

Total Lunar Eclipse on March 3

Artemis Program Schedule and Goals Revamped

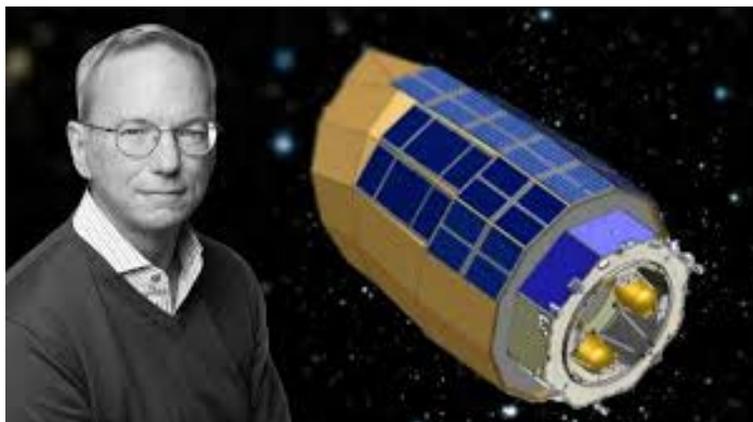
THE OBSERVER



The Newsletter of Central Valley Astronomers of Fresno

March-April 2026

Schmidt Sciences Announces Lazuli: A Space-Based Telescope Larger than Hubble



At the annual meeting of the American Astronomical Society on January 7, former Google CEO Eric Schmidt and his wife Wendy announced that their foundation, Schmidt Sciences, will build four telescopes, including a space-based telescope called Lazuli. Lazuli, Schmitt said, will have a 3 meter (118 inch) primary mirror, will be put into low-Earth orbit, will cost a fraction of the Hubble Space Telescope, and will be operational by 2029. With government cutbacks, Wendy Schmidt said, it is time for private enterprise to step up and continue America's preeminence in the sciences. The entire project, the Schmidts said, will be known as the Schmidt Observatory System, and will consist of three ground-based telescopes and the Lazuli Space Telescope. One of the ground telescopes, the Deep Synoptic Array, will be a radio telescope; the second, known as Argus, will observe objects in
(Continued on inside)

Astronomy Quote of the Month-

"Images of broken light which dance
before me like a million eyes
They call me on and on across the
universe ..."

John Lennon, "Across the Universe"

1970

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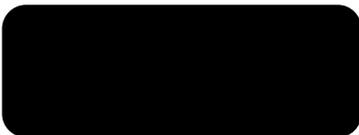
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will observe objects in visible light; and the third will specialize in spectrographic studies of exotic objects. All four will work together and will be operational in three years. (although the Schmidts said that the telescopes will be ready by 2029, indications are that Schmidt Sciences has been working on this project for several years before making it public). In their talk, the Schmidts emphasized that they are not trying to take the place of NASA or the National Science Foundation, but to encourage more private investment in the sciences.



Schmidt Sciences's Argus Telescope, one of four that will work together as the Schmidt Observatory System

Number of exoplanets found as of February 2026- Confirmed-6,107

How many more are out there?

Tens of Thousands? Hundreds of Thousands?

Millions?

(From NASA's Exoplanet Exploration Website)

The March 3 Lunar Eclipse

The total lunar eclipse of March 3-known as the "Blood Moon," will begin at 12:44am, will reach totality at 3:04 am, last until 4:02am, and will be over at 6:23am. Early in the morning, to be sure, but one of those events worth getting up for.



The President's Message

By Hubert Cecotti

News related to observational astronomy are full of articles about "once in a lifetime" experiences, which, if you miss it, you will never see it again. Futile alignments of planets or stars often appear in the news and can pique public interest. People are eager to see things that cannot be seen again or that probably won't be seen by anyone else. Astronomy can be an experience of making memories. Indeed, consumers are eager to spend on travel, entertainment, sports, food, and the same goes for astronomy.

We are already in March, and the first outreach event at River Park has just happened. We are lucky to have not only the Moon but also Jupiter to show to our curious audience at River Park. Although the objects of interest were close to the zenith, it was a great event and nice to meet other club members after many weeks, probably multiple months, of bad weather. It was worth noting that a small, smart telescope can provide a great view of the Orion Nebula, as demonstrated at River Park. As usual, we have people asking for the price of the instruments, always surprised that they are not as expensive as some may think. The wide range of equipment and practices shows that observations can be performed across the spectrum, from purely manual visual astronomy to a fully electronic-assisted experience with smart telescopes. Given the relatively low price of these smart instruments compared to a typical classical Dobsonian telescope, this option becomes relevant for newcomers to the hobby.

Let's not forget the total lunar eclipse on March 3, creating a dramatic red "blood moon" for sky-watchers across North America (Pacific time: 3:04-4:02 a.m PST on March 3, 2026), Australia, and East Asia. More importantly, March is also the time for the Messier marathon, where the ideal days typically coincide with cloudy weather. We can hope for the best for the next star party.

Clear skies always-

Hubert

This exceptionally clear image of NGC 4301 and M61 in the Virgo Cluster shows the power of the Vera Rubin Telescope, with its 7,200 megapixel camera, now in Operation

Image-NSF-DOE Vera C. Rubin Obs.



Profiles in Astronomy

Riccardo Giacconi 1931-2018

Giacconi was born and raised in Genoa, Italy, received his doctorate in astrophysics at the university of Milan, then came to the United States on a Fulbright Scholarship, where he made the newly emerging field of x-ray astronomy his specialty. At first, he was at the Smithsonian's Institute for Astrophysics, then became a professor at Johns Hopkins university, where he would spend the rest of his life. He eventually became an American citizen.

Giacconi was a pioneer in developing techniques and equipment for space-based x-ray astronomy. In the 1950s, he built and launched sounding rockets carrying x-ray detectors; in the 1960s and 70s, he was the chief scientist for several x-ray satellites, including the Uhuru, launched in 1970s, which found the first suspected black hole, Cygnus X-1; the Einstein X-Ray Observatory, which was launched in 1978; and the Chandra X-Ray telescope, which was launched in 1999 and is still operational today. He was the first director of the Space Telescope Science Institute at Johns Hopkins, and later the director of the European Southern Observatory.

Giacconi won many awards for his achievements; the most famous being the Nobel Physics Prize in 2002 for his contributions to x-ray astronomy.



CVA Calendar for March and April

March 6-Monthly meeting at Round Table Pizza-begins at 7pm

March 21-Monthly starwatch at Eastman Lake-Messier Marathon Night

March 26-Public starwatch at Riverpark

April 3-Monthly meeting at Round Table Pizza-begins at 7pm

April 18-Monthly starwatch at Eastman Lake

April 24-Public starwatch at Riverpark

Astronomy Short(sort of)

The Ring Nebula is arguably the best known object on Charles Messier's famous list. However, Messier, who originally viewed it on January 31, 1779, at first thought it was a comet. Two weeks after his sighting, a fellow French scientist, Antoine Darquier, also saw it and contacted Messier to say it was not a comet but a nebular object that looked much like a planet. This prompted William Herschel, who saw it in 1782, to coin the term "planetary nebula." Messier eventually included it as number 57 in his list of objects. Right-The Ring Nebula, taken by the James Webb Space Telescope



Starliner Investigation Report Severely Critiques Boeing, NASA

On February 19, NASA chief administrator Jerod Isaacman released the investigation report on the so-far only crewed Boeing Starliner mission that ended up with the two astronauts spending almost nine months aboard ISS and returning on Space-X's Crew Dragon C-11 flight. In it, Isaacman severely criticized both Boeing and NASA for allowing Starliner to fly with the possibility of major flaws, especially with the thrusters. The mission, which was launched on June 25, 2024, encountered numerous problems after launch, and was barely able to eventually dock with the space station.



The investigation showed that the craft experienced what NASA termed a "Type A Mishap," the most serious kind, the same designation given to the Challenger and Columbia tragedies, and could have ended in fatalities, which, fortunately, it did not. In the report, Boeing was blamed for the various technical failures aboard the craft, but NASA management was also negligent for allowing them to be overlooked, and overruling objections to the mission. The space agency's insistence, the report stated, on having two different commercial crew vehicles is flawed. The report went on to state that many technical, managerial, and cultural hurdles need to be satisfied at both Boeing and NASA before a crewed Starliner will fly again. Isaacman made it very clear that safety will always come first in any NASA crewed endeavor.

What this means for the future of the Starliner program is unclear. Boeing, in response to the report, says that it is continuing to work on the spacecraft until it meets all NASA safety and technical requirements. A planned uncrewed Starliner cargo flight scheduled for April 2026 is still on, but this report may change it. Earlier in February, NASA and Boeing agreed to modify the contract that required six crewed Starliner missions down to four by 2030, when ISS will be deactivated and abandoned. Only time will tell what will happen to the spacecraft that, when it was first proposed in 2012, was considered a shoe-in as NASA's primary commercial crew spacecraft for the 2020s.

NASA makes Major Changes to the Artemis Program

On February 27, NASA announced that the Artemis program will be revamped and missions rescheduled and expanded. Artemis II, which was moved back to the Vehicle Assembly Building on February 25 for repairs to the SLS fuel lines, will now be launched no sooner than April 3 for a circumlunar mission. If it is successful, Artemis III, which was scheduled to be the first lunar landing mission, has now changed its date and objectives. Its



mission will be similar to that of Apollo 9 in early 1969, and will test the Orion/MPCV spacecraft and the lunar lander, either Space-X's modified Starship or Blue Origin's Blue Moon, or possibly both, in low Earth orbit.* This is now scheduled for mid-2027. Artemis IV will be the first lunar landing mission, will land near the Moon's South Pole, and will take place no sooner than mid-2028. In addition, the SLS, which was planned to be modified to accommodate the moon landing equipment, will remain in its original configuration to speed up production to be ready for the changed schedule of launches. Left unsaid is how much longer NASA will use the SLS booster, which is estimated to cost \$4-5 billion per launch.

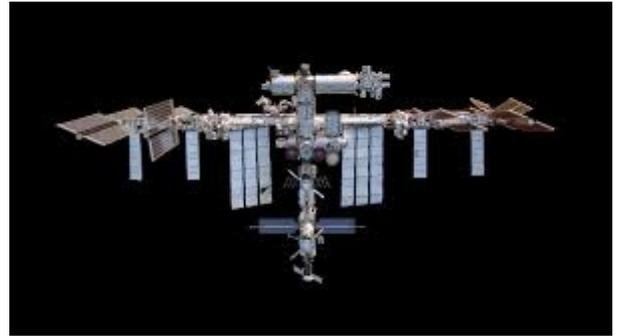


*Implicit in this mission is the fact that it will probably consist of two separate launches: NASA will launch the crewed Orion/MPCV aboard the SLS, and Space-X will launch the lunar Starship atop its Starship booster, or Blue Origin will launch the Blue Moon lander aboard its New Glenn heavy lift booster.

What's New In Space

Russia's Space Program Plans after ISS

What NASA plans to do with the International Space Station is well known and has been for a while: abandon it for smaller private commercial space stations by the late 2020s, and in 2030, deorbit it using a modified Space X Dragon spacecraft, where it will burn up in the atmosphere (if anything remains, it will fall into the "satellite graveyard," a spot in the South Pacific almost 2,000 miles from anywhere). What has not generally been talked about is what will Russia do once the ISS partnership ends. Russia, in 2021, said that it would end its part in ISS in 2023 due to political tensions, then it said 2024, then 2025, and so far it's still sending crews and supplies to the space station. Roscosmos, or RKA as it's known, the Russian Space Agency, has also talked about building and launching an entirely new and updated space station of its own by 2026 and has even publicized drawings and illustrations of it. But the truth is that it doesn't have the funding for any such project, and the "new" space station plans are just that, plans on paper only.



On December 21, RKA put out a press bulletin which, although it did not directly say so, implied that before ISS is deorbited, the Russian segment of it will be detached, will become a free-orbiting space station all its own, and will continue to host Russian crews for the indefinite future. While this is seen as a realistic option for continuing the crewed space program, it was criticized in many circles. The Russian module will be thirty years old, has been known to have equipment breakdowns and leaks and may be biologically unsafe due to the buildup of mold and other pathogens over the years. Many now doubt the structural integrity or the safety of the module, but given RKA's financial situation, it apparently has little recourse but to continue using it to keep the once prestigious Russian space program going.

Mars MAVEN Spacecraft Goes Silent

NASA announced that, on December 4, its Mars MAVEN spacecraft, which has been orbiting the Red Planet since 2014, suddenly went silent after emerging from Mars' far side. In addition, the few fragments of telemetry picked up on the spacecraft indicated that it is slowly rotating and its orbit may have changed. All of this suggests that it may have been hit by something, possibly a tiny asteroid or other piece of orbital debris. NASA and the Jet Propulsion Laboratory, which manages the MAVEN mission, is still working on restoring contact with the spacecraft, but, as of this writing, the end of December, chances are fading for a successful recontact.



MAVEN's original and main goal, lasting for a year, was to examine Mars' upper atmosphere to find clues about the planet's climate and chemistry. Afterwards, it was given a series of objectives, one of which was to act as a communications relay for the rovers on the surface, which it has been doing for the past eight years. NASA and the European Space Agency still have four other Mars orbiters providing links for the rovers, but the loss of MAVEN is a setback to the overall Martian research program.

Another in a continuing series on lesser-known, but still important, astronomical observatories around the world

The Hirsch Observatory

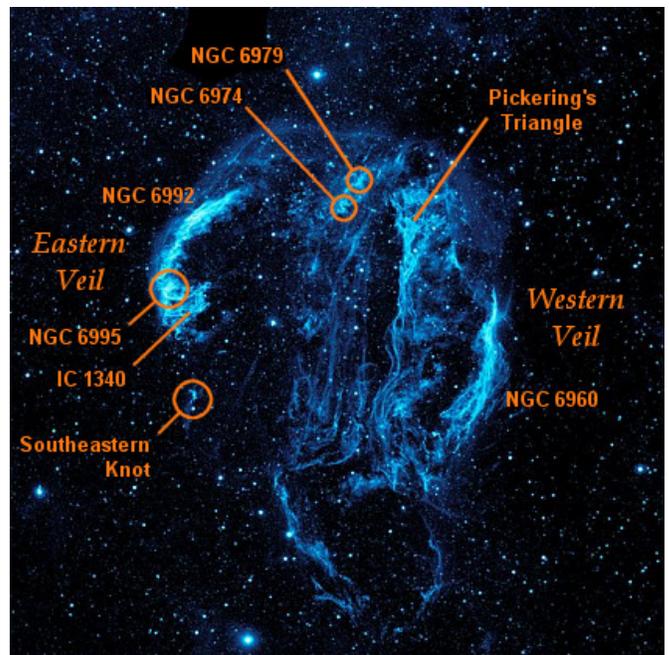
The Hirsch Observatory is at the Rensselaer Polytechnic University in Troy, New York, and is managed by the Science Center at the University. It was established and built in 1942 and originally housed a 12" reflector, which was used for many years. In 1965, the facility was renamed the Hirsch Observatory in honor of David Hirsch, a graduate and trustee of the school, who donated over \$70,000 to have the observatory refurbished. In 1980, the General Electric company gave a 16" Schmidt-Cassegrain telescope to the University, and it replaced the 12". It is still used today. In 2006, the observatory was refurbished again and updated with computer controls and other electronic equipment.



Currently, the observatory is on the roof of the Sciences building, where it was moved to in 1983. The 16" S-C is used by both professors and students, as well as the public during community outreach events during the year.

The Cygnus Loop

The Cygnus Loop, of which the Veil Nebula is the best-known part, is a remnant of a supernova located in the constellation Cygnus. It measures almost 3 degrees across and is believed to have been formed about 30,000 years ago. The latest measurements show it to be about 2,400 light years from Earth; it is estimated to be 125 light years in diameter. It is actually made up of several different parts; each one goes by a distinctive NGC or IC designation. The Veil Nebula itself is also known as the Cirrus Nebula and goes by the catalog identity of NGC 6992 and also NGC 6990. One part towards its southern end is catalogued as IC 1340. It is also called the Eastern Veil Nebula and goes by the designation of Caldwell 33. The Western Veil Nebula, on the opposite side of the Loop, is also known as the Witch's Broom. It is catalogued as NGC 6960 and also Caldwell 34. A triangular area at the north end of the Loop is known as Pickering's Triangle. It was first seen by Williamina Flemming in 1904.



Near it are two bright areas, catalogued as NGC 6979 and NGC 6974. Below the Eastern Veil is another bright area called the Southeastern Knot, which is a strong x-ray source. Various parts of the Cygnus Loop were first seen and catalogued by William Herschel in the 1790s; other parts were first observed by Lord Rosse in the 1840s.

Image-Taken by NASA's Galaxy Evolution Explorer (GALEX) satellite in ultraviolet light

Galaxy in the Eyepiece

NGC 6217

NGC 6217 has the distinction of being the only galaxy of consequence in the constellation Ursa Minor. It was first seen by William Herschel in 1797. It is classified as an SBbc spiral with a central bar; is about 55,000 light years in diameter, half the size of our Milky Way; and the latest measurements show it to be 67 million light years from Earth. It has an apparent magnitude of 11.2, which means it can be seen in a small telescope on a dark night.

6217 is considered a starburst galaxy by scientists; it is undergoing massive star formation in its spiral arms, and in the barred area. It also has a number of HII regions. As such, many astronomers consider it to be a fairly young galaxy, maybe only half the age of the Milky Way or even younger. One supernova has been observed in it: SN2018gj, with a magnitude of 14.6, found in 2018.



Star Stories

Mirzam

Mirzam, also known as Beta Canis Majoris, is the second brightest star in Canis Major, after Sirius. It is not far from Sirius, either, being in the position of the dog's front leg. It is classified as a B1 star with an apparent magnitude of 1.98, an absolute magnitude of -3.93, a mass of about twelve times that of our Sun, and, based on the latest parallax measurements, 500 light years from Earth. It is estimated to be twelve to fourteen million years old.



Mirzam is a Beta Cepheid Variable, with its apparent magnitude ranging from 1.97 to 2.1 over a six hour period, too small to be discerned by the human eye. Its variability was not noticed until advanced luminosity instruments of the mid-twentieth century revealed it. The same instruments have revealed that Mirzam was the brightest star in the sky about four million years ago, outshining even Sirius with an estimated apparent magnitude of -3.6. So far, it is not known to have any companion stars or planetary bodies around it.

Like many other stars, the name *Mirzam* is Arabic, meaning "The Announcer," probably because it is the first star in Canis Major to rise above the horizon, foretelling the arrival of Sirius. To the Chinese, it was *Jun Shi*, "the first star of the Soldier's Market."

Science Trivia

J. Robert Oppenheimer, the physicist who became the head of the Manhattan Project during World War II, was in such demand as a professor during the 1930s that he was on the faculty at two different schools. He taught at Caltech one semester, and at UC Berkeley the other. Even more so, many of his students followed him from one institution to the other to take his classes. After WWII, he became the director of the Princeton Institute for Advanced Studies, where his most famous employee was Albert Einstein.



Space Age Archeology

Ariel 1

Ariel was the first British satellite to be launched into orbit, making Great Britain the third country, after the Soviet Union and the United States, to put a satellite into orbit. It was the first of a number of satellites under the Ariel name.

The Ariel program began in 1959, when the British National Committee for Space Research proposed a joint satellite venture with NASA. It was originally known as the UK-1 and S-55 programs. The name Ariel was chosen by the British to honor Shakespeare; Ariel is a character in his play *The Tempest*.

The Ariel satellite bus itself was designed and built at the Goddard Space flight Center outside Washington, D.C., but the six experiments carried aboard it were products of University College London and Cambridge University. They included solar and ionospheric radiation detectors, cosmic ray sensors, and x-ray detectors. The finished satellite was cylindrical shaped, had a diameter of 23 inches, a height of 22 inches, and weighed 136 Earth pounds. It had solar panels for generating electrical power and was expected to last about a year. Three satellites were built, all identical. One was a ground prototype testing device, one was the actual orbital satellite, and the third was a backup. Originally, Ariel was scheduled to be launched aboard a Scout rocket, but the Scout program was behind schedule, so a Thor-Delta rocket was used instead.

Ariel I was launched from Cape Canaveral., Florida, on April 29, 1962, and went into a highly elliptical orbit of 250 miles by 750 miles. Its main goal was to gather information on solar flares, and it captured twenty of them over a two month period. The satellite was damaged, along with several others, when the United State conducted a high-altitude nuclear blast, known as Starfish, on July 9, 1962, but it was able to transmit some data for almost two years after that. Ironically, the radiation from the blast deactivated the timer that would have shut down the satellite after a year. It reentered the atmosphere in 1976 and burned up.

Ariel I was considered a success, and paved the way for five more Ariel satellites, launched between 1965 and 1979, all dedicated to exploring the upper atmosphere and the solar environment.



CVA Gets a Special Treat

For the CVA meeting on February 6, instead of gathering at Round Table, CVA members and their families met at the Downing Planetarium at Fresno State. There, they were introduced to Dan Brown, the new planetarium director, who has taken the place of Steve White; Steve is retired from the planetarium and Fresno State, but Dan said he still comes around every now and then to see how things are going. Dan treated the CVA members to special showing of Pink Floyd's "The Dark Side of the Moon," which he explained is the planetarium's the most popular show. It was a forty-five minute surreal ride through both light and sound, something that those who were there won't soon forget. Afterwards, Dan took everyone on a tour of the nighttime skies, viewing both familiar objects and new ones as well. An evening well worth the drive.

