The Fremont Peak Observer

— Bringing Astronomy to the Public —

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President's Message

Pat Donnelly

I am happy to report that the FPOA has successfully completed its 39th year of providing astronomical public outreach. The FPOA was able to conduct most of the scheduled evening and solar programs, although the weather, like it has been for most of this decade, gave us more clouds, fog, and high humidity than in the past. We were able to provide a lecture for every scheduled evening program. I would like to thank Rob Hawley for his efforts in giving the lectures, especially on occasions when the weather was nasty and the road slippery. This year, in addition to the views of planets and deep sky objects, the FPOA provided views of two (2) comets and two (2) dwarf planets. Our next observing season will begin in March 2026.

2026 Program Dates

Saturday Evening Programs (lecture start)

March	14, 21 (8 PM)	July	4, 11, 18
April	11, 18, 25	August	8, 15
May	9, 16, 23 (8:30 PM)	September	5, 19 (8 PM)
June	13, 20	October	3, 10, 17

Solar Programs (2-5pm)

March	21	July	18
April	18	August	15
May	6	September	5
June	20	October	3

Board Meetings (Zoom, 1pm)

January	10	July	11
February	14	August	8
March	14	September	(12)
April	11	October	10
May	9	November	14
June	13	December	No Meeting

Annual Meeting & SBQ September 12

Please check our web Schedule and status for updates before heading up.

On October 11, 2026, the FPOA had its annual Star-B-Que. As best as I can determine, this Star-B-QUE was our 37th event. For this Star-B-Que the FPOA tried something different. We invited amateur astronomers from other organizations to set up their telescopes on our pads and in the amphitheater area near the observatory. The invite was quite successful as we were able to fill most of the available space in the area. The barbeque was also successful. A big thanks goes out to Rick Mazzarella for his coordinating efforts. Also, I would like to thank Rick Mazzarella and Loren Dynneson for doing the cooking, and I would like to thank everyone, who helped clean up, mostly in the dark.

On the following Saturday, October 18, the FPOA hosted the Hartnell general astronomy class at the observatory for evening viewing. The weather that evening cooperated extremely well. The students were in for some real treats. That evening two (2) comets (Lemmon & 3I ATLAS) were visible. In addition, Saturn was visible with its rings all but edge on. Because of the orientation of the rings, one could see that all of Saturn's visible moons along with the rings were orbiting Saturn in Saturn's equatorial plane. The Andromeda Galaxy (M31) and globular cluster M15 were also big hits. I look forward to sessions next year with the spring and autumn astronomy classes.

During this time of the year, an interesting astronomical phenomenon occurs. From about Oct. 25 to Nov. 10, one can observe Arcturus in the evening sky in the northwest and then before dawn in the east. This is because of the long nights and the distance that Arcturus is from the Ecliptic. The same phenomenon occurs for Capella in late June and early July. In fact, while I was in the United Kingdom in 1994, I could see Capella above the horizon due north with a bit of twilight at local midnight. A most wonderful sight it was. In addition to these two (2) stars all of the stars of the summer triangle will also have a brief period, in which each is visible after sunset in the west and visible in the east before the sun rises the next morning. Next October be sure to check out this interesting occurrence.

Finally, do not forget to send to us any memories you have of the last 40 years at the peak to editor@. We shall try to publish some of them in the newsletter.

PD

Operations

Rob Hawley

A new way of Using Our Telescopes

One operational challenge of using the Challenger for public programs is the time it takes to move from one object to another. We aim to keep this time under 5 minutes, but it often exceeds this limit. The Challenger is rather awkward to move so a traditional star hop that we would use on Big Orange is a very poor option. Consequently, the Challenger tends to focus on easily accessible objects rather than those that truly benefit from its large aperture. These objects, however, are also more challenging to find.

The Challenger had a Digital Setting Circle (DSC) system (BBox) installed before the 2000s. In the 20 years the author has been with FPOA, he has only seen this system turned on once or twice and then not for a full public program. About five years ago, this device failed and is no longer replaceable. This summer, FPOA purchased and attempted to install a state-of-the-art NEXUS DSC. However, we were unable to get it to operate. We were also concerned that even if we could install it, it would take too long and require skies that are dark enough during setup to impact the start of a public program.[1]

While Big Orange is easy to move it still has the same problem that finding interesting objects requires a great deal of skill which also tends to limit what we show with it. During the November 2025 board meeting the board voted to purchase a unit suitable for Big Orange.

How the Pi Finder is different

A DSC system, such as the BBox or NEXUS, or even a high-quality mount like a Losmandy or Astro Physics, operates on the principle of a pointing model. To use a pointing model, the model must be taught about the telescope, its alignment, how its encoders report mount position, and finally, how that position corresponds to the sky at a point in time. Each time the mount moves, the encoders incrementally update the telescope's estimated position using the model. In a

[1] This concern is supported by online comments. It is the stated reason the manufacturer started working on the pi-finder.

high-quality mount like an Astro Physics, which is carefully aligned to the exact celestial pole in a fixed observatory, this process is incredibly accurate. In contrast, a “good” quality mount like a Losmandy, which is set up each time on a pad, does an adequate job if you spend the time to give it multiple known stars. However, with the Challenger, where the encoders are moved with a rubber bearing pressing on the axes, this process was not reliable.

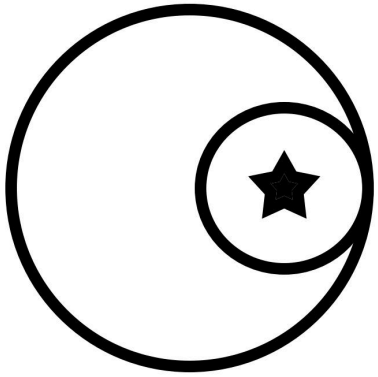
The pi finder operates in a totally different manner. In this device a small camera is connected to a compact Raspberry Pi computer. Instead of attempting to infer the movements of the telescope’s axes (similar to a DSC), it directly measures the telescope’s position by capturing an image and comparing the stars it observes to patterns in its software. This process is formally described as using an Astrometric Engine. The pi finder also has a process called “alignment” but let us get to that in a moment.

This method eliminates the incremental errors of a DSC. Each measurement is an original and only requires that the sky be dark enough for the astrometric engine to see enough stars for a match.

In its November meeting, the board decided to request that Medlocks permit us to permanently install the pi finder on the Challenger. Additionally, the board decided to purchase a second unit for Big Orange. I have been asked multiple times, and yes, the Telrad will remain on Big Orange. Also, yes optical finders will still be available if the operator does not want to use the electronics.

“Alignment” with the pi-finder

The alignment process in the pi finder is due to its camera having a large field of view that includes, but is not centered on the FOV of the telescope. This is especially true in the Challenger where the device’s FOV is intentionally angled away from the telescope.



In the drawing on the left , the telescope’s FOV is shown in one corner of the pi finder view. The alignment process teaches the pi finder where to report the location of the telescope’s FOV. I anticipate that we will have to do this at the beginning of the evening with Big Orange, but only now and then with the Challenger (where the pi finder will remain attached for the entire program season).

The Operator’s Experience in 2026

The pi finder will work differently on a Dobsonian telescope like Big Orange than it will on the Challenger. Let me provide a preview of what using these scopes will look like.

Big Orange

The pi finder’s design is targeted for a scope like Big Orange so it will provide the native experience. Once setup is complete (around nautical twilight) the operator will select a target

using a set of menus on the computer
The pi finder provides a wide list of catalogs to choose from. In the example a Caldwell object is chosen.

On Big Orange the device will actually allow you to dial in the target by giving you directions in real time.

My experience with the 10” that I used for testing was that when the numbers were close the object was in the eyepiece FOV.

Because the pi finder is a computer, it cannot be used when it is humid. Under those circumstances, it will be necessary to replace the pi finder with an optical finder.

Challenger

As I mentioned earlier, the device was initially designed for use with a Dobsonian telescope. One significant difference in the experience is that on the Challenger, you won’t have a dynamic display while you’re moving the telescope. Currently, the recommended approach is to use the telrad to move the telescope to an approximate location of the object, wait for the “solution” icon to appear, and then make incremental adjustments to the telescope’s position based on that information. Rinse and repeat.

I am working with the author to improve the experience on an equatorial mount, but that describes how it operates today. Even with that limitation I was able to rapidly put the Challenger on several objects that we would normally not attempt to look at during the most active parts of a program such as Neptune or NGC 7009.

Training

I will be conducting training/retraining during 2026. Use of the pi finder is optional (both scopes can be used with optical finders). My plan is to provide both movies of its setup and use as well as some in person training. I will have more details as we get closer to March and I know whether the author has taken my suggestions regarding improving the experience on equatorial mounts.

New Challenger Training Procedure

Rob Hawley will assume responsibility for Challenger training in 2026. The board has decided to divide the Challenger training into two parts to ensure that new Challenger operators can demonstrate their ability to successfully use the scope to locate objects (and satisfy their public service requirement) before committing to the extensive training required to learn how to open and close the building. Rob believes this approach is more considerate of everyone's time. Additionally, this training process reverts to the procedures established by our founder, Kevin Medlock.

As previously stated, Challenger training will be broken into two parts.

- Using the Challenger
- Observatory Startup/Shutdown and Authorization for Program Conclusion

There is no requirement to complete Shutdown training to use the Challenger on a public program night.

Challenger Use Training

In 2026 any member (you do not have to be an Observer) can apply to be a Challenger operator during the duration of a public program. You will be responsible for selecting a target and then placing the Challenger on the target. An experienced member will assist you to answer questions and initially perform some of the more difficult tasks such as a meridian swap. But you, the member, will be operating the Challenger.

Operating the Challenger in 2026 will be quite a bit different than in the past. A separate article describes the pi finder that we will be installing over the winter. This will become your most likely way to find objects and will allow FPOA to offer objects such as the Saturn Nebula that are worthy of 30" of glass which will allow the Challenger to provide a better complement to the smaller scopes.

This system will only work with a single Operator per night. We will have to see how this program develops to know if we have to put restrictions on repeat nights, but the hope is to allow a new student each public night so FPOA has a growing cadre of operators even if they are not able to perform a building shutdown.

Observatory Startup/Shutdown

Once a member has demonstrated they can use the Challenger during a public program the only reason to learn the intricacies of building startup and shutdown is if you want to reserve time on a non-public night or become responsible for closing after a public program. In 2026 getting this second piece of instruction requires that the student first do a full public program night as a Challenger Operator. The current plan is to conduct 3 training classes for building open/close in May, July, and September. More details will be provided by Spring.

A foundational principle of FPOA is that time on the Challenger is not for sale. This comes directly from the conditions of our lease with the telescope's owners. Private member time on the Challenger is not granted by purchasing an Observer membership, but by service in a public program. If Challenger operation is a goal this new approach will provide an easier path to that goal.

Proposed Guest Observing Program

Over the years, the pool of regular volunteers has dwindled, making it increasingly challenging to fulfill our contractual commitment of 20 public programs. In response, during this year's SBQ, we attempted an experiment. We invited non-members to set up during the event and spend the night. Unfortunately, that particular night was plagued by a rising moon around 11 PM and high humidity. Despite these challenges, the level of interest generated by the offer prompted the board to consider exploring new avenues for volunteer engagement.

What I am going to describe is a work in progress. While the idea received general board interest, there are still a lot of particulars that the board needs to consider before we offer additional Guest Nights. We invite you to add your opinions.

What we know we want to do

- At present regular members are allowed to set up during a public program, but then have to leave. Observer members can remain by registering their car information.
- If we allow non-members to set up on public nights it may cost us some income. FPOA will receive the benefit of having a pad filled with a telescope for the public to view. That is more important than the income
- Our current policy that only Observer members can set up on non-public nights will remain in place
- Guests would have to at least sign the state liability waiver. This would allow them to remain on their own without an FPOA member being with them
- If they plan to stay then they have to meet our reservation requirements so we can notify the state

What we still need to figure out

- How many nights during our program season will this be offered
- Can a guest come multiple times
- How many guests per night
- Should we have them sign our waiver in addition to the state waiver
- To comply with the contract do we need to create a special class of membership that only lasts one week

The board plans to continue discussing this in January and February to shape the details and confirm this is something that we really want to do.

RJH

Facilities

Eric Egland

Small repairs remain for the winter break; led lighting repair on the west stairs, and possible addition of east and west stair lights to the driveway light switch to simplify close-up. Rewired the GFI outlet on Pad 1.

Membership Renewal

To join or renew, please select from the list of options on our Membership page and pay via PayPal or mail a check to:

FPOA Membership
c/o Rob Hawley
1233 Hillcrest Dr.
San Jose, CA 95120

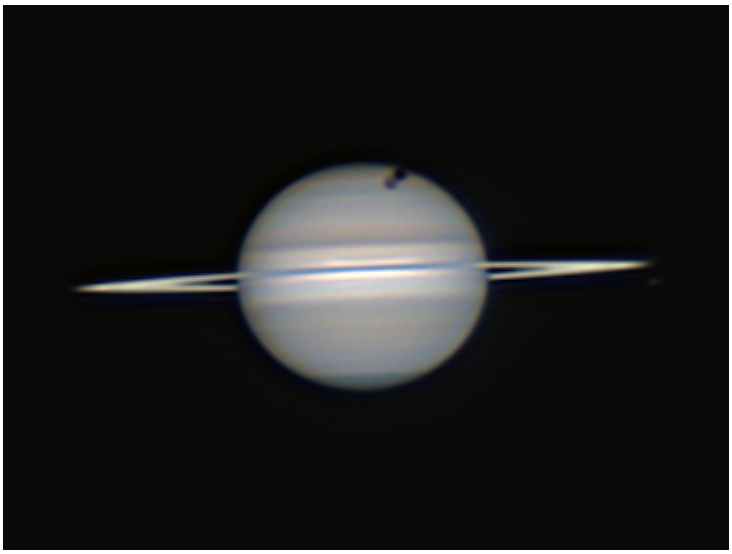
Support

Thanks to those who renewed. FPOA receives most of its income from our memberships. Most annual members are now Observers. We still need your support. Contributions cover publications, phone, insurance, rent, etc.

Please consider volunteering, it's great fun and a service to our community. Please see the back page for details.

Gallery

From top: 1st storm cloud to cloud lightning, foggy sunbeams on SJC Road, foggy EV car lights and red fog-bow,, cooks work the grill at SBQ Oct 11th, pre-program planning, 1.25" of rain starts the storm season.



Saturn-Titan transit 9-21-25 courtesy of Michael Lewis

Observing Reservations

Please send the following information
48 hours in advance to:

schedule at fpoa.net

- Member name
- Reservation date
- Estimated arrival time
- Duration of stay
- Number in party
- Vehicle description and license plate
- Specific observing site request (pad)

Reminder – 48-hour notice for Observer Access is non-negotiable

Please, No 'last minute' requests

We lease access to the FPOA area from the State. Our agreements with the State require we give 48 hours' notice for all visitors. Observer members agree to the 48-hour notice per the liability contract.

Public Program Volunteers

- Complete the updated 2023 liability waiver and return to *membership at fpoa.net*.
- Also, please email name, vehicle, and the program date to *schedule at fpoa.net*.

Fremont Peak Observatory Association

Box 1376, San Juan Bautista, CA 95045

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Dates and Delivery

Members, The Observer is now sent by email and posted on our website at FPOA Observer online
Please send email updates to *membership at fpoa.net*.

The *Fremont Peak Observer* publishes four times a year following Winter, Spring, Summer and Fall. We welcome articles and photos from our members. Please email those to *editor at fpoa.net* by Feb 25th, May 25th, August 25th, and November 25th in plain text or Word format.