Prescott Astronomy Club

EPHEMERIS

The official newsletter of the Prescott Astronomy Club (PAC)
e-phem-er-is: a time-based listing of future positions of solar system objects

JANUARY 2021

UPCOMING EVENTS

Wednesday, January 6 - Regular PAC meeting @ 6:30 PM. The meeting will be conducted virtually on Zoom hosted by John Carter and Jeff Stillman. Invitations will be sent to all members. Guests can register on our webpage. To participate in the meeting, one must register by e-mail.

Ernest Cisneros, Arizona State University, will present *"Mars 2020 Rover Mission"*. As a Mastcam-Z team member, Ernst will present an overview of the Mars 2020 rover mission, its goals and the Mastcam-Z instrument that is mounted on the rover.

Wednesday, January 13 - METASIG @ 5:00 PM at local restaurant. At this time, no Zoom events will be conducted for METASIG. Anyone wishing to organize a meeting should coordinate with Russell Chappell.

CHECK YOUR SKY'S QUALITY WITH ORION

David Prosper

Have you ever wondered how many stars you can see at night? From a perfect dark sky location, free from any light pollution, a person with excellent vision may observe a few thousand stars in the sky at one time! Sadly, most people don't enjoy pristine dark skies – and knowing your sky's brightness will help you navigate the night sky.

The brightness of planets and stars is measured in terms of apparent magnitude, or how bright they appear from Earth. Most visible stars range in brightness from 1st to 6th magnitude, with the lower number being brighter. A star at magnitude 1 appears 100 times brighter than a star at magnitude 6. A few stars and planets shine even brighter than first magnitude, like brilliant Sirius at -1.46 magnitude, or Venus, which can shine brighter than -4 magnitude! Very bright planets and stars can still be seen from bright cities with lots of light pollution**.** Given perfect skies, an observer may be able to see stars as dim as 6.5 magnitude, but

such fantastic conditions are very rare; in much of the world, human-made light pollution drastically limits what people can see at night.

Your sky's limiting magnitude is, simply enough, the measure of the dimmest stars you can see when looking straight up. So, if the dimmest star you can see from your backyard is magnitude 5, then your limiting magnitude is 5. Easy, right? But why would you want to know your limiting magnitude? It can help you plan your observing! For example, if you have a bright sky and your limiting magnitude is at 3, watching a meteor shower or looking for dimmer stars and objects may be a wasted effort. But if your sky is dark and the limit is 5, you should be able to see meteors and the Milky Way. Knowing this figure can help you measure light pollution in your area and determine if it's getting better or worse over time. And regardless of location, be it backyard, balcony, or dark sky park, light pollution is a concern to all stargazers!

How do you figure out the limiting magnitude in your area? While you can use smartphone apps or dedicated devices like a Sky Quality Meter, you can also use your own eyes and charts of bright constellations! The Night Sky Network offers a free printable Dark Sky Wheel, featuring the stars of Orion on one side and Scorpius on the other, here: bit.ly/darkskywheel. Each wheel contains six "wedges" showing the stars of the constellation, limited from 1-6 magnitude. Find the wedge containing the faintest stars you can see from your area; you now know your limiting magnitude! For maximum accuracy, use the wheel when the constellation is high in the sky well after sunset. Compare the difference when the Moon is at full phase, versus new. Before you start, let your eyes adjust for twenty minutes to ensure your night vision is at its best. A red light can help preserve your night vision while comparing stars in the printout.

The Dark Sky Wheel, showing the constellation Orion at six different limiting magnitudes (right), and a photo of Orion (left). What is the limiting magnitude of the photo? For most observing locations, the Orion side works best on evenings from January-March, and the Scorpius side from June-August.

WHAT'S HAPPENING IN JANUARY 2021

This calendar from In-The-Sky.org shows the objects and events visible during January 2021.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 M41 is well placed	2 The Earth at perihelion
3 Quadrantid meteor shower 2021	4	5	6 Moon at Last Quarter	7	8	9 Conjunction of Mercury and Saturn
10 Conjunction of Neptune and Ceres	11 Conjunction of Jupiter and Mercury Conjunction of the Moon and Venus	12 New Moon	13	14 Conjunction of the Moon and Mercury 134340 Pluto at solar conjunction M47 is well placed NGC 2403 is well placed	15	16 NGC 2451 is well placed
17	18	19 γ-Ursae Minorid meteor shower 2021	20 Moon at First Quarter NGC 2516 is well placed Conjunction of the Moon and Mars	21 Close approach of the Moon, Mars and Uranus Asteroid 15 Eunomia at opposition Conjunction of Mars and Uranus	22	23 NGC 2547 is well placed Mercury at greatest elongation east Saturn at solar conjunction
24 Asteroid 14 Irene at opposition	25 Mercury reaches highest point in evening sky Mercury at dichotomy	26	27	28 Full Moon Conjunction of Venus and Pluto Jupiter at solar conjunction	29	30 M44 is well placed
31 IC2391 is well placed IC2395 is well placed						

For additional information and details, see: https://in-the-sky.org/newscal.php and www.telescopius.com . Observing lists of monthly 'Binocular' and 'Telescope' Showpieces can be found on the club website.

NEED TO KNOW - ASK A MEMBER

A new 15-minute segment is being added to the regular general meetings where members can have their 'burning' questions answered by other knowledgeable members. If you have an astronomy related question you would like explained, submit the question to John Carter (jrcpvaz@icloudcom). You can also bring up the question at the meeting.

FOR SALE

Please visit the Classified Ads section of the club website to view the items posted there for sale:

http://prescottastronomyclub.org/classified-ads/

New items are added now and then, so don't miss out on something that you would like to get for yourself...or a friend.

PAC MENTORS

If you need advice on the purchase of astronomy equipment, setting up equipment, astrophotography, etc., contact a PAC mentor.

Jeff Stillman - Astrophotography - (928) 379-7088

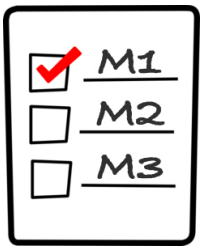
David Viscio - General - (928) 775-2918

Greg Lutes - Visual Observing - (928) 445-4430

Joel Cohen - Beginner's Astronomy: Selecting & Using a Telescope - (856) 889-6496

John Carter - Video Observing - (928) 458-0570

OBSERVING LISTS



Observing lists are available in PDF format on the PAC website to provide guidance and goals for visual and astrophotography programs.

Astroleague Lunar 100	Binocular Showpieces
Bright Nebulae	Caldwell
Dunlop 100	Face-On Spiral Galaxies
Globular Clusters	Herschel 400
Herschel II	Hidden Treasures
Messier	Open Clusters
Planet Maps	Planetary Nebulae
Royal Astronomical Society of Canada Finest NGC	
Saguaro Astronomy Club Best NGC	S&T Lunar 100
Telescope Showpieces	The Secret Deep

PAC WEBSITE & YAHOO GROUPS

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

E-mail: pacinfo@prescottastronomyclub.org

Astrophotography special interest group:

https://groups.yahoo.com/neo/groups/pacastrophotography/info

BOARD OF DIRECTORS

President: Jeff Stillman	At Large: Jason Hoover
Vice President: Open	At Large: Dave Covey
Secretary: Open	At Large: Doug Tilley
Treasurer: Art Arnold-Roksandich	At Large: Pat Bledsoe

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METASIG: Russell Chappell
Newsletter: David Viscio
Night Sky Network: John Carter
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Schools & Camps Outreach: Don Beaman & Joel Cohen
Starry Nights Coordinator: Don Beaman & Joel Cohen
Third Thursday Coordinator: Dave Covey, Marilyn Unruh
Webmaster: Russell Chappell

ONE EVENING, THREE PLANETS

Image Credit: David B. Viscio

October 10, 2020

Celestron C6 with Scopetronix 1.6X Amplifier (FL 2400mm, f/1.6)

Canon 60Da in Crop 640x480 Video Mode

5-Minute Videos at 60 Frames/Sec (18,000 Frames)

5000 Frames Stacked with Autostakkert II

Wavelet Processed in Registax 6

Optimized in Adobe Photoshop