

# ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

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# 01.

## SFAA PRESIDENT'S NOTE | AUGUST SKIES

As the summer comes to a close, the familiar sights of Scorpius, Sagittarius and the summer Milky Way start to slip off into the west, to return again next summer. Jupiter and Saturn have been putting on a show for the last couple of months, and they are front and center in August.

August marks the start of school for many families around the country, and our outreach programs begin to catch the interest of students looking for science-oriented activities. We would like to coordinate City star parties with local schools but need to find more volunteers to get involved. If you would like to help in outreach at local schools, please contact [volunteer@sfaa-astronomy.org](mailto:volunteer@sfaa-astronomy.org) to learn more.

On August 31<sup>st</sup>, SFAA has a members-only guided tour of Lick Observatory. This is a 4+ hour tour of the facilities, with a visit to the 3-meter Shane reflector and the 1-meter Great Lick Refractor. If the weather cooperates, the end of the tour will include an observing session on the 1-meter, which is still operational. Please visit the link below to sign up; there is still room on the list for more members.

<https://docs.google.com/forms/d/e/1FAIpQLSdzA8yCYEG4HuxjyutO25HBotsGsbFa3wX-F9Mzv232xIX1g/viewform>

With this issue, we hope to resume publishing a newsletter on a more predictable schedule. We could use some more help in that department, so if you have some time to spare, we will really appreciate if you could lend a hand. Email [newsletter@sfaa-astronomy.org](mailto:newsletter@sfaa-astronomy.org) to learn how you can help with the creation of the newsletter.

I'd like to extend a thank you to member Thomas Perfumo for submitting a science story for this issue.

Clear skies,

**P.J. Cabrera**  
President, SFAA

### **SFAA Board Officers and Directors:**

President	P.J. Cabrera	<a href="mailto:president@sfaa-astronomy.org">president@sfaa-astronomy.org</a>
Vice President	Liz Triggs	<a href="mailto:vice-president@sfaa-astronomy.org">vice-president@sfaa-astronomy.org</a>
Treasurer	Scott Miller	<a href="mailto:treasurer@sfaa-astronomy.org">treasurer@sfaa-astronomy.org</a>
Secretary	Bill Kircher	<a href="mailto:secretary@sfaa-astronomy.org">secretary@sfaa-astronomy.org</a>
Directors:	Matthew Jones, Tom Kellogg, Brian Kruse, Jessica Miller, Will Silberman, and Douglas Smith, Kate Cabrera	

### **\*\*\* Note: SFAA Membership Process \*\*\***

Current SFAA members can create a login account to the SFAA website to edit personal profile information, view membership status, and renew membership. Members will need the email address that was used to join SFAA as the login username, and members will need to create a password the first time they login.

An auto-renewal process is also available to make annual renewals easier and effortless.

The process to join SFAA will also change slightly with new members prompted for their personal profile information in addition to payment details.

# 02.

## SFAA EVENTS



### AUGUST 2019 – NOVEMBER 2019

Details at: <http://www.sfaa-astronomy.org>

**Wednesday, August 21, 7:30 pm – 9:15 pm**

Meeting and Lecture, Randall Museum

**Saturday, August 31st, 6:00 pm – 2:00 am**

Mt. Tam Members Night (arrive BEFORE sunset)

**Saturday, August 31, 6:00 pm – 10:00 pm**

Lick Observatory guided tour (arrive BEFORE sunset)

**Thursday, September 5, 7:00 pm – 10:00 pm**

City Star Party, Presidio Parade Ground

**Saturday, September 7, 6:30 pm – 10:00 pm**

Mt. Tam Public Star Party (arrive BEFORE sunset)

**Wednesday, September 18, 7:30 pm – 9:15 pm**

Meeting and Lecture, Randall Museum

**Saturday, September 28, 6:30 pm – 2:00 am**

Mt. Tam Members Night (arrive BEFORE sunset)

**Saturday, October 5, 6:30 pm – 10:00 pm**

Mt. Tam Public Star Party (arrive BEFORE sunset)

**Sunday, October 6, 7:00 pm – 10:30 pm**

City Star Party, Pier 17 Embarcadero

**Wednesday, October 16, 7:30 pm – 9:15 pm**

Meeting and Lecture, Randall Museum

**Saturday, October 26, 6:30 pm – 2:00 am**

Mt. Tam Members Night (arrive BEFORE sunset)

**Thursday, November 7, 7:00 pm – 10:00 pm**

City Star Party, Lands End in San Francisco

**Wednesday, November 20, 7:30 pm – 9:15 pm**

Meeting and Lecture, Randall Museum

**Saturday, November 23, 6:30 pm – 2:00 am**

Mt. Tam Members Night (arrive BEFORE sunset)

### BAY AREA ASTRONOMY EVENTS

Each month, long-time SFAA member Kenneth Lum assembles and sends out a list of Bay Area Astronomy events.

As each month unfolds, check the following link for information regarding additional events:

<http://tech.groups.yahoo.com/group/bayastro/?v=1&t=directory&ch=web&pub=groups&sec=dir&slk=94>

\* \* \* \* \*  
**GET REAL, LIVE HELP  
WITH YOUR TELESCOPE!**  
\* \* \* \* \*

Are you a new telescope owner?

Or perhaps you could use some help with alignment, collimation or other adjustments?

Collimating a reflector, like playing guitar or dancing the tango, can, with great effort, be learned from reading, but it is much easier and more enjoyable to learn hands-on from somebody who already knows how to do it.

Bring your telescope to a Star Party – we'll be happy to help!

# 03.

## IN MEMORIAM: NORMAN MAHAN | PJ CABRERA

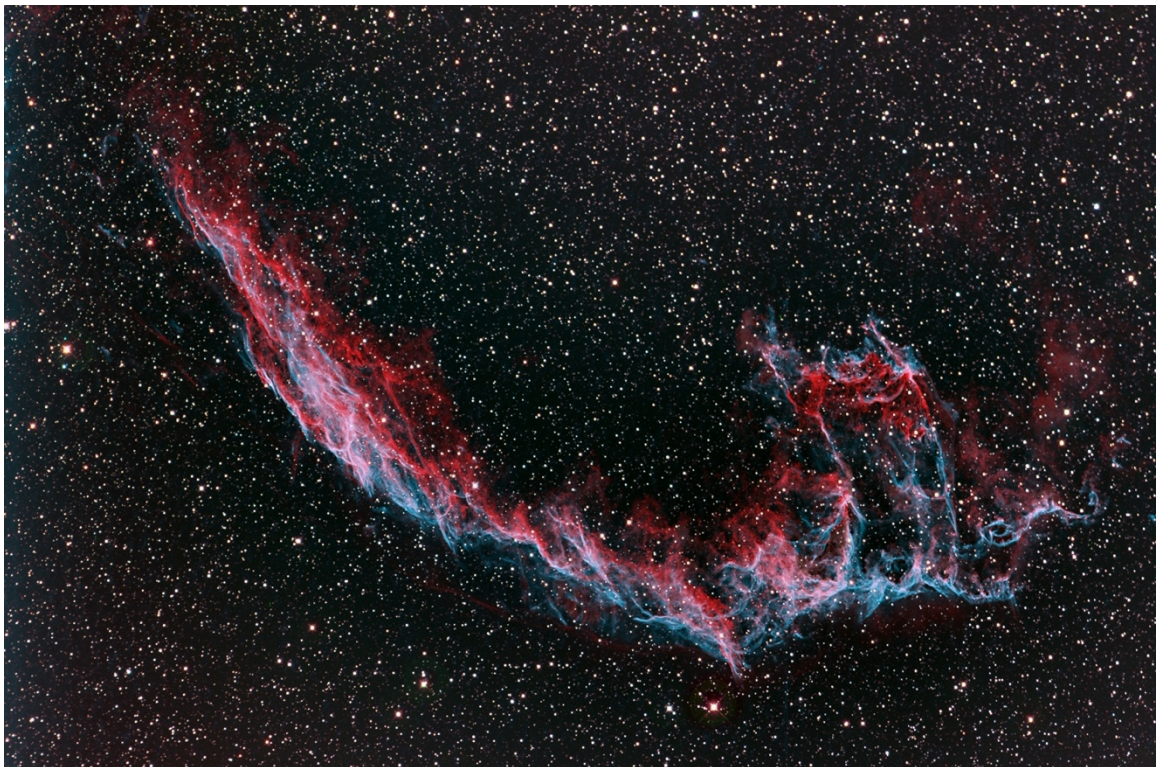
We regret to inform our membership of the passing of SFAA member Norman Mahan on August 5<sup>th</sup>, 2019, after a long battle with cancer.



Norman was an active member of SFAA for many years, and worked alongside his wife Linda Mahan, who has been our Speaker Chair for over 14 years. Norman created the certificates that are given to guest speakers with our appreciation after every lecture. Many times, he helped research astronomy topics and find speakers for our lecture series.

In the years before SFAA had lectures at the Presidio, on our first run at the Randall Museum, Norman was responsible from bringing and setting up the projector used by our guest speakers. He also helped bring

and set up refreshments at many of our lectures. If you attended any of our lectures over the last decade, you probably saw him helping set up the refreshments table as attendees started to arrive.



Norman was an avid astro photographer and enjoyed traveling to take long exposure photography of the night sky. The photo above was taken by Norman at Tahoe Donner, where the air is clear and crisp.

# 04.

## SFAA NEEDS YOU: VOLUNTEER OPPORTUNITIES | WILL SILBERMAN

### Volunteer Opportunities

Throughout the year SFAA provides two or three star parties a month. Every month of the year we do a City Star Party at various locations in San Francisco and a members night on Mount Tamalpais. From April through October, in collaboration with Mt. Tam State Park, the Friends of Mt. Tam, and Wonderfest, SFAA provides telescope observing as part of the monthly public astronomy program. That's a total of 31 star parties a year! We need a couple of experienced SFAA members to serve as contact people for each of these events. If you've been to at least a few star parties, you're familiar with the procedures, and you're able to commit to attending a specific star party, we need your help.

Star party contact persons check the weather forecast during the days before a star party, keep in touch with the other contact person, and make a decision whether or not to cancel the event because of rain, or because of high fire danger on Mt. Tam. On the day of the star party, contact people arrive early, welcome and orient members, and hold a brief huddle for all the telescope operators to review procedures and answer questions. On Mount Tamalpais contact people make sure that every vehicle belongs to an SFAA member and has a parking pass. For the Mt. Tam public astronomy program, SFAA contact people coordinate with the Friends of Mount Tam volunteers who manage the visitor parking area. Contact people always have plenty of time to set up and use their own equipment and to enjoy the star party. At the end of the night on Mt. Tam, the contact persons need to make sure members know to lock the gate behind them on the way out.

A small number of SFAA members have been serving as contact people for all our star parties. It would be great to have a larger pool of volunteers, so that we could all take turns. If you sign up you will receive one email a month asking people to volunteer for upcoming star parties.

If you're willing to help out, or if you have questions, please contact Will Silberman at [volunteer@sfaa-astronomy.org](mailto:volunteer@sfaa-astronomy.org).

### Snack Volunteers Needed

SFAA also needs members to volunteer to bring **light refreshments** to our monthly **meetings and lectures** at the Presidio Officers Club, on the **Third Tuesday of Each Month**. Refreshments help to create a welcoming, sociable atmosphere for members and guests. If a few members each bring something, there's less burden on any one member, and we'll have a good variety of snacks and beverages. You may donate snack items or simply provide receipts to be reimbursed for your expenses, and your fellow members will be grateful to you! If you can bring refreshments, please send an email to Linda Mahan, [speakerchair@sfaa-astronomy.org](mailto:speakerchair@sfaa-astronomy.org). Let Linda know which month or months you can help with, and what you would like to bring.

### Ongoing Opportunities to Participate in our SFAA Club

SFAA is also looking for volunteers to help in these areas:

- **Star Parties** – both on Mt. Tam and for City Star Parties
- **Marketing** – we can use help posting SFAA event updates to SFGate, SF FunCheap, Eventful, Bay Area Science, etc.
- **Above The Fog** – submit an occasional article, astrophoto and/or serve as a member of the editorial team.

Please send an email to PJ at [president@sfaa-astronomy.org](mailto:president@sfaa-astronomy.org) if you're interested.

**On behalf of the board of directors and your fellow SFAA members, thank you for your willingness to help out!**

# 05.

## STAR PARTY ETIQUETTE | WILL SILBERMAN AND SCOTT MILLER

Each year SFAA presents 31 star parties -- a monthly members night on Mount Tamalpais, a monthly public star party at different locations in San Francisco, and, in association with the Friends of Mount Tamalpais and Wonderfest, we provide public telescope viewing at the Mount Tamalpais Public Astronomy Program.

Mt. Tam Members nights are held at the Rock Springs parking area and are open only to current members of SFAA and their guests. Each vehicle must have a State Parks parking pass. When you renew your SFAA membership, be sure to request a parking pass and provide your current mailing address. The Treasurer will send you a parking pass valid for one year. We schedule Members nights on the Saturday closest to the new Moon, to provide the darkest possible deep sky viewing.

City star parties are open to the public. We move around among the Presidio Main Parade Ground, Land's End, and the Embarcadero at Pier 17 (outside the Exploratorium). To make sure there will be at least one object visible through urban light pollution, the Moon is always up during City star parties. Start and end times are determined by when the Moon will be high enough for good viewing.

The Mount Tam Public Astronomy Programs are held monthly from April through October. There's a lecture by a professional astronomer in the Mountain Theater followed by telescope viewing in the Rock Springs parking area. Visitors need to leave by 11:00 pm. SFAA members with parking passes can stay as late as we like. The speakers and their topics will be announced on the Friends of Mt. Tam website, <http://www.friendsofmontam.org/astronomy.html>.

You don't need to have a telescope to come to a star party. Other members will be happy to let you look through theirs. If you're considering getting a telescope (or another telescope) star parties are a great opportunity to check out other members' scopes and get their opinions and advice. At public star parties, even if you don't have any equipment, if you know the sky you can help visitors get oriented, show them some constellations, and tell them about what they'll be looking at through the telescopes.

Star parties may be cancelled because of weather -- clouds, rain, or, on Mt. Tam, high fire danger. Please check the SFAA website at <http://www.sfaa-astronomy.org/> before you leave home! Cancellations will be announced on the main page.

Please plan to arrive at a star party before sunset. If you're bringing a telescope, you'll have time to set up in the light of day and be ready to observe when the sky gets dark, rather than struggling with and cursing at your equipment in the dark. Whether or not you have a telescope, driving into a star party after dark with your headlights on will obliterate everyone else's night vision. And if you try to drive in with your lights off you're liable to run over somebody. Just arrive before sunset and everybody will be safe and happy.

In order to maintain dark-adapted vision, please be very careful with any lights. Turn off the lights inside your car. Use a dim red flashlight only when needed. If you're not used to being outside in the dark, you may be surprised at how well you can see once your eyes are fully adapted to the dark. And please be careful with laser pointers -- don't shine them in people's faces or near airplanes. If other members are taking astrophotographs they may ask you not to use your laser pointer at all, to prevent green streaks in their images.

When you're ready to leave, please let the other members know before you start packing up. Try to leave in groups, rather than one by one. Especially on Mt. Tam, that's safer for everybody, and minimizes the disruption caused by people turning on their car lights.

# 06.

## SFAA LECTURE SCHEDULE 2018

**AUGUST 21<sup>ST</sup> LECTURE | “COSMIC GOLD: THE ORIGIN OF THE HEAVY ELEMENTS”**

### **Randall Museum**

**199 Museum Way, San Francisco, CA 94114**

**7:00 pm Doors Open & Light Refreshments | 7:30 pm Club Announcements | 7:45 pm Speaker**  
**SFAA'S GENERAL MEETINGS OCCUR ON THE 3<sup>RD</sup> Wednesday OF EACH MONTH**

## **“COSMIC GOLD: NEUTRON STAR MERGERS, GRAVITATIONAL WAVES, AND THE ORIGIN OF THE HEAVY ELEMENTS”**



### **ELIOT QUATAERT, PHD, UC BERKELEY**

Scientists have recently developed a new way to “see” the universe, using the gravitational waves predicted by Einstein nearly a century ago. These waves can teach us about some of the most exotic objects known, including star “corpses” known as black holes and neutron stars. Remarkably, they have also helped solve a longstanding puzzle about where in the Universe some of the elements we know and love here on Earth are produced, including gold, platinum, uranium, and even Californium!

#### **Brief Bio**

Eliot Quataert is Professor of Astronomy and Physics at UC Berkeley and Director of the Theoretical Astrophysics Center. He received his B.S. in Physics from MIT in 1995 and his PhD in Astronomy from Harvard in 1999. He was a postdoc in the School of Natural Sciences at the Institute for Advanced Study for two years before coming to Berkeley as a faculty member in 2001. As an astrophysics theorist, he works on a wide range of problems, and is the recipient of a number of national awards, including the Alfred P. Sloan Fellowship (2002), the Packard Fellowship in Science and Engineering (2003), the Warner Prize of the American Astronomical Society (2008), and a Simons Investigator Award. Eliot is a member of the American Academy of Arts and Sciences and is a highly regarded teacher and public lecturer.

# 07.

## UPCOMING SFAA LECTURES 2018

### Randall Museum

199 Museum Way, San Francisco, CA 94114

7:00 pm Doors Open & Light Refreshments | 7:30 pm Club Announcements | 7:45 pm Speaker

SFAA'S GENERAL MEETINGS OCCUR ON THE 3<sup>RD</sup> Wednesday OF EACH MONTH

#### SEPTEMBER 18TH | ANN MARIE CODY, NASA AMES AND SETI INSTITUTE

“Exoplanets Across the Sky: the View from TESS”

The Transiting Exoplanet Survey Satellite (TESS) is a NASA space mission that is tasked with tracking the brightness variations of stars across nearly the entire 360-degree expanse of the sky, in its two-year planned mission. In operation for the past year, it has already made numerous new discoveries, including comets, supernovae, and exoplanets. TESS is finding small, rocky planets around stars that are bright enough to view with binoculars, or even the naked eye. These are prime targets for future studies of exoplanetary composition and atmospheres. In this talk I will present some of the many TESS discoveries to date and discuss ongoing efforts to conduct follow-up studies from the ground.

#### OCTOBER 16TH | BRIAN DAY, NASA AMES

“Exploring Planetary Surfaces with NASA’s Solar System Treks”

Originally designed for mission planning and science, this technology has shown great benefits for public outreach. NASA’s Solar System Treks have a suite of online, interactive visualization and analysis portals. This talk will showcase the capabilities of 7 portals where you can take a Trek to a number of planetary bodies; incl. the Moon, Mars, Ceres, Mercury and more.

#### NOVEMBER 20TH | MARK SHOWALTER, FELLOW, SETI INSTITUTE

“Exploring Ultima Thule: Humanity’s Next Frontier”

NASA’s New Horizons mission made history when it flew by the Kuiper Belt object nicknamed Ultima Thule, on January 1st, 2019. This is the first contact binary object ever observed “in the wild” and provides an amazing glimpse into our primordial solar system.

#### DECEMBER 18TH | KEVIN BUNDY, UCO LICK, UC SANTA CRUZ

“Mapping the Lives and Deaths of 10,000 Nearby Galaxies with MaNGA”

The SDSS-IV MaNGA survey is obtaining resolved spectroscopy for thousands of nearby galaxies, providing new insights on key questions regarding galaxy growth, the regulation of star formation, and its eventual suppression through “quenching”. MaNGA maps the largest integral field survey of galaxies ever conducted.



## NASA's Spitzer Spies a Perfectly Sideways Galaxy



*Galaxy NGC 5866 lies 44 million light-years from Earth and has a diameter of roughly 60,000 light-years - a little more than half the diameter of our own Milky Way galaxy. From our viewpoint, NGC 5866 is oriented almost exactly edge-on, yielding most of its structural features invisible. Credit: NASA/JPL-Caltech*

This image from NASA's Spitzer Space Telescope might look like a lightsaber floating in space, but it's actually an entire galaxy viewed on its side.

The long red beam in the center of the image is a galaxy called NGC 5866. It lies 44 million light-years from Earth and has a diameter of roughly 60,000 light-years - a little more than half the diameter of our own Milky Way galaxy. When we think of galaxies, we often imagine massive spiral arms or thick disks of dust. But not all galaxies are oriented face-on as viewed from Earth. From our viewpoint, we see only the edge of NGC 5866, so most of its structural features are invisible.

Spitzer detects infrared light, and the red color here corresponds to an infrared wavelength typically emitted by dust. With a consistency similar to soot or thick smoke, the dust absorbs light from stars, then reemits light at longer wavelengths, including in infrared. (Materials used to make blacklight posters work via this same mechanism, by absorbing ultraviolet light and reemitting visible light.) The clean edges of the dust emission from NGC 5866 indicate that there is a very flat ring or disk of dust circling the outer region of the galaxy. Dust rings and disks sometimes form in the wake of galaxies merging, but this galaxy lacks any sign of twists or distortions in the ring that often appear as the result of a merger.

Trying to learn about the history and shape of NGC 5866 is challenging due to its orientation. Our view of this galaxy is somewhat like our view of the Milky Way galaxy: Because Earth lies inside the Milky Way, we can see it only edge-on rather than face-on. But our proximity to the rest of the Milky Way has allowed astronomers to reconstruct what our galaxy would look like viewed face-on. Even [the Sombrero galaxy](#), which is nearly edge-on as viewed from Earth, is tilted just enough to reveal a symmetric ring of dust around the galaxy's center. If seen perfectly edge-on, the Sombrero might look a lot like NGC 5866.

Spitzer took this image during its ["cold" mission](#), which ended in 2009. The colors represent three infrared wavelengths captured by the Infrared Array Camera instrument. Blue light corresponds to Spitzer's observations at a wavelength of 3.6 microns, produced mainly by stars; green corresponds to 4.5 microns; and red corresponds to 8 microns. In this image, the blue haze is produced by stars that make up most of the mass of the galaxy.

More information about Spitzer is available at the following site:

[https://www.nasa.gov/mission\\_pages/spitzer/main/index.html](https://www.nasa.gov/mission_pages/spitzer/main/index.html)

A visible light image of NGC 5866 from NASA's Hubble Space Telescope at the following site:

<https://hubblesite.org/image/1933/gallery>

Attribution

"NASA's Spitzer Spies a Perfectly Sideways Galaxy." NASA Jet Propulsion Laboratory - California Institute of Technology, August 7, 2019 (<https://www.jpl.nasa.gov/news/news.php?feature=7467>).



# San Francisco Amateur Astronomers

PO Box 15097  
San Francisco, CA 94115

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## Application for New or Renewing Membership

1. Memberships, with dues payment, are for one year running from the member's join or renewal date.
2. New or renewal memberships sent in via USPS mail will have membership start date based on postmark date.
3. SFAA is a 501(c)(3) nonprofit organization. Membership dues are tax-deductible, as allowed by law.

### This application is for:

- New**
- Renewing**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Email: \_\_\_\_\_

Contact phone (optional): \_\_\_\_\_

**Membership Type:**       Individual \$25.00       Family \$30.00       Student \$10.00

Supporting \$75.00       Institutional \$40.00

**(All dues tax-deductible as allowed by law.)**

**Please mail to me a Mt. Tamalpais Parking Permit (1 per membership)**

### To complete the membership process:

- A. Print and fill out this form
- B. Make check or money order payable to San Francisco Amateur Astronomers
- C. Mail this form and payment to:

**Treasurer, SFAA**

**PO Box 15097**

**San Francisco, CA 94115**

Both new and renewing members will receive a verifying email from the SFAA upon completion of the membership process.