

PRIMEFOCUS

Tri-Valley Stargazers



October 2019



Meeting Info

Meteorites: Where do they come from and what are they made of?

Who:
Bill Beiriger

When:
October 18, 2019
Doors open at 7:00 p.m.
Meeting at 7:30 p.m.
Lecture at 8:00 p.m.

Where:
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

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October Meeting

Meteorites:

Where do they come from and what are they made of?

By Bill Beiriger

In this presentation, I will discuss meteorites, including my extensive collection. My main collections are micro-minerals that require 10 to 40 times magnification with a binocular microscope to enjoy them. I have a sand collection that is now over 4700 samples. I have had a lot of fun putting together educational displays with my sand samples. They have included WWII sand displays, Route 66, Louis and Clark Exposition and a display of sand from the filming sites for movies and TV shows. My presentation on the meteorites was put together for the Lithophiles Gem and Mineral Society.



Caption: Alex Meshik and Morgan Nunn Martinez collecting a meteorite in Antarctica's Miller Range during the 2013-2014 ANSMET field season. ANSMET is the Antarctic Search for Meteorites program. Credit: NASA/JSC/ANSMET

Bill Beiriger has been a member of the Livermore Valley Lithophiles Gem and Mineral Society for over 50 years. He was their Education Chairman for about 25 years, and has held most of the other offices in the group. Bill retired from LLNL where he was working in Earth Sciences most of the time. He mostly did X-ray Diffraction, Scanning Microscopy and Electron Microprobe analysis of minerals and minerals in rock samples. Bill gives rock, mineral and fossil presentations to schools and scout groups.

News & Notes

2019-2020 TVS Meeting Dates

Below are the TVS meeting dates for 2019-2020. The lecture meetings are on the third Friday of the month, with the Board meetings on the Monday following the lecture meeting.

Lecture Meeting	Board Meeting	Prime Focus Deadline
Oct. 18	Oct. 21	
Nov. 15	Nov. 18	Nov. 01
Dec. 20	Dec. 23	Dec. 06
Jan. 17	Jan. 20	Jan. 03
Feb. 21	Feb. 24	Feb. 07
Mar. 20	Mar. 23	Mar. 06
Apr. 17	Apr. 20	Apr. 03
May 15	May 18	May 01
Jun. 19	Jun. 22	Jun. 05
Jul. 17	Jul. 20	Jul. 03
Aug. 21	Aug. 24	Aug. 07
Sep. 18	Sep. 21	Sep. 04
Oct. 16	Oct. 19	Oct. 02
Nov. 20	Nov. 23	Nov. 06
Dec. 18	Dec. 21	Dec. 04

Money Matters

As of the last Treasurer's Report on 9/23/19, our club's checking account balance is \$13,850.

TVS Welcome to New Members

TVS would like to welcome new members: A. Singh, C. Dutton, and M. Taraszki. Please say hello and chat with them at upcoming club meetings.

Outreach Star Parties

November 2: Del Valle (Arroyo Staging Area), set-up at 5:00pm

Del Valle star parties are joint public outreach and club star parties. They are jointly hosted with the EBRPD and held at the Arroyo Staging Area. The public is invited for the first 1.5-2 hours, while club members can stay the remainder of the night.

Time to Renew Club Membership for 2020

Now is a great time to become part of TVS. Membership is open to anyone with an interest in astronomy. Amateurs and professionals are equally welcome; skilled amateurs comprise the majority of the membership. You do not have to own a telescope in order to be a member.

Those renewing their club membership are encouraged to do so by using the online application before the end of December. Normally our memberships are only good for the calendar year, but anyone joining after October 1st will be given a membership for the remainder of 2019 and all of 2020. The regular club membership remains a bargain at \$30.

Student membership (full-time High School or College student) is only \$10! Alternatively, Patron Membership, which grants use of the club's 17.5" reflector at H2O, is available at the annual rate of \$100.00. To become a key holder to H2O, you must be 18 or older. There is a one-time \$20 Key deposit and a \$10 annual access fee.

You can join TVS or renew your membership online at:

<http://www.trivalleystargazers.org/membership.shtml> After filling out the application form you are connected to the PayPal payment form. You do not need to have a PayPal account to pay online, since PayPal will accept credit cards. Everyone is encouraged to use the online application. Alternatively, you can mail in the Membership Application on the last page of this newsletter along with a check to the Tri-Valley Stargazers, P.O. Box 2476, Livermore, CA 94551-2476. Note that TVS will not share your information with anyone. We only use the e-mail address to notify you when the newsletter becomes available.

All members agree to hold the Tri-Valley Stargazers, and any cooperating organizations or landowners, harmless from all claims of liability for any injury or loss sustained at a TVS function.

Calendar of Events

October 19, 11:00am

What: Exploring the Local Universe with the Hubble and James Webb Space Telescopes

Who: Prof. Dan Weisz, UC Berkeley

Where: UC Berkeley, 131 Campbell Hall, Upper-Campus

Cost: Free, Parking at the Upper Hearst Structure at Hearst and Gayley. The venue is 15-20 minute walking distance from BART and bus lines.

Most galaxies are so far away that they appear to us only as faint smudges. However, for the nearest galaxies in our cosmic neighborhood, the clarity and sensitivity of the Hubble Space Telescope transforms them galaxies from smudges into spectacular collections of individual stars. These observations allow astronomers to study how galaxies form and evolve. In this talk, Prof. Weisz will highlight some of the amazing science and images produced by Hubble observations of local galaxies from the past three decades. The pinnacle of these studies is the Panchromatic Hubble Andromeda Treasury (PHAT) program, an 800 hour Hubble survey of our sibling galaxy Andromeda, and one of the largest Hubble programs ever conducted. He will describe the PHAT survey and its scientific impact. He will also discuss plans for James Webb Space Telescope, which will succeed Hubble as the most sensitive telescope in existence following its launch in 2021.

Header Image: Meteorite North West Africa 869-Ordinary L5 Chondrite about 1-inch in size. Metal grains and chondrules are visible. Credit: Ken Sperber

Calendar of Events (continued)

For more information see: <http://scienceatcal.berkeley.edu/lecture-oct19-local-universe/>

October 22, 7:15pm

What: Globular Clusters
Who: Prof. Graeme Smith, Lick Observatory
Where: Mt. Diablo Astronomical Society, Lindsay Wildlife Experience, Community Room, 1931 First St., Walnut Creek, CA 94597
Cost: Free.

No details available.

For more information see: https://nightsky.jpl.nasa.gov/event-view.cfm?Event_ID=95252

November 1, 6:00pm - 10:00pm

What: Future Friday: Andrew Fraknoi
Who: Prof. Andrew Fraknoi
Where: Chabot Space and Science Center, 10000 Skyline Blvd., Oakland, CA 94619
Cost: \$5

July 20, 2019 was the 50th anniversary of humanity's first steps on the Moon. In that time, the Apollo missions, a fleet of robotic probes, and observations from Earth have taught us a lot about Earth's surprising satellite. In this non-technical talk, Andrew Fraknoi, who is sometimes called the Bay Area's public astronomer, will look at the past, present, and future of the Moon, including its violent origins, the mystery of the frozen water we have found at its poles, and its long-term future as it moves further and further away from us.

Illustrated with beautiful images taken from orbit and on the surface, his talk will make the Moon come alive as an eerie

world next door, as a changing object in our skies, and as a possible future destination for humanity and its ambitions. Come find out how the achievements of the Apollo program fit into the bigger picture of our only natural satellite.

For more information see: <https://chabotspace.org/calendar/future-friday-andrew-fraknoi/> or call (510) 336-7373.

November 1, 7:00pm-8:00pm

What: Intro to the Night Sky
Who: David G.
Where: Houge Park, 3972 Twilight Drive, San Jose, CA
Cost: Free

At our "Intro to the Night Sky" talk, learn about what's happening in the night sky in the coming month and what you can see from your own backyard in San Jose. Afterward take a walk down telescope row at our In-Town Star Party. The class and the star party are free, no reservations, just show up!

For more information, see: <https://www.meetup.com/SJ-Astronomy/events/257516271/>

November 4, 7:30pm

What: Celebrating 20 years with NASA's Chandra X-ray Observatory
Who: Dr. Belinda Wilkes, Director, Chandra X-ray Center
Where: California Academy of Sciences, 55 Music Concourse Dr., Golden Gate Park, San Francisco, CA
Cost: Advanced ticketing required. Academy members \$12, Seniors \$12, General \$15. Reserve a space online or call 1-877-227-1831.

The launch of NASA's Chandra X-ray Observatory in 1999 brought X-ray astronomy into the main stream, with 10 times

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<p>Officers</p> <p>President: Roland Albers president@trivalleystargazers.org</p> <p>Vice-President: Eric Dueltgen vice_president@trivalleystargazers.org</p> <p>Treasurer: David Feindel treasurer@trivalleystargazers.org</p> <p>Secretary: Ron Kane secretary@trivalleystargazers.org</p> <p>Past President: Rich Combs past_president@trivalleystargazers.org</p>	<p>Volunteer Positions</p> <p>Astronomical League Rep.: Dennis Beckley alrep@trivalleystargazers.org</p> <p>Club Star Party Coordinator: Eric Dueltgen coordinator@trivalleystargazers.org</p> <p>Del Valle Coordinator: David Feindel delvalle@trivalleystargazers.org</p> <p>Historian: Hilary Jones historian@trivalleystargazers.org</p> <p>Internat. Dark-Sky Assoc. Rep.: Aadi Duggal darksky@trivalleystargazers.org</p> <p>Librarian: Ron Kane librarian@trivalleystargazers.org</p> <p>Loaner Scope Manager: Ron Kane telescopes@trivalleystargazers.org</p>	<p>Night Sky Network Rep.: Ross Gaunt nnsn@trivalleystargazers.org</p> <p>Newsletter Editor: Ken Sperber newsletter@trivalleystargazers.org 925-361-7435</p> <p>Observatory Director/Key Master: Chuck Grant observatory@trivalleystargazers.org</p> <p>Outreach Coordinator: Eric Dueltgen outreach@trivalleystargazers.org</p> <p>Potluck Coordinator: Jill Evanko potluck@trivalleystargazers.org</p> <p>Program Coordinator: Dan Helmer programs@trivalleystargazers.org</p> <p>Publicity Coordinator: Jim Theberge publicity@trivalleystargazers.org</p>	<p>Refreshment Coordinator: Laurie Grefsheim</p> <p>Webmaster: Hilary Jones webmaster@trivalleystargazers.org</p> <p>Web & E-mail www.trivalleystargazers.org info@trivalleystargazers.org</p> <p>TVS E-Group To join the TVS e-group just send an e-mail message to the TVS e-mail address (info@trivalleystargazers.org) asking to join the group. Make sure you specify the e-mail address you want to use to read and post to the group.</p>
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TVS Outreach Event at John Green Elementary School



Image Caption: Jenny Siders took this image on October 1 of a young girl enjoying a view through a telescope at the TVS Outreach event at the John Green Elementary School.

the resolution and the ability to see objects 100 times fainter than previous X-ray satellites.

As Chandra celebrates its 20th year of operations, Dr. Wilkes will review some of the major discoveries and highlights of its scientific progress to date. This encompasses determining whether habitable exoplanets can survive the birth of their stars, to finding very distant supermassive black holes when the Universe was 10% of its current age, and everything in between: the birth and death of stars, merging galaxies and black holes, and unexpectedly chaotic clusters of galaxies.

What does the future hold for new Chandra scientific opportunities now and over the next decade, and what might follow Chandra when it ends its illustrious career?

For lecture and reservation information see <https://www.calacademy.org/events/benjamin-dean-astronomy-lectures/celebrating-20-years-with-nasas-chandra-x-ray-observatory-0>

RTMC 2019 By Alan B. Gorski

This year's 51st Riverside Telescope Makers Conference Expo was lightly attended. Due to scheduling conflicts with other YMCA events, the 2020 RTMC Expo will again be in September at Camp Oaks, just north of Big Bear Lake. During the day the weather is cooler and it gets darker sooner than the former traditional Memorial Day weekend event. For whatever reason this is the first time I've seen Sagittarius (the Teapot looking Constellation) set in the southwest vertically on its spout.

The place where I used to set up the telescope is now dominated by new modern dorm buildings that were not open to conference goers. I decided to set up on the other side of the pond, north of the dorms with several others which had a good 360° view of the horizon. After midnight I took a few

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TVS Member Astrophotos



Image Caption: Alan Gorski imaged the California Nebula (NGC1499) with his TeleVue (Nagler--Petzval) 127(mm) 5" f/5.2 APO refractor, 90 second exposure, ISO 4000 with a modified Canon 6D full frame DSLR..



Image Caption: Telescopes of interesting design/configuration always show-up at RTMC, including this 11-inch refractor on a portable Volvo Mount and this homemade 8-inch wooden Dobsonian. Image Credit: Alan Gorski

What's Up By Ken Sperber (adapted from S&T and The Year in Space)

Pacific Daylight Time until November 3, 2am, Pacific Standard Time thereafter

October

- 13 Sun Full Moon (2:08pm)
- 17 Thu The Moon is near the Hyades, $\sim 4^\circ$ from Aldebaran (Evening)
- 19 Sat Algol at minimum brightness for ~ 2 hours centered on 11:15pm
- 21 Mon Last-Quarter Moon (5:39am)
- 21-22 Mon The Orionid Meteors peak this night; see S&T, October 2019, p.48
- 22 Tue Algol at minimum brightness for ~ 2 hours centered on 8:04pm
- 26 Sun The thin sliver of a Moon, Mars, and Porrima form a triangle in Virgo, low on the eastern horizon (Dawn)
- 27 Sun New Moon (8:38pm)
- 29 Tue The Moon and Venus are $\sim 2^\circ$ apart in the southwest (Dusk)
- 31 Thu Saturn, the Moon, and Jupiter are seen in the southwest (Dusk)

November

- 1 Fri Saturn, the crescent Moon, and Jupiter form a line 22° long in the south-southwest (Dusk)
- 3 Sun Daylight Savings Time ends at 2:00am
- 4 Mon First-Quarter Moon (2:23am)
- 8 Fri Algol at minimum brightness for ~ 2 hours centered on 11:57pm
- 9-11 Sat- Mars passes within 2.5° of Spica (Dawn)
- 11 Mon Mercury Transits the Sun (in progress at sunrise, ending at 10:04am; See: November S&T, p. 48)
- 11 Mon Algol at minimum brightness for ~ 2 hours centered on 8:46pm
- 12 Tue Full Moon (5:34am)
- 16 Sat The Moon rises in Gemini, $\sim 6^\circ$ right of Pollux (Evening)
- 16-17 Sat The Leonid Meteor Shower peaks, but the waning Moon interferes (All Night)
- 19 Tue Last-Quarter Moon (1:11pm)
- 23-24 Sat- Venus and Jupiter are separated by $\sim 1^\circ$ (Dusk)
- 25 Mon Mars, Mercury, and the Moon form a line 10° long (Dawn)
- 27-30 Wed- The Moon passes Venus and then Saturn, with Jupiter closest to the Horizon (Dusk)

shots of the last quarter moon rising.

There were a few good talks, one on the progress of the Mars rovers and another on the rogue extra solar hyperbolic orbit visitor, Omamua. Oh well, it wasn't Star Trek's "Doomsday Machine" after all. OK, I guess I'm getting old. This Star Trek episode first aired on October 27, 1967.

But since Omamua's discovery another hyperbolic object, C/2019 Q4 (Borisov) aka 2I/Borisov, with a cometary tale, will enter the solar system. Lastly, adaptive optics are now being used to steady the sun's surface detail with incredible resolution.

NASA Night Sky Notes

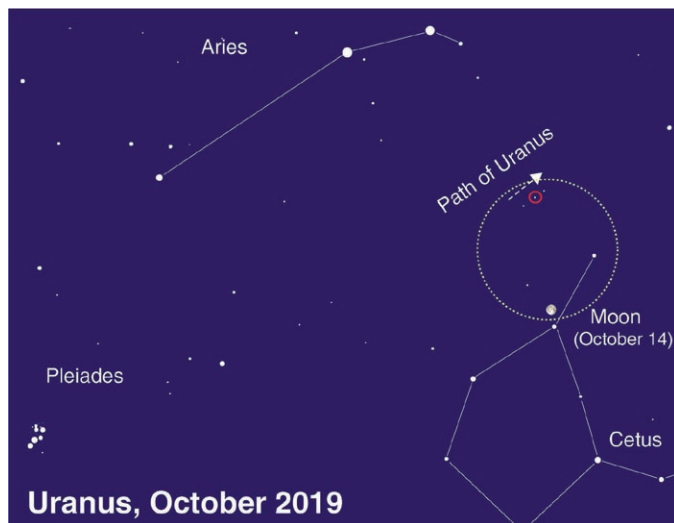
Find Strange Uranus in Aries

By David Prosper

Most of the planets in our solar system are bright and easily spotted in our night skies. The exceptions are the ice giant planets: Uranus and Neptune. These worlds are so distant and dim that binoculars or telescopes are almost always needed to see them. A great time to search for Uranus is during its opposition on October 28, since the planet is up almost the entire night and at its brightest for the year.



Search for Uranus in the space beneath the stars of Aries the Ram and above Cetus the Whale. These constellations are found west of more prominent Taurus the Bull and Pleiades star cluster. You can also use the Moon as a guide! Uranus will be just a few degrees north of the Moon the night of October 14, close enough to fit both objects into the same binocular field of view. However, it will be much easier to see dim Uranus by moving the bright Moon just out of sight. If you're using a telescope, zoom in as much as possible once you find Uranus; 100x magnification and greater will reveal its small greenish disc, while background stars will remain points.



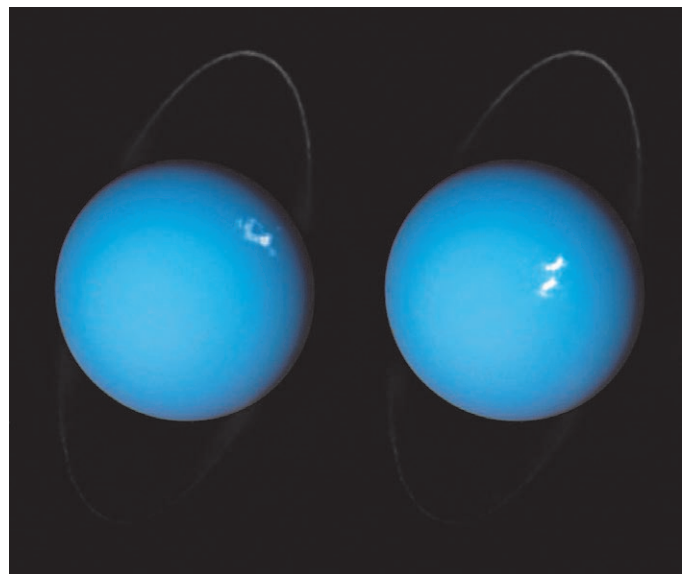
Caption: The path of Uranus in October is indicated by an arrow; its position on October 14 is circled. The wide dashed circle approximates the field of view from binoculars or a finderscope. Image created with assistance from Stellarium.

Try this observing trick from a dark sky location. Find Uranus with your telescope or binoculars, then look with your unaided eyes at the patch of sky where your equipment is aimed. Do you see a faint star where Uranus should be? That's not a star; you're actually seeing Uranus with your naked eye! The

ice giant is just bright enough near opposition - magnitude 5.7 - to be visible to observers under clear dark skies. It's easier to see this ghostly planet unaided after first using an instrument to spot it, sort of like "training wheels" for your eyes. Try this technique with other objects as you observe, and you'll be amazed at what your eyes can pick out.

By the way, you've spotted the first planet discovered in the modern era! William Herschel discovered Uranus via telescope in 1781, and Johan Bode confirmed its status as a planet two years later. NASA's Voyager 2 is the only spacecraft to visit this strange world, with a brief flyby in 1986. It revealed a strange, severely tilted planetary system possessing faint dark rings, dozens of moons, and eerily featureless cloud tops. Subsequent observations of Uranus from powerful telescopes like Hubble and Keck showed its blank face was temporary, as powerful storms were spotted, caused by dramatic seasonal changes during its 84-year orbit. Uranus's wildly variable seasons result from a massive collision billions of years ago that tipped the planet to its side.

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Caption: Composite images taken of Uranus in 2012 and 2014 by the Hubble Space Telescope, showcasing its rings and auroras. More at bit.ly/uranusauroras Credit: ESA/Hubble & NASA, L. Lamy / Observatoire de Paris



Tri-Valley Stargazers
P.O. Box 2476
Livermore, CA 94551
www.trivalleystargazers.org

Tri-Valley Stargazers Membership Application

Contact information:

Name: _____ Phone: _____

Street Address: _____

City, State, Zip: _____

Email Address: _____

Status (select one): _____ New member _____ Renewing or returning member

Membership category (select one): Membership term is for one calendar year, January through December.

_____ Student member (\$10). Must be a full-time high-school or college student.

_____ Regular member (\$30).

_____ Patron member (\$100). Patron membership grants use of the club's 17.5" reflector at H2O. You must be a member in good standing for at least one year, hold a key to H2O, and receive board approval.

Hidden Hill Observatory Access (optional): Must be 18 or older.

_____ One-time key deposit (\$20). This is a refundable deposit for a key to H2O. New key holders must first hear an orientation lecture and sign a usage agreement form before using the observing site.

_____ Annual access fee (\$10). You must also be a key holder to access the site.

Donation (optional):

_____ Tax-deductible contribution to Tri-Valley Stargazers

Total enclosed: \$ _____

Member agrees to hold Tri-Valley Stargazers, and any cooperating organizations or landowners, harmless from all claims of liability for any injury or loss sustained at a TVS function. TVS will not share information with anyone except as detailed in our Privacy Policy (<http://www.trivalleystargazers.org/privacy.shtml>).

Mail this completed form along with a check to: Tri-Valley Stargazers, P.O. Box 2476, Livermore, CA 94551.