



# 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

## OCTOBER 2021

### UPCOMING EVENTS



Wednesday, October 6 - Regular PAC meeting @ 6:30 PM. The meeting will be conducted virtually on Zoom hosted by 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.

Ms. Vanessa Gressieux will present an overview of the SkyCenter facilities on Mt. Lemmon, individual or group activities conducted that are currently planned, and photos of deep sky objects/planets/moon imaged at the SkyCenter. I doubt that any remote live viewing of deep sky/planets will be possible to share that early in the evening.

Wednesday, October 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.

Wednesday, October 13 - Arizona Astrophotography Association @ 7:00 PM. The meeting will be conducted virtually on Zoom hosted by Jeff Stillman.

Saturday, October 16 - International Observe the Moon Night.

### PAC HOLIDAY DINNER

Roland Albers, Acting Secretary

The annual PAC Holiday Dinner is scheduled for the evening of Saturday, December 11. We have two options for location of the dinner: Augie's in Prescott or Bonn-Fire in Chino Valley.

Augie's is located at 1721 Highway 69 in Prescott. We'd be able to use their private banquet room. Dinner would cost about \$41 per person, including tax and tip. Each diner would have several entree choices: NY steak, chicken, salmon, pork schnitzel or vegetarian pasta.

Bonn-Fire is located at 1667 Highway 89 in Chino Valley. We'd be able to use their private

banquet room, which they will decorate for us. Their standard dinner would cost about \$32 per person, including tax and tip. Each diner would have several entree choices: roast turkey, sirloin steak, baked cod, or grilled portabella. We could also opt for a premium dinner costing about \$54 per person. The premium entree choices include prime rib, lobster & shrimp, golden walleye, or vegetable lasagna.

Do you have a preference for either restaurant? Please click on the following link to let me know:

[https://doodle.com/poll/xaeuyxiip5bg nuk8?utm\\_source=poll&utm\\_medium=link](https://doodle.com/poll/xaeuyxiip5bg nuk8?utm_source=poll&utm_medium=link)

Please only vote once and vote before the end of September. If you're having trouble with the link, please just reply by email to [s@prescottastronomyclub.org](mailto:s@prescottastronomyclub.org) and let me know which restaurant you prefer. I'll compile the results and present them at our next club meeting on October 6th.

## **NOMINATIONS FOR PAC OFFICERS**

Art Arnold-Roksandich, Treasurer, Nomination Chariman

It is time for nominations of officers and board of directors for the Prescott Astronomy Club for 2022. We need to fill these positions to enable the club to rebound post-Covid. After a couple of years of Zoom meetings and no star parties, 2022 will be a rebuilding year for the club. It is time to refocus on the purpose of this club: observing, educating, and sharing by rebuilding our lecture programs, public star parties, fellowship and related activities. The needed officers are President, Vice President, Treasurer, and Secretary, and two At-Large Directors of the Board. The descriptions of their duties are in the appendix.

If you know someone who has expressed interested in serving, talk with them and get their approval to send in their name for nomination. Better yet, if you are interested in serving, you may nominate yourself. There is only one requirement: the nominee must be a club member.

Bottom line, if we don't get nominations (volunteers) for these positions, there won't be a club. We have been without a Vice President and Secretary for the past year. Nevertheless, the club has grown by 50% this year. In order to rebound in 2022, we need a full complement of officers. Please seriously consider contributing some of your time and leading the Prescott Astronomy Club to be a significant part of our community. Come help lead the Prescott Astronomy Club in 2022!

Please send nominations to [t@prescottastronomyclub.org](mailto:t@prescottastronomyclub.org) by the October meeting.

## **JAMES WEBB SPACE TELESCOPE EVENT CANCELLED**

John Carter

As coordinated with the Prescott Public Library and based on the unknowns about whether or not it would be feasible to hold the JWST Launch Party at the Library, it has been decided to cancel the club's participation in the October 23 event. However, several organizations all over Arizona will be holding launch parties during October, November, December, and maybe even into January. Particulars of those events can be found at this website: <https://etx.asu.edu/jwst> . The launch date for JWST has been set for December 18. See the press release here: <https://www.nasa.gov/press-release/nasa-readies-james-webb-space-telescope-for-december-launch> .

## **WEIRD WAYS TO OBSERVE THE MOON**

David Prosper

International Observe the Moon Night is on October 16 this year– but you can observe the Moon whenever it's up, day or night! While binoculars and telescopes certainly reveal incredible details of our neighbor's surface, bringing out dark seas, bright craters, and numerous odd fissures and cracks, these tools are not the only way to observe details about our Moon. There are more ways to observe the Moon than you might expect, just using common household materials.



Put on a pair of sunglasses, especially polarized sunglasses! You may think this is a joke, but the point of polarized sunglasses is to dramatically reduce glare, and so they allow your eyes to pick out some lunar details! Surprisingly, wearing sunglasses even helps during daytime observations of the Moon.

One unlikely tool is the humble plastic bottle cap! John Goss from the Roanoke Valley Astronomical Society shared these directions on how to make your own bottle cap lunar viewer, which was also suggested to him by Fred Schaaf many years ago as a way to also view the thin crescent of Venus when close to the Sun:

“The full Moon is very bright, so much that details are overwhelmed by the glare. Here is an easy way to see more! Start by drilling a 1/16-inch (1.5 mm) diameter hole in a plastic soft drink bottle cap. Make sure it is an unobstructed, round hole. Now look through the hole at the bright Moon. The image brightness will be much dimmer than normal – over 90% dimmer – reducing or eliminating any lunar glare. The image should also be much sharper because the bottle cap blocks light from entering the outer portion of your pupil, where imperfections of the eye's curving optical path likely lie.” Many report seeing a startling amount of lunar detail!

You can project the Moon! Have you heard of a “Sun Funnel”? It’s a way to safely view the Sun by projecting the image from an eyepiece to fabric stretched across a funnel mounted on top. It’s easy to make at home, too – directions are here: [bit.ly/sunfunnel](http://bit.ly/sunfunnel). Depending on your equipment, a Sun Funnel can view the Moon as well as the Sun– a full Moon gives off more than enough light to project from even relatively small telescopes. Large telescopes will project the full Moon and its phases, with varying levels of detail; while not as crisp as direct eyepiece viewing, it’s still an impressive sight! You can also mount your smartphone or tablet to your eyepiece for a similar Moon-viewing experience, but the funnel doesn’t need batteries.

Of course, you can join folks in person or online for a celebration of our Moon on October 16, with International Observe the Moon Night – find details at [moon.nasa.gov/observe](http://moon.nasa.gov/observe). NASA has big plans for a return to the Moon with the Artemis program, and you can find the latest news on their upcoming lunar explorations at [nasa.gov](http://nasa.gov).



Sun Funnels in action! Starting clockwise from the bottom left, a standalone Sun Funnel; attached to a small refractor to observe the transit of Mercury in 2019; attached to a large telescope in preparation for evening lunar observing; projection of the Moon onto a funnel from a medium-size scope (5 inches).

**Safety tip:** *NEVER use a large telescope with a Sun Funnel to observe the Sun, as they are designed to project the Sun using small telescopes only. Some eager astronomers have melted their Sun Funnels, and parts of their own telescopes, by pointing them at the Sun - large telescopes create far too much heat, sometimes within seconds! However, large instruments are safe and ideal for projecting the much dimmer Moon. Small telescopes can't gather enough light to decently project the Moon, but larger scopes will work.*



# WHAT'S HAPPENING IN OCTOBER 2021

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					<b>1</b> M110 is well placed Asteroid 40 Harmonia at opposition	<b>2</b> M32 is well placed M31 is well placed Venus at aphelion
<b>3</b> NGC 253 is well placed	<b>4</b> SMC is well placed	<b>5</b> October Camelopardalid meteor shower 2021 NGC 300 is well placed	<b>6</b> New Moon	<b>7</b> NGC 362 is well placed Mars at solar conjunction	<b>8</b> The Moon at perihelion The Moon at perigee Draconid meteor shower 2021	<b>9</b> Mercury at inferior solar conjunction Conjunction of the Moon and Venus Close approach of the Moon and Venus
<b>10</b> Southern Taurid meteor shower 2021 Saturn ends retrograde motion	<b>11</b> $\delta$ -Aurigid meteor shower 2021	<b>12</b> Moon at First Quarter	<b>13</b>	<b>14</b> Conjunction of the Moon and Saturn Close approach of the Moon and Saturn	<b>15</b> Conjunction of the Moon and Jupiter Close approach of the Moon and Jupiter M33 is well placed	<b>16</b>
<b>17</b> 136199 Eris at opposition The Moon at aphelion Jupiter ends retrograde motion	<b>18</b> $\epsilon$ -Geminid meteor shower 2021	<b>19</b> Mercury at perihelion	<b>20</b> Full Moon	<b>21</b> Orionid meteor shower 2021 136108 Haumea at solar conjunction Close approach of the Moon and Uranus	<b>22</b>	<b>23</b> Mercury at dichotomy
<b>24</b> Leonis Minorid meteor shower 2021 The Moon at apogee Mercury at greatest elongation west	<b>25</b>	<b>26</b> NGC 869 is well placed	<b>27</b> NGC 884 is well placed	<b>28</b> Mercury at highest altitude in morning sky Venus at dichotomy Moon at Last Quarter	<b>29</b> Venus at greatest elongation east	<b>30</b>
<b>31</b> Fornax is well placed						

For additional information and details, see: <https://in-the-sky.org/newscal.php> and [www.telescopius.com](http://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@icloud.com](mailto:jrcpvaz@icloud.com)). 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](mailto:pacinfo@prescottastronomyclub.org)

Arizona Astrophotography Association:

<https://www.facebook.com/groups/azastro>



## BOARD OF DIRECTORS

President: Jeff Stillman

Vice President: Open

Secretary: Open

Treasurer: Art Arnold-Roksandich

At Large: Jason Hoover

At Large: Dave Covey

At Large: Doug Tilley

At Large: Pat Bledsoe





## **PAC COORDINATORS**

Astronomical League Coordinator: John Carter

Facebook: Adam England

Highland Center Coordinator: David Viscio

Membership: Art Arnold-Roksandich

METASIG: Russell Chappell

Newsletter: David Viscio

Night Sky Network: John Carter

PAC Affiliate Partner w/ NAU Space Grant Program – Cory Shaw

PAC Store Sales - John Verderame

Property Records: Open

Public Relations: Adam England

Refreshments: Open

Schools & Camps Outreach: Don Beaman & Joel Cohen

Starry Nights Coordinator: Don Beaman & Joel Cohen

Third Thursday Coordinator: Dave Covey

Webmaster: Russell Chappell



## **COPERNICUS: SEPTEMBER 16, 2021**

*Image Credit: David B. Viscio*



*Celestron C6 plus ScopeTronix MaxPower 1.6x Amplifier*

*Point Grey Flea3 640x480 16-bit Monochrome Video Camera*

*Stack of 431 frames from 4000 frames*

*Video camera control, video frame assessment/stacking and wavelet processing done using Astro  
IIDC on MacBook Pro with OS 10.6.8*

*Final image optimization using Adobe Photoshop CS6*

## **DUTIES OF THE BOARD OF DIRECTORS:**

1. Duties of the President shall be to:
  - a. Preside at all meetings.
  - b. Coordinate the activities of the board of Directors.
  - c. Call extra meetings as required, temporarily fill vacancies, and appoint and dissolve committees not otherwise provided for.
2. Duties of the Vice President shall be to:
  - a. Serve in the place of the president in case of president's absence or incapacitation.
  - b. Act in an official capacity (under the direction of the president) for the PAC at public functions.
3. Duties of the Secretary shall be to:
  - a. Keep all official documents and records of the PAC, and perform other duties delegated by the President
  - b. Record the minutes of all regular business meetings and the board of Directors, and at the request of any member, read aloud the minutes of the regular business or board meeting.
  - c. Conduct an annual inventory of all club property and present it to the general membership at the October business meeting.
4. Duties of the Treasurer shall be to:
  - a. Execute all financial transactions authorized by the club.
  - b. Receive and distribute all dues, subscriptions and bank receipts.
  - c. Account for all receipts and expenditures.
  - d. Report on club finances at each regular business meeting.
  - e. Maintain an up-to-date roster of members.
  - f. The duties of secretary and treasurer may be combined.
5. The duties of the Directors-at-large shall be to attend board meetings and assist the President in carrying out club activities.