



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 2022

UPCOMING EVENTS



Saturday, October 1 - Astronomy Day - Bringing Astronomy to the People. For a FREE 76 page Astronomy Day Handbook full of ideas and suggestions on hosting an event, go to astroleague.org. Click on "Astronomy Day", Scroll down to "Free Astronomy Day Handbook".

Tuesday, October 4 - Regular PAC meeting @ 6:00 PM at Prescott Public Library Founder's Suite hosted by Art Arnold-Roksandich. This will be a hybrid meeting with both in-person and Zoom. Registration is not necessary. The URL link for Zoom is on the new website and included in the email reminder sent to the membership.

NOTE: THIS MONTH'S MEETING IS ON TUESDAY, OCTOBER 4, not the usual first Wednesday of the month.

Dr. David Williams, Research Professor, Arizona State University, will present "*ASU Explores the Solar System*". Arizona State University (Phoenix), and the University of Arizona (Tucson), have been two of the top universities with planetary science programs for the last 40 years. ASU has traditionally focused on planetary geology, and many of their faculty have been involved with NASA planetary missions going back to the Apollo Program of the 1960-70s. Dr. David Williams' talk will focus around the current missions that ASU faculty and students are involved in, that explore the planets, moons, and asteroids of our Solar System.

Sunday, October 16 - Club Member Star Party @ Dave Covey's home. Details are still being finalized. Email updates will follow.

Friday, October 21 - Public star party @ 6:30 PM at the Prescott Valley Civic Center Greenspace. Although walk-ins are welcome, pre-registration at pvlib.net/register is preferred. See appendix for additional details.

Friday, October 28 - Starry Nights public star party @ 5:30 PM at the Highland Center for Natural History, Prescott.

NEW EDITOR FOR PAC EPHEMERIS NEWSLETTER

David Viscio, Editor

Hilary Legacy, new club member, has stepped forward and volunteered to be the new Ephemeris editor effective for the January 2023 edition. For almost 13 years I have contributed to the club as the newsletter editor. I look forward to helping Hilary as this responsibility transitions to her and seeing what personal touches and improvements she makes to the newsletter. Please thank Hilary for taking on this important task.

FOMALHAUT: NOT SO LONELY AFTER ALL

David Prosper



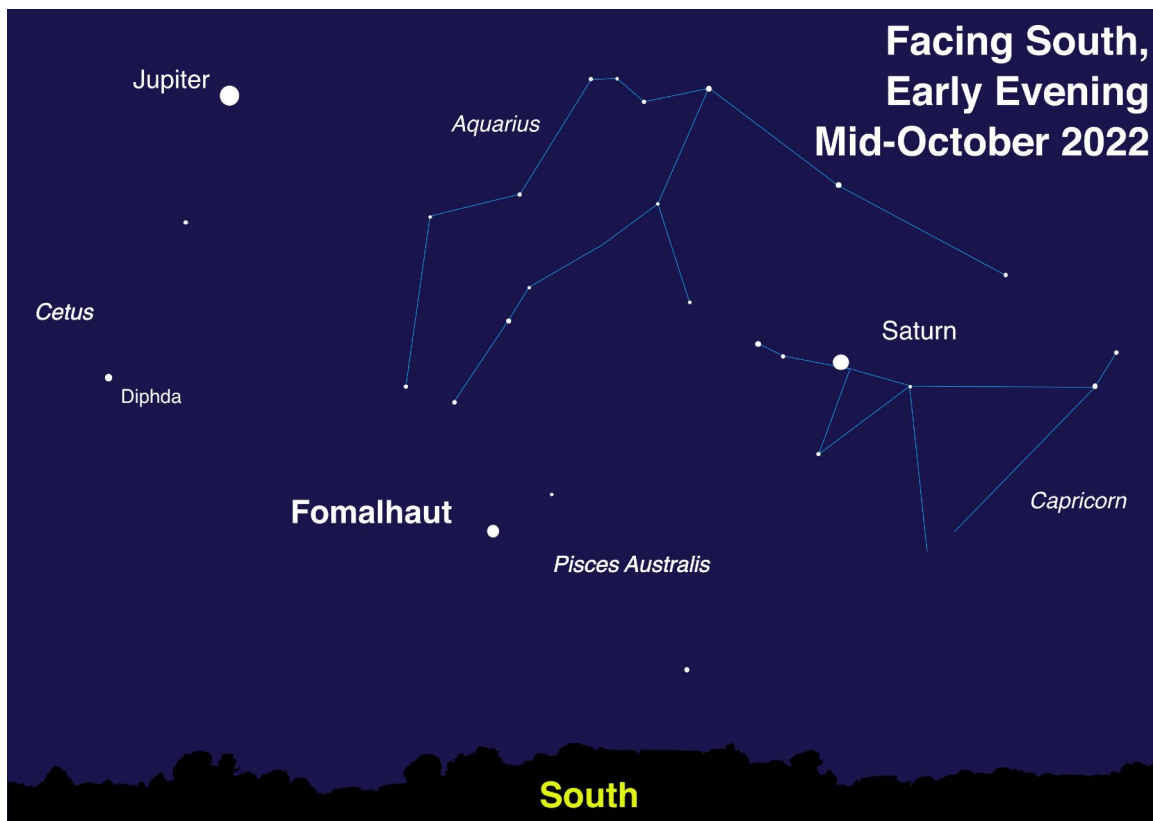
Fall evenings bring a prominent visitor to southern skies for Northern Hemisphere observers: the bright star Fomalhaut! Sometimes called “The Autumn Star,” Fomalhaut appears unusually distant from other bright stars in its section of sky, leading to its other nickname: “The Loneliest Star.” Since this 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

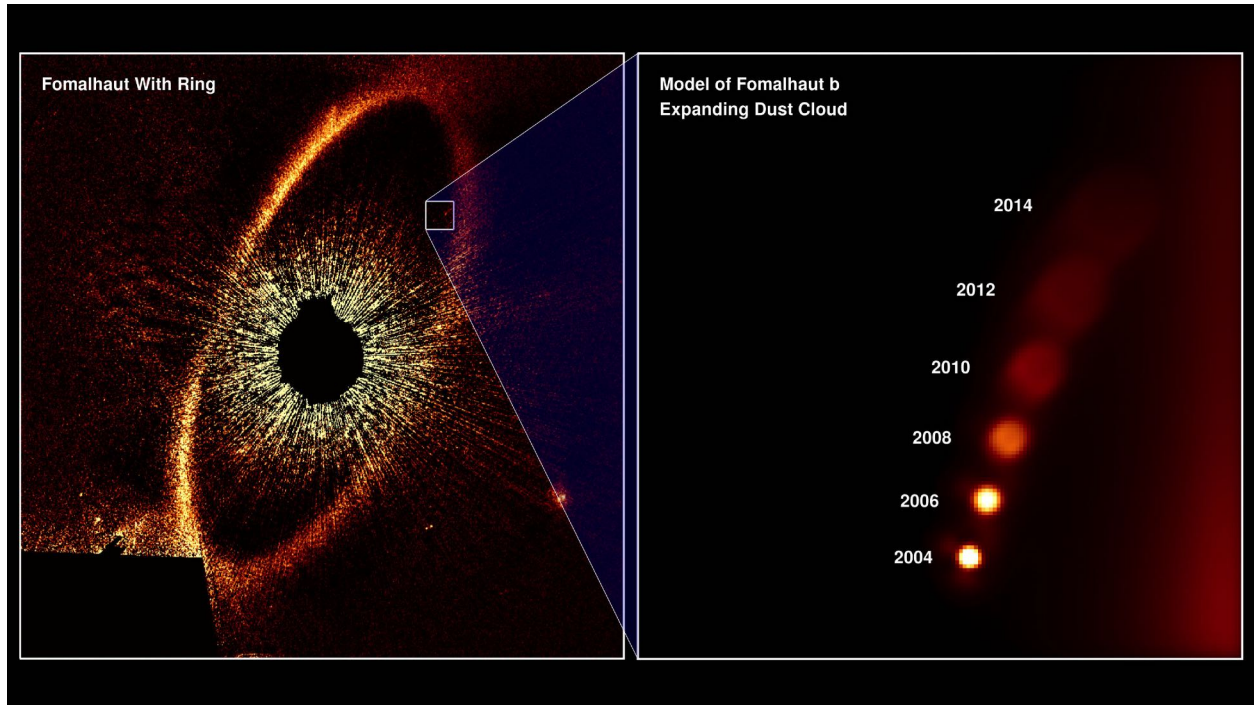
is from our own Sun! In the mid-2000s a candidate planetary body was imaged by Hubble and named Fomalhaut b. However, Fomalhaut b was observed to slowly fade over multiple years of observations, and its trajectory appeared to take it out of the system, which is curious behavior for a planet. Scientists 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](https://www.nasa.gov).



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 Pisces 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>

WHAT'S HAPPENING IN OCTOBER 2022

This calendar from In-The-Sky.org shows the objects and events visible during October 2022.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 136472 Makemake at solar conjunction M110 is well placed
2 M32 is well placed M31 is well placed Moon at First Quarter	3 NGC 253 is well placed	4 The Moon at perigee SMC is well placed	5 Conjunction of the Moon and Saturn Close approach of the Moon and Saturn NGC 300 is well placed	6 October Camelopardalid meteor shower 2022 Mercury at perihelion	7 The Moon at aphelion NGC 362 is well placed	8 Mercury at dichotomy Conjunction of the Moon and Jupiter Mercury at greatest elongation west Close approach of the Moon and Jupiter
9 Draconid meteor shower 2022 Mercury at highest altitude in morning sky Full Moon	10 Southern Taurid meteor shower 2022	11 δ-Aurigid meteor shower 2022	12 Close approach of the Moon and Uranus Lunar occultation of Uranus	13	14 Close approach of the Moon and Mars Conjunction of the Moon and Mars	15 M33 is well placed
16	17 The Moon at apogee Moon at Last Quarter 136199 Eris at opposition	18 ε-Geminid meteor shower 2022	19	20	21 Orionid meteor shower 2022	22 Venus at superior solar conjunction Saturn ends retrograde motion 136108 Haumea at solar conjunction
23	24 Leonis Minorid meteor shower 2022	25 New Moon Partial solar eclipse	26 NGC 869 is well placed	27 The Moon at perihelion NGC 884 is well placed	28	29 The Moon at perigee
30 Mars enters retrograde motion	31					

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.

CALL FOR ASTRO-IMAGES

David Viscio, editor

I request all astrophotographer members of the club submit examples of their astro-images to share with club members by inclusion in the Ephemeris. Images can be sent to me at pkmist@gmail.com. Please include description of equipment, cameras, image capture parameters and processing.

NEED TO KNOW - ASK A MEMBER

A 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 Art Arnold-Roksandich p@prescottastronomyclub.org. You can also bring up the question at the meeting.

FOR SALE

As a member of PAC, you may use the groups.io/g/pacinfo message board to post notices of items for sale. It is easy to signup. Go to groups.io/g/pacinfo. Click on "Apply for Membership to This Group". Fill in your email address and click on "Confirm Email Address". You should get a return email by the next day. You can update your profile for a daily digest or no email notices at all. You can go anytime to groups.io/g/pacinfo to check out what other people are doing.



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.

Open - Astrophotography

David Viscio - General & Astrophotography - (928) 775-2918

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

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

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

Website: <http://www.prescottastronomyclub.org>

E-mail: pacinfo@prescottastronomyclub.org



BOARD OF DIRECTORS

President: Art Arnold-Roksandich
Vice President: Brian Blau
Secretary: Roland Albers
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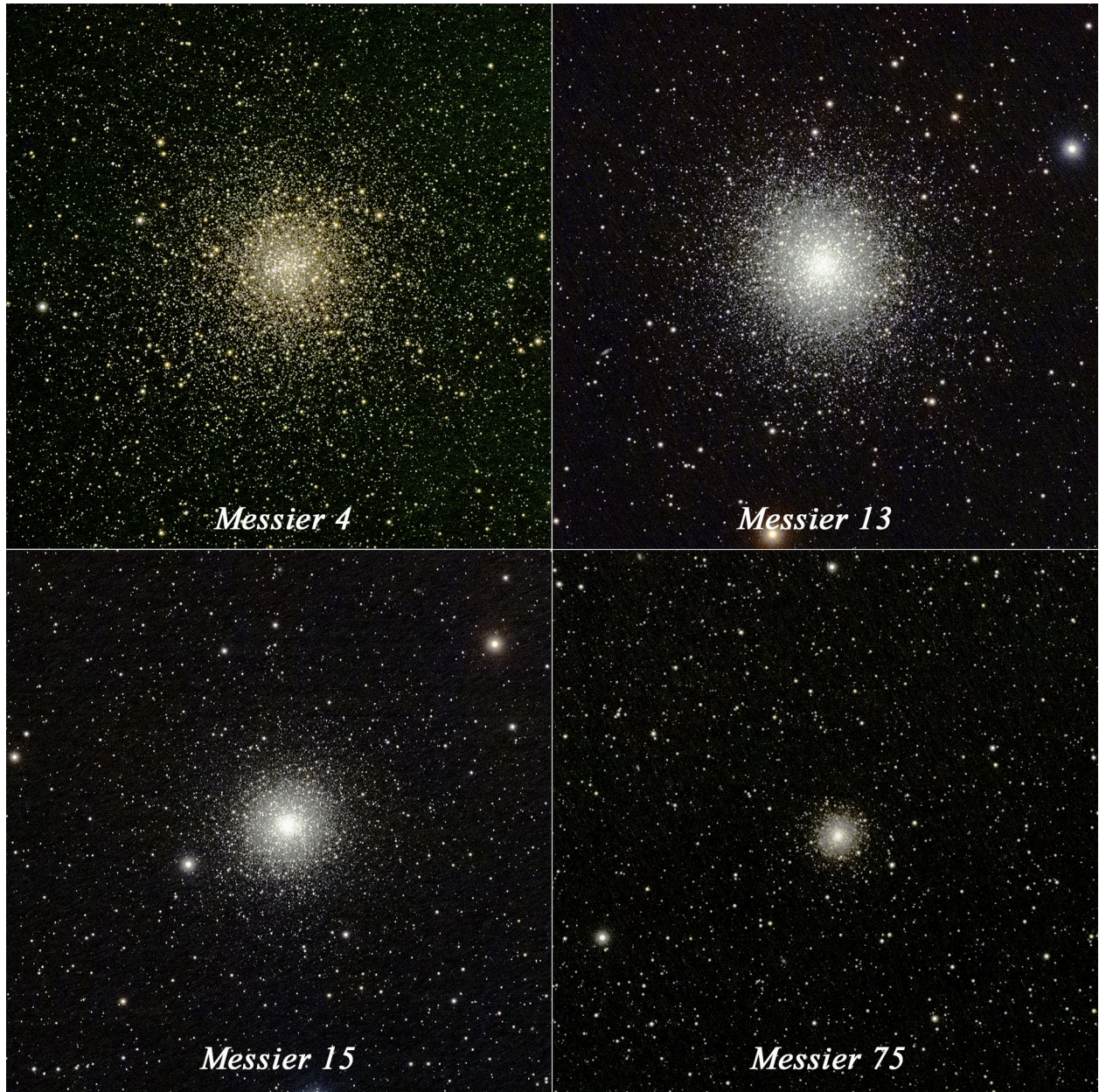
PAC COORDINATORS

Astronomical League Coordinator: Ken Olson
Events: Susanne Vaughan
Facebook: Open
Membership: Susanne Vaughan
METASIG: John Dwan
Newsletter: David Viscio
Night Sky Network: Open
PAC Affiliate Partner w/ NAU Space Grant Program – Cory Shaw
PAC Store Sales - Open
Property Records: Open
Public Relations: Open
Refreshments: Open
Schools & Camps Outreach: Joel Cohen & Brian Blau
Starry Nights Coordinator: David Viscio
Webmaster: EJ Van Horne



A QUARTET OF GLOBULAR CLUSTERS

Image Credit: David B. Viscio



Stellarvue SV115 triplet apo refractor with 0.8x focal reducer/flattener (640mm FL, f/5.6)

Paramount MX German equatorial mount

Canon 60Da DSLR

60-second sub-exposures

60 light frames, 60 dark frames, 60 flat frames, 60 dark flat frames

Frames stacked in Deep Sky Stacker

Images optimization in Adobe Photoshop CS6

PRESCOTT VALLEY PUBLIC LIBRARY &
PRESCOTT ASTRONOMY CLUB PRESENT:

STAR PARTY

OCTOBER 21, 2022

6:30-9 PM

CIVIC CENTER GREENSPACE

FREE EVENT - ALL AGES

See the night sky through a variety of telescopes and binoculars. Prescott Astronomy Club members will have available their personal telescopes, a Club telescope, or binoculars for the public to view interesting objects in the night sky. Club astronomers will show the public wonders of the solar system and deep space objects. Highlights of the evening event will include Saturn, Andromeda Galaxy, Hercules Cluster, Ring Nebula, and many more.

PRE-REGISTRATION PREFERRED.

PVLIB.NET/REGISTER

WALK-INS WELCOME

