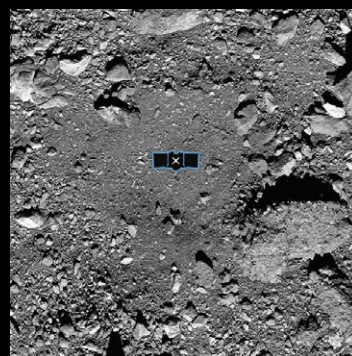


PRIMEFOCUS

Tri-Valley Stargazers



April 2020



Meeting Info: **Starry Messengers: Analyzing Stardust to Decipher the Cosmic Element Factory**

Who:
Dr. Reto Trappitsch

When:
April 17, 2020
Meeting at 7:30 p.m.
Lecture at 8:00 p.m.

Where:
Virtual Meeting using: Zoom*
See "The President's Corner" on p.3 about Staying Connected using of Zoom.

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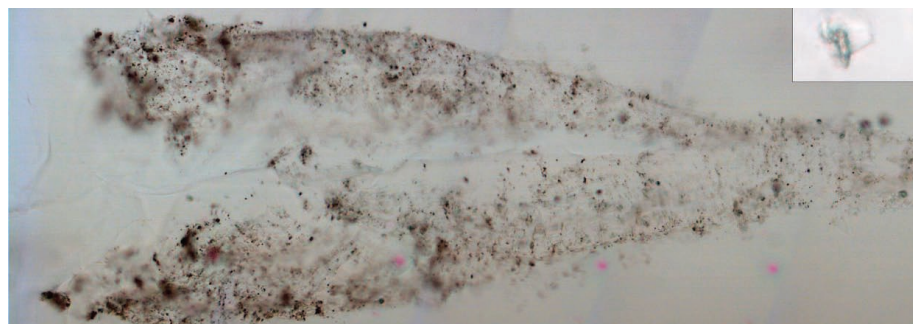
April Virtual Meeting Using "Zoom"

Starry Messengers: Analyzing Stardust to Decipher the Cosmic Element Factory

By Dr. Reto Trappitsch, Lawrence Livermore National Laboratory

Stardust grains formed in the death throes of stars can be found today in meteorites. Some of these grains formed up to around three billion years prior to the solar system and are the oldest solids on Earth. Furthermore, these bona fide stellar remnants represent the sole samples that allow direct measurements of the processes underlying the formation of elements in stars.

In my talk I will discuss how, together with astronomical observations, measurements of the composition of ancient stardust can help us to understand stellar nucleosynthesis and galactic chemical evolution. By studying these processes we can begin to understand how the elements we are made of are formed.



Caption: The track of a Calcium Aluminum Inclusion (CAI) particle found in aerogel cell #54 from the NASA Stardust sample return mission to Comet Wild-2. CAI's are the oldest materials that formed in the solar system. Credit: NASA (<https://astrobiology.nasa.gov/missions/stardust/>)

Reto Trappitsch is a researcher in the Nuclear and Chemical Sciences Division at Lawrence Livermore National Laboratory. He received his Ph.D. in 2016 from the University of Chicago for his research into the iron and nickel isotopic composition of stardust grains to decipher galactic chemical evolution. He joined Lawrence Livermore National Laboratory in 2017 as a postdoctoral researcher. At LLNL, he supports the efforts of resonance ionization mass spectrometry and applies this technique to cosmochemistry and experimental astrophysics measurements.

* **Club Members:** The Zoom link and password to the meeting have been supplied to you in the monthly meeting announcement email. Please do not share the link and password.

Members of the public: Those interested in attending the virtual meeting need to register by sending an email to the TVS club president asking for the meeting link and telling us a little about their areas of interest in astronomy: president"at"trivalleystargazers.org

News & Notes

2020 TVS Meeting Dates

Below are the TVS meeting dates for 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
Apr. 17	Apr. 20	
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 03/23/20, our club's checking account balance is \$13,626.66.

TVS Welcome to New Members

TVS would like to welcome new members Douglas Driver, Alan Goldner, and John Horvath. Please say hello and chat with them at upcoming club meetings.

H2O and Del Valle Observing Sites Closed

The TVS Board voted to temporarily terminate access the two club observing sites while the COVID-19 stay-at-home restrictions are in place. When the access restriction is lifted, club members will be informed via email and the club website.

TVS Star Party Descriptions

NOTE: ALL STAR PARTIES ARE SUBJECT TO POSSIBLE CANCELLATION PENDING THE STATUS OF THE STAY-AT-HOME ORDER!

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 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.

Outreach Star Party Schedule

August 22: Bankhead Theater

Contact Eric Dueltgen if you are interested in participating (outreach"at"trivalleystargazers.org).

2020 Club Star Party Schedule

May 9: H2O

June 13: Tesla Vintners

July 25: Del Valle Arroyo

August 15: H2O

September 12: Tesla Vintners

September 19: Del Valle Arroyo

October 17: Tesla Vintners

Barcroft High-Altitude Star Party: Reservations

Reservations for the Eastbay Astronomical Society's Barcroft High-Altitude Star Party are now open to members of both the EAS and Tri-Valley Stargazers clubs. This year's event will be held from Sunday August 16 through Friday August 21 (with departure by noon of Saturday August 22). That's six nights.

Before sending payments for reservations (\$60 per night, per person), even if you've been there before, please contact Don Saito FIRST (donsaito@yahoo.com) to ensure the dates you wish to attend are available. You will also be asked to read the Barcroft Write-up, 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.

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.

Barcroft is one the premier amateur astronomy view sites in the world, and it's less than a day's drive from the Bay Area to its location in the White Mountains.

Reservations and information can be found at: <http://eastbayastro.org/events/> where links to other star parties can be found, including Spring CalStar and the Golden State Star Party.

Header Image: Sample site Nightingale, OSIRIS-REx's primary sample collection site on Asteroid Bennu. The image is overlaid with a graphic of the OSIRIS-REx spacecraft to illustrate the scale of the site. Credit: NASA/Goddard/University of Arizona

The President's Corner: Staying Connected By Roland Albers

While we all do our part to fight COVID-19 by sheltering-in-place, staying connected has become both more important and more challenging. TVS is taking up the challenge, and we will be holding our April 17th club meeting online by using Zoom video conferencing software. If anyone has not used Zoom before, now is a good time to download it to your computer or phone and practice using it. There are plenty of on-line help documents and video tutorials available for those just learning to use Zoom, but here are a few of the basics you'll need to successfully participate in our club meeting:

Prerequisites: You can participate in the club's Zoom meeting using a desktop computer, laptop, tablet, or smart phone. At a minimum you'll also need a microphone and speakers to participate in the meeting. A webcam helps but is not required.

Joining: Plan to join the club meeting a few minutes before it starts. To join the meeting, simply click on the link provided in the monthly meeting announcement email sent to all club members. If you don't already have Zoom installed on your system, you'll first be prompted to download and install it. You'll then be prompted to open Zoom and then to join the meeting. Upon joining, you'll be placed in a virtual Waiting Room until the meeting starts.

While waiting for the meeting to start, you can test your audio and video equipment. Click on the "Test Computer Audio" button and you'll be brought to a Settings dialog box where you can test your microphone, speakers, and video camera. Exit the settings dialog when you've completed your testing to return to the Waiting Room. Once the meeting is starting, your Zoom window may temporarily close and reopen, and then you'll be able to see and hear the presenter in the main

window. You will also see thumbnail videos of all other participants.

Participating: To ask questions or make comments during the meeting, first use the "Chat" button to type in your question or to ask to speak. To control noise, all participants are muted by default. When you need to first use your microphone, hit the "Join Audio" button in the lower-left corner of your Zoom window. Then hit the same button again to "Unmute". When done speaking, hit the same button once again to "Mute".

Leaving: When the meeting is over, the presenter will end the meeting. Should you need to leave early, hit the "Leave Meeting" button in the lower-right corner of the Zoom window.

And that's it. Remember there are plenty of on-line resources if you wish to learn more about using Zoom. I hope to see many of you at our club's first on-line meeting!

Officers

President:

Roland Albers
president@trivalleystargazers.org

Vice-President:

Eric Dueltgen
vice_president@trivalleystargazers.org

Treasurer:

Jenny Siders
treasurer@trivalleystargazers.org

Secretary:

Ross Gaunt
secretary@trivalleystargazers.org

Past President:

Rich Combs
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 Feindel
delvalle@trivalleystargazers.org

Historian:

Hilary Jones
historian@trivalleystargazers.org

Librarian:

Ron Kane
librarian@trivalleystargazers.org

Loaner Scope Manager:

Ron Kane
telescopes@trivalleystargazers.org

Night Sky Network Rep.:

Ross Gaunt
nnsn@trivalleystargazers.org

Newsletter Editor:

Ken Sperber
newsletter@trivalleystargazers.org
925-361-7435

Observatory Director/Key Master:

Chuck Grant
observatory@trivalleystargazers.org

Outreach Coordinator:

Eric Dueltgen
outreach@trivalleystargazers.org

Potluck Coordinator:

OPEN
potluck@trivalleystargazers.org

Program Coordinator:

Dan Helmer
programs@trivalleystargazers.org

Publicity Coordinator:

OPEN
publicity@trivalleystargazers.org

Refreshment Coordinator:

Laurie Grefsheim

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 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.

TVS Member Astrophotos: M42 Region



Caption: M. Yassine took this image of the M42 region using a Williams Optics GT81 f/4.7 APO refractor using a ZWO ASI1600mm-Pro Imaging Camera. The total integration time was 1 hour using H-alpha and RGB, with 30 exposures of 30sec in each band.

M42 Imaging By Mohamad Yassine

I wanted to share my latest photo. This is just 1 hour of integration with a William Optics GT81 @ f4.7. I actually thought I would miss being able to take a picture of M42 this year between the clouds and work travel. I had a chance to get out on April 1 when the skies cleared up and I was able to get about an hour on it. This is actually only the second target I've captured with this scope, so it was exciting to finally use it.

I collected 30 subs each Ha RGB at 30 seconds each, anything more and the core gets totally blown out. At first, I didn't include the Ha data, I took it for luminance but the nebula is

so bright that you don't really need it. But I ended up replacing the red channel with the Ha data and it made the image look totally different. You can see the difference between the original and final revisions on the Astrobin link (<https://www.astrobin.com/cw4i3g>).

This target is kind of interesting, everyone always talks about how it's a beginner target because it's so bright and easy to find. I've always found it a very challenging target though because it's got the opposite problem of most other nebulas in that it's bright but it's almost too bright, so it's easy to mess it up by having subs that are too long or if the focus is off slightly, or the guiding off where because it's so bright things start looking off. Those small errors also get amplified when you're doing your post-processing. M42 was also the first

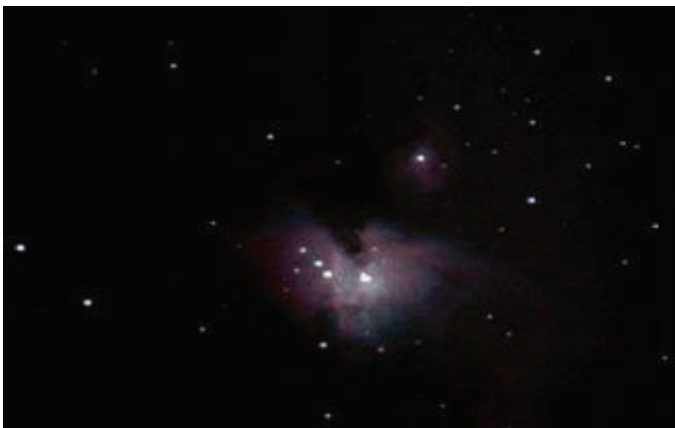
continued on p.5

TVS Member Astrophotos: Venus/M45 Conjunction



Caption: K. Sperber took this image of the conjunction of Venus and The Pleiades (M45) on April 3, 2020 using a Canon 6D, 2sec, ISO-800 and a Tamron Zoom lens at 200mm, f/2.8. This image was framed through tree branches to add Bokeh. Ken's conjunction images from the previous night can be found at: https://spaceweathergallery.com/indiv_upload.php?upload_id=160649

M42 Imaging (continued)



deep sky object I took a picture of and it got me hooked on the hobby, so I use it every year to gauge how I'm improving. I'm attaching my first ever M42 picture above to show the difference. Surprisingly my focus on that first image wasn't too bad.

There are still a lot of improvements that need to be made. I didn't do a good job masking the stars when I was stretching and sharpening things so there are some oddities present. The core needs to be improved a bit to show the trapezium. But it's definitely an improvement over last year's photo.

One final thing which I've been meaning to mention about this group is how far the outreach actually reaches. When I initially got into this hobby back in 2014, I was living in Michigan and there wasn't a lot of information out there on astrophotography. As you can imagine, there's not much time in Michigan where you can do trial and error, so you really have to learn things and be a bit more scientific about it. There was one Youtube channel out there that had all sorts of information about astrophotography, auto-guiding, taking subs, using deep sky stacker etc... So I would watch all this stuff and shuffle outside whenever there was some clear skies and mess around for hours trying to get a shot. When I moved out here, my wife found this group and we joined

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

All times are Pacific Daylight Time

April

- 14 Tue The Moon, Jupiter, Saturn, and Mars form a 20° arc in the south-southwest (Dawn)
- 14 Tue **Last-Quarter Moon (3:56pm)**
- 14 Tue Algol at minimum brightness for ~ 2 hours centered on 9:03pm
- 15 Wed The Moon is 3° below Saturn with Jupiter and Mars flanking the pair (Dawn)
- 16 Thu The Moon is $\sim 3^{\circ}$ to the lower-left of Mars (Dawn)
- 22 Wed The Lyrid Meteor Shower peaks in the early morning hours
- 22 Wed **New Moon (7:26pm)**
- 25 Sat The thin crescent Moon, illuminated by Earthshine, is $\sim 3^{\circ}$ from Aldebaran (Dusk)
- 26 Sun The Moon is located between the horns of Taurus the Bull with Venus $\sim 7^{\circ}$ to the right (Dusk)
- 30 Thu **First-Quarter Moon (1:38pm)**

May

- 1- Fri- All month Venus shines brightly in the western sky (Evening)
- 5 Tue The Eta Aquariid Meteor Shower peaks during the early morning hours
- 7 Thu **Full Moon (3:45am)**
- 12 Tue The Moon, Jupiter, and Saturn form a triangle (Dawn)
- 13-14 Wed- The Moon approaches Mars (Dawn)
- 14 Thu **Last-Quarter Moon (7:03am)**
- 15 Fri The Moon is $\sim 4^{\circ}$ from Mars (Dawn)
- 21 Thu Venus and Mercury in conjunction, $\sim 1^{\circ}$ apart (Dusk)
- 22 Fri **New Moon (10:39am)**
- 23 Sat The thin crescent Moon is $\sim 4^{\circ}$ to the lower-left of Venus (Dusk)
- 24 Sun The Moon, Venus, and Mercury form a line $\sim 12^{\circ}$ long (Dusk)
- 26 Tue The Moon is $\sim 6^{\circ}$ left of Pollux (Evening)
- 28 Thu The Moon is $\sim 7^{\circ}$ northwest of Regulus (Evening)
- 29 Fri **First-Quarter Moon (8:30pm)**

M42 Imaging (continued)

TVS. I was surprised to find that Forrest Tanaka, the same guy who was putting out all those video's I learned from, was also a member of this group (I saw his name in the member list when we transferred over to groups.io). In fact, he mentions his friend Roland in one of the videos, so I'm assuming now it's our same Roland :-). I'm not sure if he's still a member now, but I just wanted to mention that the outreach, whether it's holding events at local schools or Forrest's youtube channel, really reaches far and wide. For sure it's given my family and

me a lifetime of enjoyment and I'm really happy I stumbled upon this group when we moved out here.

NASA Night Sky Notes

Hubble at 30: Three Decades of Cosmic Discovery

By David Prosper

The Hubble Space Telescope celebrates its 30th birthday in orbit around Earth this month! It's hard to believe how much this telescope has changed the face of astronomy in just three decades. It had a rough start -- an 8-foot mirror just slightly out of focus in the most famous case of spherical aberration of all time. But subsequent repairs and upgrades by space shuttle astronauts made Hubble a symbol of the ingenuity of human spaceflight and one of the most important scientific instruments ever created. Beginning as a twinkle in the eye of the late Nancy Grace Roman, the Hubble Space Telescope's work over the past thirty years changed the way we view the universe, and more is yet to come

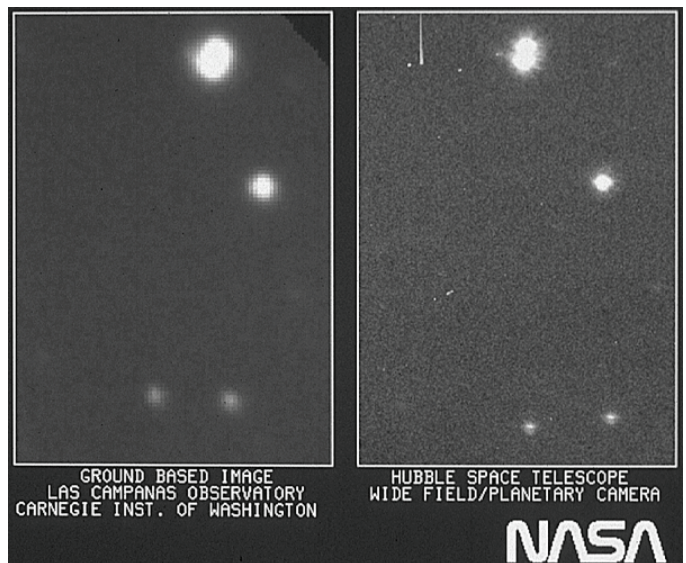


We've all seen the amazing images created by Hubble and its team of scientists, but have you seen Hubble yourself? You actually can! Hubble's orbit -- around 330 miles overhead -- is close enough to Earth that you can see it at night. The best times are within an hour after sunset or before sunrise, when its solar panels are angled best to reflect the light of the Sun back down to Earth. You can't see the structure of the telescope, but you can identify it as a bright star-like point, moving silently across the night sky. It's not as bright as the Space Station, which is much larger and whose orbit is closer to Earth (about 220 miles), but it's still very noticeable as a single steady dot of light, speeding across the sky. Hubble's orbit brings it directly overhead for observers located near tropical latitudes; observers further north and south can see it closer to the horizon. You can find sighting opportunities using satellite tracking apps for your smartphone or tablet, and dedicated satellite tracking websites. These resources can also help you identify other satellites that you may see passing overhead during your stargazing sessions.

NASA has a dedicated site for Hubble's 30th's anniversary at bit.ly/NASAHubble30. The Night Sky Network's "Why Do

We Put Telescopes in Space?" activity can help you and your audiences discover why we launch telescopes into orbit, high above the interference of Earth's atmosphere, at bit.ly/TelescopesInSpace. Amateur astronomers may especially enjoy Hubble's images of the beautiful objects found in both the Caldwell and Messier catalogs, at bit.ly/HubbleCaldwell and bit.ly/HubbleMessier. As we celebrate Hubble's legacy, we look forward to the future, as there is another telescope ramping up that promises to further revolutionize our understanding of the early universe: the James Webb Space Telescope!

Discover more about the history and future of Hubble and space telescopes at nasa.gov.



Caption: Hubble's "first light" image. Even with the not-yet-corrected imperfections in its mirror, its images were generally sharper compared to photos taken by ground-based telescopes at the time. Image Credit: NASA

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).

_____ 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.