Tri-Valley Stargazers

August 2022

PrimeFocus

WHEN:

August 19, 2022
Meeting at 7:30pm
Lecture at 8:00pm

WHERE:

Unitarian Church
1893 North Vasco Rd.
Livermore, CA 94551

and via Zoom

TVS QR Code

INSIDE THIS ISSUE:

An Introduction to Telescopes
Eric Dueltgen

This presentation is geared toward people who are new to astronomy and considering buying a telescope, but don't know what to buy. The different types of telescopes will be discussed, as well as how they work, and advantages and disadvantages of each type. The talk will cover the best types of telescopes for beginners. (Hint: There is no one best type, the best type for you depends on what you want to do with the telescope.) Newer technologies in telescopes, such as electronic eyepieces, will also be included in the discussion. Telescopes for astrophotography will also be discussed, but this will not be the "focus" of the talk.

Eric Dueltgen grew up in the San Jose and Portland, Oregon areas. He has been interested in astronomy since he was a young child, when he gave a presentation on the planets (including Pluto) to his fourth-grade class. Eric decided to join TVS in 2006 after going all the way to Turkey just to see a total solar eclipse. He has been the TVS Outreach Coordinator since 2009. Eric has a BS in Mechanical Engineering and works as an occupational safety and health professional in Livermore.

NOTE: As per the Unitarian Church Policy:

1) Do not come if we are not feeling well or have had recent contact with a person with COVID
2) Masks are required in the church
3) We will have a sign-in sheet for those attending at the church (name and email) so we can track anyone who does get sick

Obituary: Don Machholz

It is with great sadness that we report the passing of Don Machholz, a lifetime member of the Tri-Valley Stargazers, and the featured speaker from last month's TVS meeting. As far as we know, this was Don's last formal presentation to an astronomy club.

Don did *not go gentle into that good night*[1], rather he conquered the night by being the most prolific visual discoverer of comets. Through careful and deliberate searches of the night sky over the course of 9000 hours since 1975, he discovered 12 comets that bear his name. He used a wide variety of instruments to make his discoveries, including homemade telescopes and binoculars. His finds include both periodic and non-periodic comets. For example, Comet 96P/Machholz is a Sungrazing comet with a period of 5.29 years. On January 31, 2023 it will next arrive at perihelion. Another interesting discovery by Don was Comet 141P/Machholz, which fragmented into multiple pieces. Among his many awards, he received the 1978, 1985, and 1986 Tuthill Comet Award, multiple awards from the Association of Lunar and Planetary Observers and the Smithsonian Astrophysical Observatory, and the 1995 G. Bruce Blair Medal.

Don was also famous as one of the inventors of the Messier Marathon, in which the goal is to observe all 110 Messier objects in one night! Don accomplished this feat at least 50 times! As part of his legacy, he was a noted author, having published 3 books: "The Observing Guide to the Messier Marathon: A Handbook and Atlas," "Decade of Comets: A Study of 33 Comets Discovered by Amateur Astronomers Between 1975 and 1984," and "An Observers Guide to Comet Hale-Bopp." He also produced a weekly podcast entitled "Looking Up With Don" and he wrote for EarthSky.

Don is survived by his wife Michele and two sons. To learn more about the life and times of Don Machholz, see Donmachholz.com

[1]Do Not Go Gentle Into That Goodnight By Dylan Thomas

News and Notes

2022 Meeting Dates

Lecture Meeting	Board Meeting	PrimeFocus Deadline
Aug. 19	Aug. 22	
Sep. 16	Sep.19	Sep. 2
Oct. 21	Oct. 24	Oct. 7
Nov. 18	Nov. 21	Nov. 4
Dec. 16	Dec. 19	Dec. 2

Money Matters

As of the last Treasurer's Report on 07/18/22, our club's account balance is $66,985,03. This includes $43.123.90 in the H2O Rebuild fund.

TVS Welcomes New Members

TVS welcomes new members Krishna Pranav-Pasuparthi, Lisa Merritt, James Slutz, Ethan Teng, and Nachi Ueno. Please say hello and chat with them during our meetings.

2022 Club Star Party Schedule

Save the dates for the 2022 Club Star Parties.

Del Valle star parties are also public outreach events. 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.

Tesla Vintners star parties are open to only club members and their guests. These star parties end at midnight, but participants can leave earlier, should they wish.

H2O Open House star parties are open to the public. The open house ends at midnight, and all participants are encouraged to stay the duration. The drive to H2O takes about 1 hour, and the caravan leaves promptly from the corner of Mines and Tesla Rds. No gas stations are available on the route, so be prepared. Admission is $3/car-bring exact change. H2O is a primitive site with two porta-potties. Bring water, food, and warm clothing, as needed. Red flashlights are to be used so observer's can preserve their night vision.

August 20: H2O Open House with caravan departing promptly at 6:00pm from Mines and Tesla Roads.
August 27: Solar observing at Stockmen's Park, set up at 10:00am, observing 11:00am-2:00pm
September 17: TVS Club Star Party at Tesla Vintners, 7:00-11:30pm

TVS Telescopes for Sale

If you have been wanting to purchase a telescope, TVS has numerous options available. These include a 12-inch Dobsonian, Celestron and Meade Schmidt-Cassegrain's ranging in size from 4-8 inches, and Meade and Celestron Maksutov telescopes. Also, available is a tabletop classic 4-inch Astroscan. Full descriptions of the available equipment can be found at: TVS Telescope Sales.

Barcroft High Altitude Star Party

Reservations for the Eastbay Astronomical Society's Barcroft High-Altitude Star Party are now open to members of both the EAS and Tri-Valley Stargazer's clubs. This year's event will be held from Saturday, August 27 through Friday, September 2nd (with departure by noon of Friday, September 2nd). That's six nights. Space at Barcroft is limited to a maximum of 12 people per day, so to ensure you get the days you want, make your reservations early.

Before sending payments for reservations ($65 per night, per person), even if you've been there before, please contact Don Saito FIRST (barcroft@eastbayastro.org) to ensure the dates you wish to attend are available. You will also be asked to read the Barcroft Writeup, as it provides the information you'll need to have a safe, comfortable stay, and what is expected of guests to this University of California research facility.

For more details on making a reservation, see:
https://eastbayastro.org/events/

H2O Rebuild Update

Planning and preparations with the contractor for a cylindrical, concrete block observatory building and a deep concrete pier is proceeding well. This building should easily withstand wind, earthquakes, and fire. We are anticipating breaking ground in September. Construction will be in two stages. First the foundation and pier will be poured and left to cure for at least a week, then the concrete brick wall can be built on the foundation. Our contractor, Awesome Concrete of Tracy, CA, is owned by an avid astrophotographer who is very keen on seeing this project completed, so we are anticipating a very successful build and continued interest in any further construction at the site.

Calendar of Events

Aug. 13, 19, 20, 26, 27, 7:30pm-10:30pm

What: Free Telescope Viewing
Who: Chabot Staff
Where: Chabot Space and Science Center, 10000 Skyline Blvd. Oakland, CA 94619
Cost: Free

Join Chabot astronomers on the Observatory Deck for a free telescope viewing (weather permitting). Chabot's historic telescopes offer breathtaking views 1,500 feet above the Bay. Three observatory domes house the Center's 8-inch (Leah, 1883) and 20-inch (Rachel, 1916) refracting telescopes, along with a 36-inch reflecting telescope (Nellie, 2003).

For COVID-19 Restrictions, see:
https://chabotspace.org/visit/plan-your-visit/

Calendar of Events (con't)

For more information, see:
https://chabotspace.org/events/events-listing/

August 17, 10:00am-11:00am

What: Bennu: An Asteroid Full of Surprises
Who: Drs. C. Avdellidou, E. Jawin, and S. Cambiono
Sponsor: SETI Institute
Online: REGISTRATION REQUIRED: Bennu SETI Talk

Since arriving at the near-Earth asteroid Bennu, the NASA OSIRIS-REx mission has brought a wealth of observations of the near-Earth asteroid revealing at the same time a lot of surprises.

Bennu has proved to be consistently unpredictable. The OSIRIS-REx team found a rough surface littered with boulders instead of the smooth, sandy beach they had expected based on observations from Earth- and space-based telescopes. Researchers also discovered that Bennu was ejecting rock particles from its surface into space. Unusual, bright boulders on its surface seem to come from the main-belt asteroid, Vesta. And finally, a few weeks ago, measurements taken during the sampling collection revealed that the asteroid is so loosely packed and lightly bound to each other that if a person were to step onto the asteroid, they would feel very little resistance. Bennu may have the same internal structure as a Plastic Ball Pit.

For more information, see: https://www.seti.org/talks

August 20, 1:00pm-2:00pm

What: Investigating Space: Space Telescope Snapshots
Who: Linda Shore, Chief Executive Officer of the Astronomical Society of the Pacific
Where: Chabot Space and Science Center, 10000 Skyline Blvd. Oakland, CA 94619
Cost: General Admission

Note from TVS Newsletter Editor: I found this Chabot listing very confusing. Listed time is 1-2pm, but the provided abstract lists events that span 10am-3pm.

NASA's James Webb Space Telescope is more advanced than any telescope…ever. As the first images come back, we begin shedding light on some of the mysteries of the Universe. What are we learning? Why does it matter? Get an astronomer's take on the latest images from the James Webb Space Telescope.

Galaxy Explorers, Spectra Demo, Time 10am – 1pm, Studio 3: Explore the properties of light with Light Decoders. You'll experiment using scientific tools to explore emission spectra lines "hidden" in the light from excited gases.

Linda Shore, What Makes the James Webb Space Telescope Such a Big Deal? 2pm, Studio 3: The JWST is a remarkable engineering achievement, and at 1 million miles from the Earth, its location in space makes it the ideal tool for probing the very farthest reaches of the cosmos. Find out more about this amazing telescope and learn more about its first

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Officers

President
Ron Kane
president@trivalleystargazers.org

Vice-President
Eric Dueltgen
vice_president@trivalleystargazers.org

Treasurer
John Forrest
treasurer@trivalleystargazers.org

Secretary
Ross Gaunt
secretary@trivalleystargazers.org

Past President
Roland Albers
past_president@trivalleystargazers.org

Volunteer Positions

Astronomical League Rep.
Dennis Beckley
alrep@trivalleystargazers.org

Club Star Party Coordinator
Eric Dueltgen
coordinator@trivalleystargazers.org

Del Valle Coordinator
David Wright
delvalle@trivalleystargazers.org

Historian
Hilary Jones
historian@trivalleystargazers.org

Librarian
Ron Kane
librarian@trivalleystargazers.org

Loaner Scope Manager
Ron Kane
telescopes@trivalleystargazers.org

Newsletter Editor
Ken Sperber
newsletter@trivalleystargazers.org

Night Sky Network Rep.
Ross Gaunt
nnsn@trivalleystargazers.org

Observatory Director/Rebuild Chairman
Chuck Grant
observatory@trivalleystargazers.org

Observing Program Coordinator
Ron Kane
awards@trivalleystargazers.org

Outreach Coordinator
Eric Dueltgen
outreach@trivalleystargazers.org

Potluck Coordinator
OPEN
potluck@trivalleystargazers.org

Program Coordinator
Dan Helmer
programs@trivalleystargazers.org

Publicity and Fundraising
OPEN
publicity@trivalleystargazers.org

Refreshment Coordinator
OPEN

Webmaster
Hilary Jones
webmaster@trivalleystargazers.org

Web & E-mail
www.trivalleystargazers.org
info@trivalleystargazers.org

TVS E-Group
To join the TVS e-group just send an email message to TVS at: 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.

Calendar of Events (con't)

astonishing images and what astronomers are learning from them.

For COVID-19 Restrictions, see:
https://chabotspace.org/visit/plan-your-visit/

For more information, see:
https://chabotspace.org/events/events-listing/

September 3, 7:30-9:30pm

What: There is no Planet B
Who: Dr. Carolyn Porco (Visiting Distinguished Scholar, UC Berkeley)
Sponsor: Mt. Tam Astronomy Program
Online: Zoom: Mt Tam

We have entered the era of New Space, when private interests have been given the green light and are finally making headway into the commercialization of the final frontier. It's already past the time for tough questions. Will mining asteroids really save the Earth? Can humans avoid extinction by moving our civilization to Earth-orbiting space colonies or terraforming and colonizing Mars? What about the hype over space tourism, or the tens of thousands of internet satellites planned for low Earth orbit? Is any of it even realistic? The speaker will give us her take on the recent developments in space exploration and what it means for all of humanity.

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TVS Del Valle Star Party

Caption: The TVS star party at Lake Del Valle was a huge success. As sunset approached, Jenny Siders photographed the waiting crowd who anticipated views through the telescopes (upper left). Craig Siders captured evening observers chatting about the objects they were observing (upper right). Once again, the Unistellar eVccope proved to be a big attraction to the interested crowd. Quite a few people were able to download the Unistellar App and enjoy real-time views of deep-sky objects on their personal digital devices. Additionally, a large iPad was connected for more people to "observe" through the eVscope. Craig Siders captured this image of the Dumbell Nebula, M27 using the eVscope, which people were able to watch "build-up" over the 11 minute integration time (lower left).

TVS Astrophotos By Lalitya Sawant

Lalitya Sawant imaged M82, the Cigar galaxy, M63, the Sunflower galaxy, and M51, the Whirlpool Galaxy from his backyard in Livermore. He used a Celestron 9.25-inch Edge HD telescope and a 0.7x focal reducer with a ZWO ASI294MM camera using LRGB and H-alpha filters. 10 exposures of 5 minutes each were obtained using each filter. The data were stacked using ZWO Stacking Software and processed using Photoshop and Lightroom.

What's Up By Ken Sperber (adapted from S&T)

All times are Pacific Daylight Time

August

14	Sun	Saturn is at opposition (Visible All Night, see p. 48, August S&T)
15	Mon	The Moon and Jupiter are high in the south, separated by ~2° (Morning)
18	Thu	Venus and M44, the Beehive Cluster, rise together in the ENE (Dawn)
18	**Thu**	**Last-Quarter Moon (9:36pm)**
19	Fri	The Moon, Mars, and the Pleiades are high above the eastern horizon, spanning ~6° (Morning)
20	Sat	The Moon is ~7° form Aldebaran, with Mars and the Pleiades to their upper right (Morning)
23	Tue	The Moon in Gemini forms a triangle with Castor and Pollux in the ENE (Dawn)
25	Thu	The impossibly thin crescent Moon is 6° from Venus in the ENE (Dawn)
27	**Sat**	**New Moon (1:17am)**
30	Tue	Mars is located between Aldebaran and the Pleiades in the east (Morning)
30	Tue	The crescent Moon is ~4° to the upper right of Spica (Dusk)

September

3	**Sat**	**First-Quarter Moon (10:08am) ~5° from Antares (Dusk)**
7	Wed	Mars is ~4° from Aldebaran (Morning; see p.46 September S&T)
7	Wed	The Moon is ~7° to the lower right of Saturn (Evening)
9	Fri	The Moon is located between Jupiter and Saturn in the SE (Evening)
10	**Sat**	**Full Moon (1:59am)**
11	Sun	The Moon is ~5° below Jupiter (Morning)
14	Wed	Algo at minimum brightness for two hours centered on 9:42pm
15	Thu	The Moon rises in the ENE, preceded by the Pleiades and trailed by Mars (Evening)
16	Fri	The Moon, Mars, Aldebaran, and Elnath form a line above the ENE horizon (Evening)
17	**Sat**	**Last-Quarter Moon (2:52pm)**
20	Tue	The Moon in Gemini is 3° below Pollux (Dawn)
21	Wed	The Moon in Cancer is 3° to the upper left of M44, the Beehive Cluster (Dawn)
23	Fri	The Moon and Regulus, separated by 4.5°, rise in the ENE (Dawn)
25	**Sun**	**New Moon (2:55pm)**
26	Mon	Jupiter, at opposition, is the closest to Earth since 1963 (Visible All Night, see p. 48, September S&T)
30	Fri	The Moon is ~1.5° above Antares in the SW (Dusk)

Calendar of Events (con't)

For more information, see:
https://www.mttamastronomy.org/calendar

September 12, 7:30pm

What: Astronomers for Planet Earth: A Cosmological View on Climate
Who: Dr. Adrienne Cool (San Francisco State University)
Where: Golden Gate Park, 55 Music Concourse Drive, San Francisco
Cost: Members and Seniors $12, Guests $15

Astronomers for Planet Earth (A4E) was founded in 2019 to empower and mobilize the global astronomical community to take action on the climate crisis. The network now includes more than 1500 astronomy students, researchers, amateurs, educators, and Nobel laureates from 70 countries. Members of this all-volunteer organization are united by the recognition that the astronomical perspective is valuable in the struggle to preserve our planet's habitability. By gathering, creating, and sharing information and resources, we help each other speak, write, teach, and advocate for climate action and sustainable practices within the field of astronomy and beyond. Dr. Cool will describe the origins of A4E, its current work, and some directions for the future.

For more information, see: Benjamin Dean Astronomy Lecture

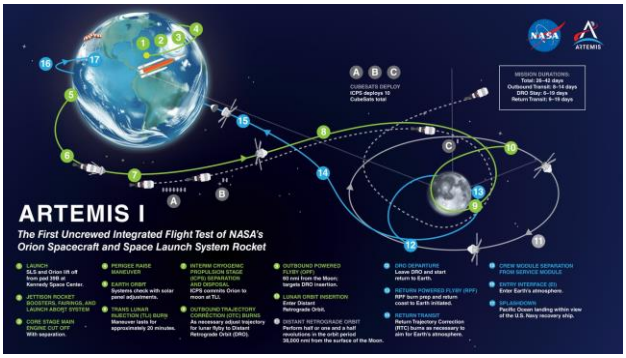
NASA Night Sky Notes

Artemis 1: A Trip Around the Moon – and Back!

By David Prosper

We are returning to the Moon - and beyond! Later this summer, NASA's Artemis 1 mission will launch the first uncrewed flight test of both the Space Launch System (SLS) and Orion spacecraft on a multi-week mission. Orion will journey thousands of miles beyond the Moon, briefly entering a retrograde lunar orbit before heading back to a splashdown on Earth.

The massive rocket will launch from Launch Complex 39B at the Kennedy Space Center in Florida. The location's technical capabilities, along with its storied history, mark it as a perfect spot to launch our return to the Moon. The complex's first mission was Apollo 10 in 1968, which appropriately also served as a test for a heavy-lift launch vehicle (the Saturn V rocket) and lunar spacecraft: the Apollo Command and Service Modules joined with the Lunar Module. The Apollo 10 mission profile included testing the Lunar Module while in orbit around the Moon before returning to the Earth. In its "Block-1" configuration, Artemis 1's SLS rocket will take off with 8.8 million pounds of maximum thrust, even greater than the 7.6 millions pounds of thrust generated by the legendary Saturn V, making it the most powerful rocket in the world!



Caption: Follow along as Artemis 1 journeys to the Moon and back! A larger version of this infographic is available from NASA at: nasa.gov/image-feature/artemis-i-map

Artemis 1 will serve not only as a test of the SLS and the Orion hardware, but also as a test of the integration of ground systems and support personnel that will ensure the success of this and future Artemis missions. While uncrewed, Artemis-1 will still have passengers of a sort: two human torso models designed to test radiation levels during the mission, and "Commander Moonikin Campos," a mannequin named by the public. The specialized mannequin will also monitor radiation levels, along with vibration and acceleration data from inside its mission uniform: the Orion Crew Survival Suit, the spacesuit that future Artemis astronauts will wear. The "Moonikin" is named after Arturo Campos, a NASA electrical engineer who played an essential role in bringing Apollo 13's crew back to Earth after a near-fatal disaster in space.

The mission also contains other valuable cargo for its journey around the Moon and back, including CubeSats, several space science badges from the Girl Scouts, and microchips etched with 30,000 names of workers who made the Artemis-1 mission possible. A total of 10 CubeSats will be deployed from the Orion Stage Adapter, the ring that connects the Orion spacecraft to the SLS, at several segments along the mission's path to the Moon. The power of SLS allows engineers to attach many secondary "ride-along" mission hardware like these CubeSats, whose various missions will study plasma propulsion, radiation effects on microorganisms, solar sails, Earth's radiation environment, space weather, and of course, missions to study the Moon and even the Orion spacecraft and its Interim Cryogenic Propulsion Stage (ICPS)!

Caption: Full Moon over Artemis-1 on July 14, 2022, as the integrated Space Launch System and Orion spacecraft await testing. Photo credit: NASA/Cory Huston Source: https://www.nasa.gov/image-feature/a-full-moon-over-artemis/

If you want to explore more of the science and stories behind both our Moon and our history of lunar exploration, the Night Sky Network's **Apollo 11 at 50 Toolkit** covers a ton of regolith: bit.ly/nsnmoon! NASA also works with people and organizations around the world coordinating **International Observe the Moon Night**, with 2022's edition scheduled for Saturday, October 1: moon.nasa.gov/observe. Of course, you can follow the latest news and updates on Artemis 1 and our return to the Moon at nasa.gov/artemis-1.

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and more.

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).

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.