Chagrin Valley Astronomical Society

Sky Report September 2024

Planets

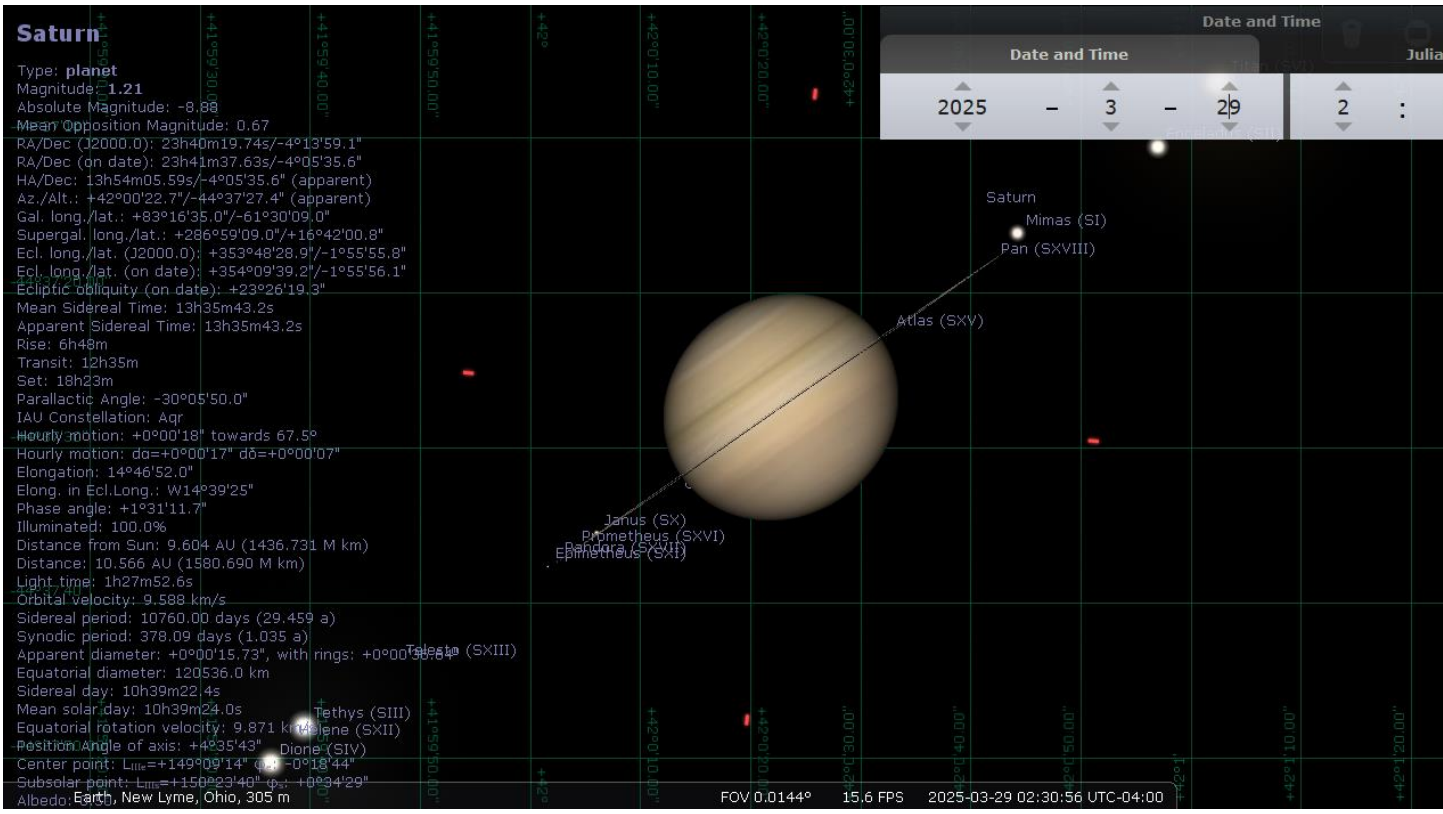
Mercury rises 75 minutes before the Sun on September 1 at magnitude 0.47; should be a nice pairing with the thin crescent Moon to its upper left. By the middle of the month, it will be lost in the glare of the sun to see.

Venus will be visible for an hour after Sunset, with altitude dropping daily from 9° to 2° while its magnitude increases from -3.88 to -3.91 as it gets closer to Earth. Venus will remain in the evening sky throughout the month. For a change, try observing Venus shortly after sunset. It is sufficiently bright to be visible.

Mars will make a good companion for the night owls this month rising 56 minutes after midnight on September 1, and 15 minutes after midnight 30th. It will be in the constellation Taurus for the first week of September, the rest of the month in Gemini.

Jupiter will rise about ½ hour after midnight. Both will join Uranus in Taurus. As always, it is a source of great observing with its Moons exchanging positions throughout the night. Magnitude -2.28 to -2.47.

Saturn will be up throughout the night, rising at 8:13 PM in Aquarius. On the 17th it will be occulted by the Moon visible in the western part of the USA. For CVASers in that part of the country check out for details the following two links: (https://in-the-sky.org/news.php?id=20240917_16_100), and Eclipses visible in 41°37'58.6"N, 80°43'20.9"W (timeanddate.com). Saturn will also be at opposition on September 8 reaching magnitude 0.74. Its rings will approach 5° tilt to our line of sight as we approach the “ring plane” crossing (when the Earth’s crosses the plane of Saturn rings, and we see them edge on. See screenshot below.



Uranus will also be in the line up with Jupiter and Mars in the constellation Taurus. Magnitude 5.71. See screenshot below.



Neptune, 12.5° east of Saturn, will reach opposition on the 20th of September.

It is in Pisces. Magnitude 7.81. See screenshot below.



Click on the Ephemerides below for more information about the planets

ephemerides visible planets Sept 2024.xl

ephemerides unvisible planets Se

Autumnal Equinox: **Sunday, September 22, 2024 at 8:43 am EDT**

Moon:

We're trying a new instrument to learn about the Moon! A daily interactive site from NASA providing updated information you expect from a calendar and scientific information you do not get from a calendar…with animation!

Daily Moon Guide | Observe – Moon: NASA Science

NASA - SKYCAL - Sky Events Calendar

Partial Lunar Eclipse on September 17–18, 2024 – Where and When to See (timeanddate.com)

> **Partial lunar eclipse:** During a partial lunar eclipse, only part of the moon enters Earth's shadow, which may look like it is taking a "bite" out of the lunar surface. Earth's shadow will appear dark on the side of the moon facing Earth. How much of a "bite" we see depends on how the sun, Earth and moon align, according to NASA.

Meteor Showers:

Although the Orionids do not peak until the middle of October, early meteors will start burning through the atmosphere the last week of September.

"Next period of activity: September 26th, 2024 to November 22nd, 2024

The Orionids are a medium strength shower that sometimes reaches high strength activity. In a normal year the Orionids produce 10-20 shower members at maximum. In exceptional years, such as 2006-2009, the peak rates were on par with the Perseids (50-75 per hour). Recent displays have produced low to average displays of this shower. In 2024, a waning gibbous moon will rise during the late evening hours and will severely hamper views of this display.

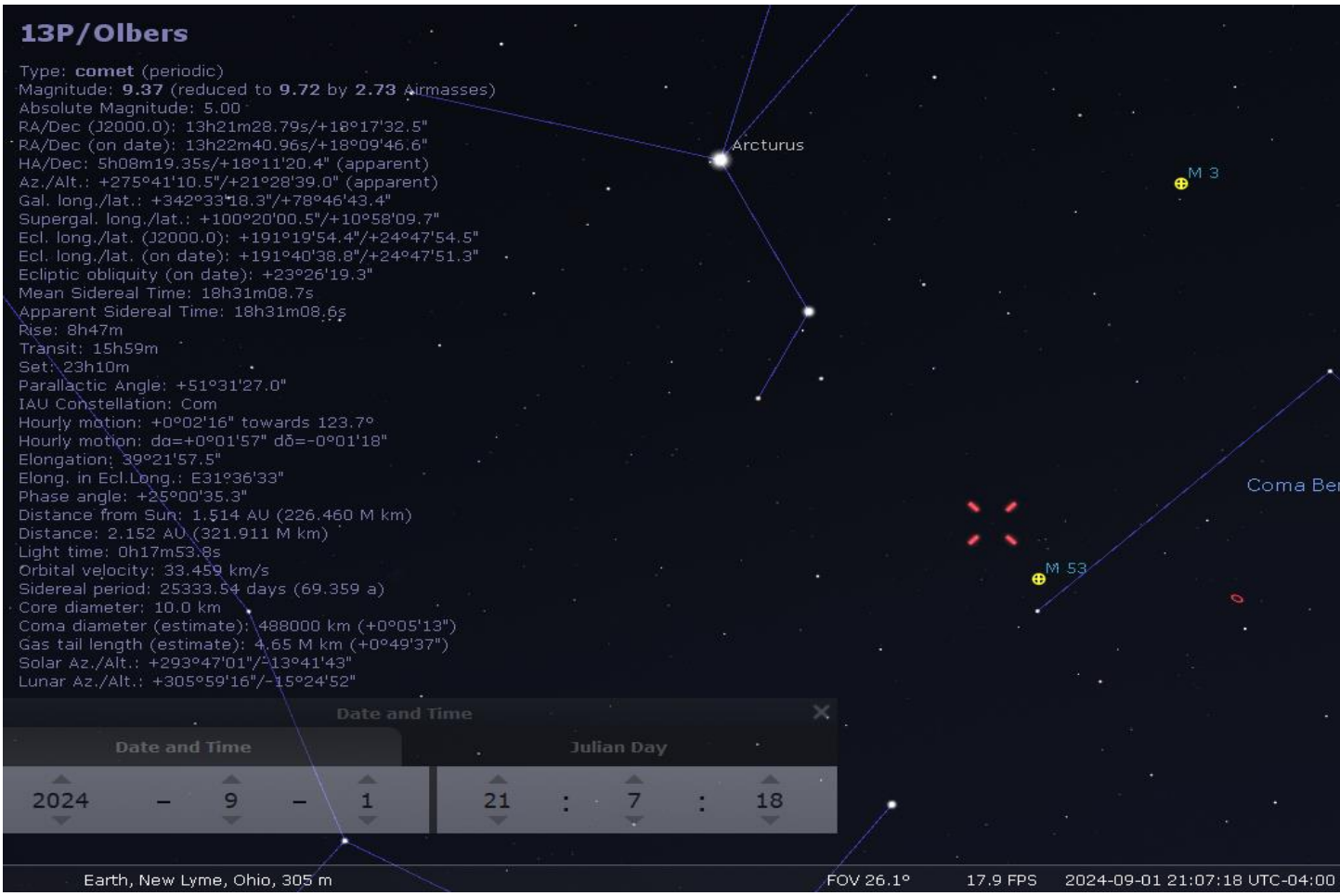
Shower details - **Radiant:** 06:21 +15.6° - **ZHR:** 20 - **Velocity:** 41 miles/sec (swift - 66km/sec) - **Parent Object:** 1P/Halley

Next Peak - The Orionids will peak on the Oct 20-21, 2024 night. The moon will be 83% full." amsmeteor.org

Comets: 13P/Olbers

The comet was recovered on 24 August 2023 by Alan Hale with the Las Cumbres Observatory at Siding Spring, and then additional pre-recovery images from August 13 were located. The comet then had an estimated apparent magnitude of about 22.[8][1] On 16 November 2023 the comet came to opposition 139 degrees from the Sun. On 14 January 2024 the comet had an estimated magnitude of 15.3, was reported to have a strongly condensed coma measuring 0.9 arcminutes across and a faint tail one arcminute. By 10 March 2024 the comet had brightened to a magnitude of 11.4 and the coma was 4 arcminutes across. The comet was observed visually on April 12 to have a magnitude of 9.2, being a magnitude brighter than the ephemeris.[10] It came to perihelion on June 30, 2024,[2] when it was 1.18 AU from the Sun and 1.94 AU from Earth.[2] [3] Wikipedia

Below is where to find the comet at magnitude 9.37 on September 1 in the constellation Coma Berenices, requiring a large telescope for observation. As the month progresses it will steadily move westward (left) through the lower parts of Bootes and closer to the horizon as its magnitude faints to 10.83, and altitude drops from 22° to 5°.



Stellarium Screenshot

A/2023 A3 (Tsuchinsha-Atlas) is receiving a lot of noise so here are 3 sites for information to get you in the loop.

C/2023 A3 (Tsuchinshan–ATLAS) - Wikipedia

Comet C/2023 A3 (Tsuchinshan-ATLAS) | TheSkyLive

A comet predicted to light up the sky in 2024 may already be doomed | Space

Constellations

The Constellation Pegasus:

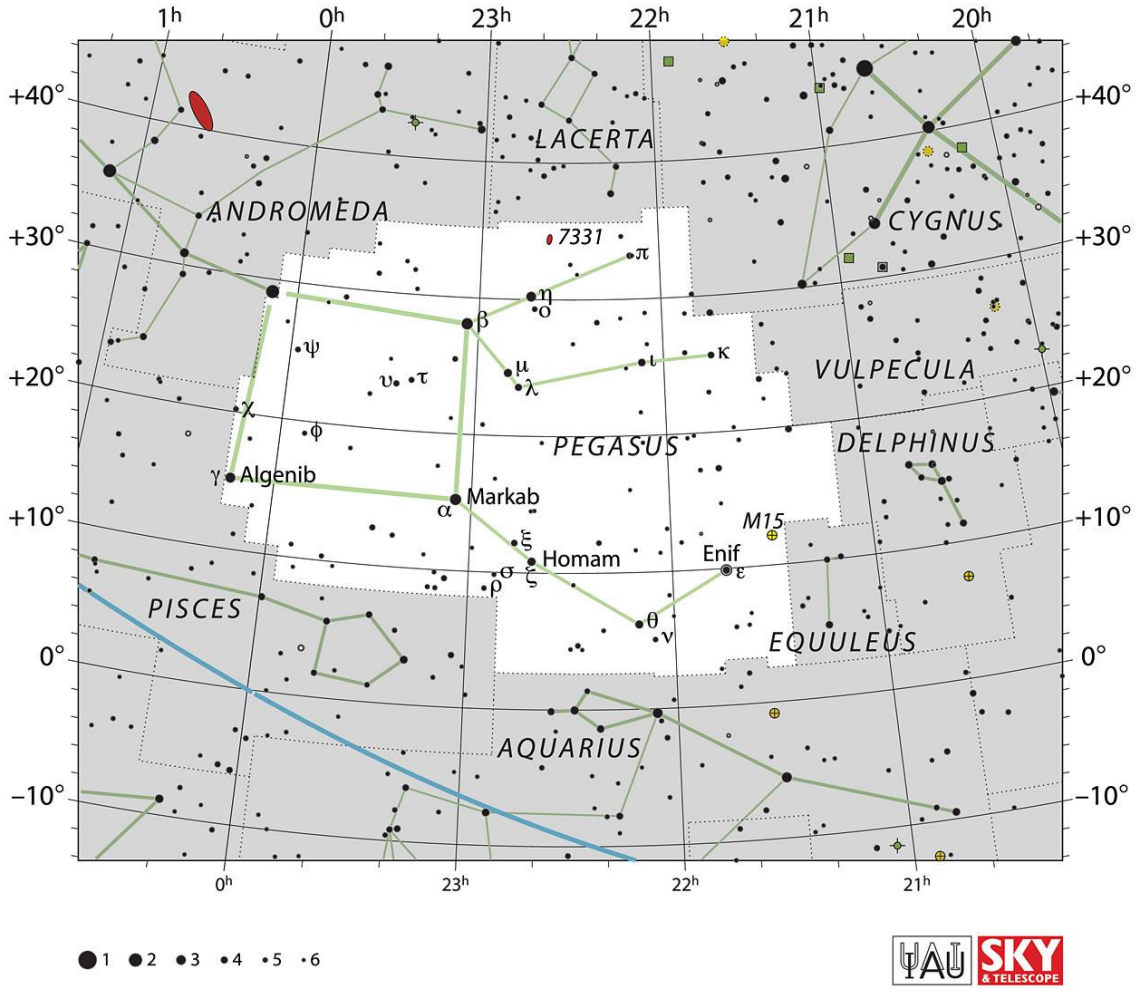
By Paul Grubach

Pegasus is a large "equatorial constellation," which means that it is among the 15 constellations that intersect the celestial equator. Although Pegasus is not particularly bright it is nonetheless prominent. It ranks 7th in size among the 88 constellations, and it covers 1,121 square degrees of the celestial sphere, or about 2.7%. Pegasus reaches astronomical culmination (i.e., it is at its greatest altitude) on midnight September 1st. It is best placed for evening viewing from mid-summer through late autumn.

Three of the four brightest stars in Pegasus, along with second magnitude Alpheratz in Andromeda, form a large, very prominent keystone-shaped asterism called the Great Square of Pegasus.

Pegasus can be best spotted on dark nights at our Hill observatory beginning in late September and early October. Look for a group of stars in the shape of a box, with several lines of stars extending out from the corners. One of those lines marks the Andromeda constellation. Refer to the following diagrams,


M15
M31
Pegasus
Andromeda
M33
Pisces



CVAS members should appreciate the fact that a close study of the Pegasus constellation is a lesson in the science of the origin, development and nature of the universe.

Pegasus has been important in the study of extrasolar planets, or planets that are outside our solar system. Astronomers discovered a planet orbiting one

of the constellation's stars, 51 Pegasi, in 1995, It was the first Sun-like star known to have a planet.

NGC 7078, better known as Messier 15 or M 15, is a big, bright, beautiful globular cluster. M15 is about 33,000 light-years away from Earth and contains more than 100,000 stars, some of which are at least 12 billion years old. (Note: The universe is approximately 13.8 billion years old.) This globular cluster is a spherically shaped collection of stars bound together by mutual gravitational attraction.

In this context, some amateur astronomers think that the space between their telescope and the stars in M 15, and the space between the more than 100,000 different stars in M 15, is a "void," or simply "empty space." This appears to be incorrect, as allegedly "empty space" is permeated by a gravitational field.

M 15 is very easy to find, lying 4.2 degrees NW of m2.4 Enif, the brightest star in Pegasus,

The best way to view M 15 is though binoculars or a good backyard telescope. It may look like a fuzzy smudge through binoculars, but a good telescope will reveal much more detail.

To locate M 15, put Enif on the SE edge of your binocular or finder field and look near the NE edge of the field. M 15 appears as a prominent patch of haze in even a 30 mm binocular or finder. At 125X in a 10 inch reflector, M 15 is a beautiful globular cluster. The stars in M 15 are so tightly packed together that even the Hubble Space Telescope cannot make out individual stars at the core of the cluster.

Refer to the following diagram, which is an amateur view of M 15 through a back-yard type telescope.



Below, NGC 7331 is an unbarred spiral galaxy located 39.8 million light-years away in the constellation Pegasus. With an apparent magnitude of 10.4, it can be seen in small telescopes. It is the brightest galaxy in the NGC 7331 Group, a visual grouping that also includes four more distant galaxies.

NGC 7331 is the brightest member of the NGC 7331 Group, also known as the Deer Lick Group. The visual grouping is not a real galaxy group because NGC 7331 lies much closer to us than the other galaxies and is not physically associated with them. The other galaxies lie at distances of 290-370 million light-years and appear much smaller than NGC 7331. These galaxies are "red-shifted."

Ever since 1929, when Edwin Hubble discovered that the Universe is expanding, scientists have known that most other galaxies are moving away from us. Light from these galaxies (such as NGC 7331 and the companion galaxies) is shifted to the longer (and this means redder) wavelengths—in other words, it is "red-shifted."

Astronomical red-shifts (like that of NGC 7331) are "expansion redshifts," due to the expansion of space itself. Two objects can be stationary in space and still experience a red shift if the intervening space itself is expanding.

A convenient analogy for the expansion of the Universe is a loaf of unbaked raisin bread. The raisins are at rest relative to one another in the dough before it is placed in the oven. As the bread rises, it also expands, making the space between the raisins increase.

If the raisins could see, they would observe that all the other raisins were moving away from them, although they themselves were stationary within the loaf. Only the dough—their "Universe"—is expanding.

Refer to the following photo of NGC 7331.



Sources: earthsky.org; constellation-guide.com; esahubble.org; NASA web site; esa.int; iau.og; IAU Sky and Telescope; space.com; Thoughtco.com; Wikipedia;

Illustrated Guide to Astronomical Wonders, DIY Science, First Edition, Robert

Bruce Thompson & Barbara Fritchman Thompson, O'Reilly, 2007.

President's Challenge

This month the "Challenge" is of a different sort than an exploration of another part of the Natural universe. The link below explains. Russ Swaney (CVAS) shared an article by CVAS co-founder Anthony Mallama, published in Sky and Telescope magazine, about the latest entry into artificial satellites on a massive scale.

https://skyandtelescope.org/uncategorized/observers-report-first-views-of-the-chinese-thousand-sails-satellites/

Compiled by Gus Saikaly

Sources: Anthony Mallama, Astronomy Magazine, Stellarium, NASA, Wikipedia, Paul Grubach, amsmeteor.org, cited links