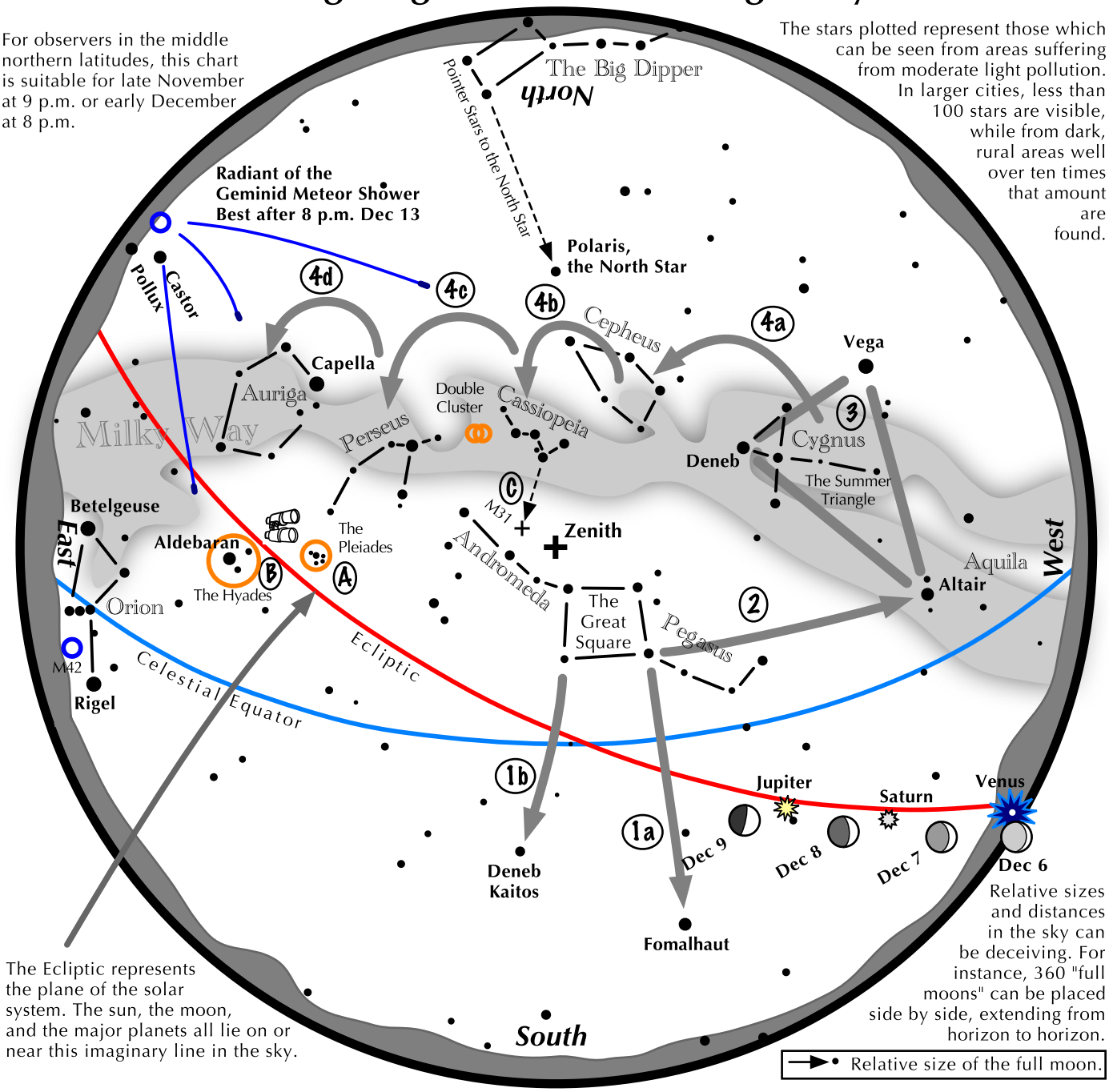
The planets Venus, Saturn, and Jupiter will be evenly spaced with Venus nearest the horizon.

On December 6, Venus will be at its most brilliant.

On December 6, the thin crescent Moon lies under Venus. Look at them through binoculars. Venus will show a tiny thin crescent, looking like a miniature Moon. The Moon will reveal its night side due to the magical light of Earthshine.

For the next three nights, the Moon seems to slide up an invisible celestial necklace, rst passing Saturn, then Jupiter.

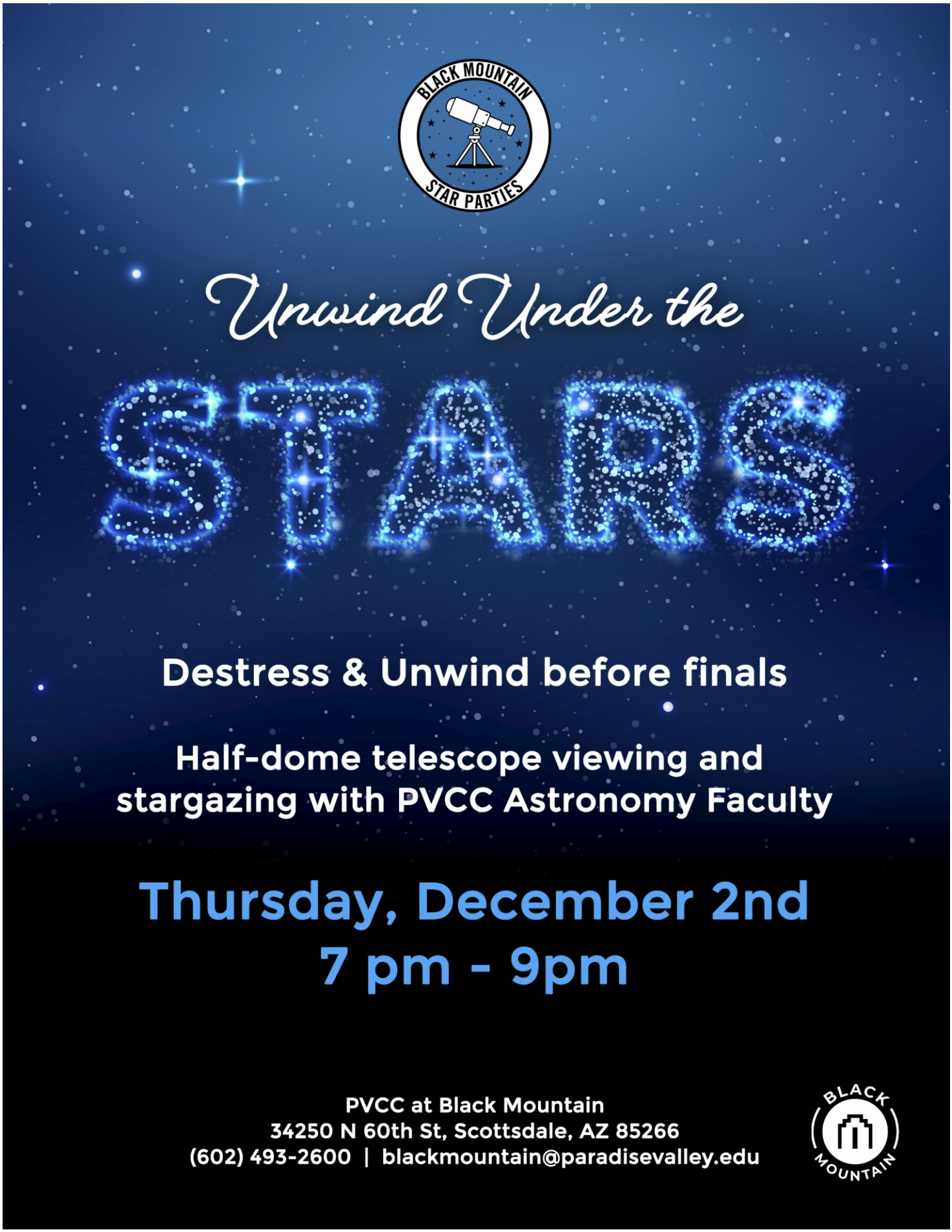
Navigating the December Night Sky



Navigating the December night sky: Simply start with what you know or with what you can easily nd.

1. Face south. Almost overhead is the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend an imaginary line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the southwest. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second bright star in the south.
2. Draw another line, this time westward following the southern edge of the Square. It strikes Altair, part of the "Summer Triangle."
3. Locate Vega and Deneb, the other two stars of the "Summer Triangle. Vega is its brightest member while Deneb sits in the middle of the Milky Way.
4. Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, to Perseus, and nally to Auriga with its bright star Capella.

Binocular Highlights
A and B: Examine the stars of the Pleiades and Hyades, two naked eye star clusters.
C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
D: Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas.


BLACK MOUNTAIN
STAR PARTIES
Unwind Under the
STARS
Destress & Unwind before finals
Half-dome telescope viewing and
stargazing with PVCC Astronomy Faculty
Thursday, December 2nd
7 pm - 9pm
PVCC at Black Mountain
34250 N 60th St, Scottsdale, AZ 85266
(602) 493-2600 | blackmountain@paradisevalley.edu
BLACK
MOUNTAIN