

# The Fremont Peak Observer

— Bringing Astronomy to the Public —

Vol 35 No. 3

Fall 2018

## President's Message

*By Patrick Donnelly*

As I write this column, I can see two or three layers of clouds drifting across the sky. The clouds in the sky mean that the summer observing season is almost over. The final two (2) public programs are scheduled for Saturday, October 6 & 13. The final solar program is scheduled for October 6. If you haven't been to the peak this year, I recommend that you try to attend one of the FPOA's last public observing sessions.

This year, 2018, has been a banner year for the FPOA. The organization completed the west deck construction project early in the year. We have had over flowing crowds attending most of our public programs. On two (2) separate occasions there were over 200 visitors with viewing lines extending out beyond the parking spaces on the east side of the observatory. The FPOA also conducted observing sessions for the Hartnell general astronomy students both in the spring and in the fall. The FPOA continued to assist NASA with its meteor tracking program. In July one of the FPOA members, Chris Angelos, participated in an experiment that resulted in the obtaining of a video recording of Pluto occulting a star. The experiment used the Challenger Telescope. The FPOA conducted its Annual Members Meeting and BBQ on September 8. As it turned out September 8 was one of the best observing nights of the summer, which added to the success of the event. FPOA successfully negotiated a renewal of its contract with the Department of Parks and Recreation (DPR). As such, the FPOA is now good until the summer of 2022. Finally, the FPOA continued its summer intern program with the students from Hartnell Community College.

Looking back 2018 was quite a year for astronomy, except for the Sun, which was spotless for most of the summer. In June all five (5) of the naked eye planets were visible during the public programs.

*Continued Page 3*

## 2019

### FPOA Program Dates

#### Saturday Evening Programs

**Mar 30 Apr 6, 27 May 4, 11, 25**  
**Jun 1, 8, 29 Jul 6, 27**  
**Aug 3, 24, 31 Sept 7, 21, 28**  
**Oct 5, 19, 26**

#### Solar Programs

**Mar 30 Apr 27 May 25 Jun 29**  
**Jul 27 Aug 24 Sept 21 Oct 19**

#### Board Meetings

**Jan 5 Feb 2 Mar 9 Apr 6**  
**May 4 Jun 1 Jul 6 Aug 3**  
**Sept 7 Oct 5 Nov 2**

#### Special Events

**Annual Meeting / BBQ Sept 7**

Please check <http://www.fpoa.net/schedule.html> for changes or updates to this schedule.

## Where is the Anti-matter?

*By Rob Hawley*

*This summer I have been presenting a talk called "How We Know What We Know (and some things we don't know)". One of the sections of this talk is on the mystery of the missing Anti-Matter. This topic has recently been in the news [here](#).*

*What is Anti-Matter*

*My audience here probably knows the answer, but I will go through my presentation in the talk.*

*Continued Page 2*

Most non-scientists associate anti-matter with what powers the Enterprise. Anti-matter as described is really real (as opposed to faster than light travel, transporters, etc.). However, it would take the GDP of the entire world several



al decades to afford it.

To scientists anti-matter is a mirror image of matter (the stuff we are made of). The original assumption was that it has the same physical properties except for opposite electromagnetic charge.

Given enough energy ( $E=mc^2$ ), a pair of matter and anti-matter particles will be created. Under normal conditions they will immediately recombine back into energy.



At the moment of the Big Bang there was lots of energy so pairs of Matter and Anti-Matter were created in abundance. The problem is that the reverse should also occur with every one of these pairs annihilating leaving just pure energy. So, based on our understanding of physics we should not be here.

How to End up with Matter?

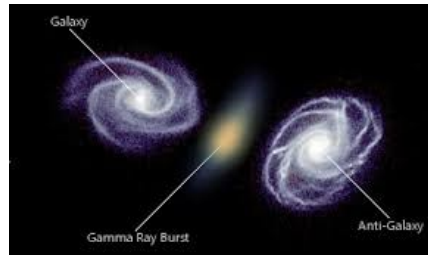
So how do we end up in a world that contains only matter. Something must have disrupted the annihilation of the pairs. There are two solutions we can postulate. (A third of just creating Matter without antimatter is rejected for conservation of energy).

- Something in the early universe prevented at least some of the pairs from annihilating. For example, if electromagnetism was not active in the first  $10^{-35}$  seconds maybe some unknown force separated at least some of the pairs. In that case at least some of the antimatter should still be around. **That is a testable prediction.**

- Perhaps the original assumption of matter and anti-matter being identical is wrong. In this scenario a small amount of the antimatter might have decayed. If only a really, really small amount did, that might leave enough matter to form the universe we know. **Again a testable prediction.**

Prediction 1 – Anti Matter and Matter still both Exist

In this prediction there should be anti-stars and anti-galaxies along with galaxies like ours. We can test this.



Galaxies interact. Some region of the Universe would need to act as a boundary between the two. At this boundary matter and anti-matter would

come into contact. They would annihilate themselves producing distinctive radiation. We do not see this anywhere we look. We can thus conclude there are no anti stars or anti galaxies. This Prediction is disproven.

Prediction 2 – Anti Matter decays

The first successful attempt at trying to disprove the equivalence of matter and anti-matter (a necessary step to proving this Prediction) was accomplished at the [Stanford Linear Accelerator](#) a few years ago (resulting in a Nobel prize). This showed that Anti matter did not obey some of the [Charge and Parity \(CP\) symmetry rules](#). Unfortunately, this effect is not enough to explain why large amounts of anti-matter decayed.

[A second test](#) noted above is now getting underway testing whether the ability of neutrinos to morph into different kinds of neutrinos might be the answer. We have observed such oscillation in [neutrinos coming from the sun](#). This test will allow more controlled conditions.

So, as I conclude in this section of my talk the current answer is "We Don't Know".

The point of the entire lecture is that science instead of being a collection of facts to be memorized is a dynamic process waiting for contributions of the children of today.

## Revamping the Website

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*By Lenore Edman*

A project to redesign the FPOA website is nearing completion, spearheaded by members Windell Oskey and Rob Hawley, working with the help and guidance of the board and a number of other members.

While the current FPOA site has served its purpose well, it is also showing its age. It has seen relatively little change since its inception in 2001 ( [tinyurl.com/fpoa2001](http://tinyurl.com/fpoa2001) ) and revision in 2005 ( [tinyurl.com/fpoa2005](http://tinyurl.com/fpoa2005) ). Since then — a time before the iPhone! — we've gone from the world where essentially all web traffic was served to desktop computers, to the modern era where most web traffic is on now on mobile devices instead.

That leads immediately to one of the main features of the new site: It's designed to scale gracefully. It needs to both look good and be easy to navigate, regardless of what device it is being viewed on, whether that's a tiny Android phone, a tablet, or a desktop PC.

We have also restructured the entire site with an eye towards clarity. The new home page has a streamlined design that is focused squarely and solely on providing information to "first time" FPOA visitors. These first-time visitors represent the vast majority of unique individuals that visit our web site and attend our public programs. We want to provide these visitors with concise, accurate, and straightforward information about FPOA, how to visit, and what to expect.

Separately, we have created a "Member Home" page that is intended to be the main landing page for existing FPOA members. This page, accessible by clicking the prominent "Members" link in the new header, is streamlined with the familiar information such as the detailed weather forecasts, reservation procedures, and other resources that are important for members to have access to.

With this new structure, both the main and member home pages can be kept neat and efficient. Since both pages are publicly available, all of the information is still available to everyone, only better organized so that they can find it.

Beyond simply welcoming new visitors, we are also now making an active effort to recruit new members, and in particular, observer members. Observer class members have made up the majority of new memberships and are more likely to decide to

*Continued Page 5*

## President's Message *From Page 1*

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There was a great arc in the sky where one could view all of the planets at the same time. Many of the visitors to the observatory also got to observe Vesta, the brightest asteroid, hiding in Sagittarius near Saturn. There were also two (2) comets to observe and many nice passes of the International Space Station and the Hubble Space Telescope. Of course the big hit of the summer was not Mars but Saturn. Saturn was ideally placed in the sky for most of the summer. Two (2) rocket launches from Vandenberg were visible, and the annual Perseid Meteor Shower did not disappoint.

For the coming year of 2019 there are major projects in the planning stage or being conducted at this time. The FPOA website will undergo a total redesign and result in a completely new streamlined look. All of the information provided on the existing website will remain, and the layout will be revised. The observatory itself will undergo a major facelift. The old siding will be removed and new fire resistant siding will be installed. The FPOA also plans to continue with its public programs, intern program, and meteor tracking program.

In closing let me recognize those individuals, who made significant contributions to making 2018 a success. First, a big thank you goes out to all of the board members. Without their efforts FPOA would not be able to continue its programs. Special thanks to Rob Hawley for bringing the DPR contract activities to a quick and successful conclusion. I want to thank Loren Dynneson for leading the construction activities on the west deck and Greg Bosler for designing the west deck. I also want to thank all those individuals that volunteered for our public and solar programs, and all those that worked to make the Annual Meeting a success.

I am looking forward to 2019.

**One final note** – The FPOA is always looking for volunteers to help with the solar and public programs. Any help you can give is appreciated. I look forward to seeing you at the peak.

### 2018 Membership Renewal

You can use the forms on the membership page <http://www.fpoa.net/membership.html> to pay with either PayPal or via a credit card. For those preferring paper you can just send a check (that has your current correct address) to : FPOA Membership, c/o Rob Hawley, 1233 Hillcrest Dr., San Jose CA 95120

## New Rules for FPOA Membership

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*By Rob Hawley*

We are in the process of entirely redoing the FPOA web pages. That process highlighted one area in particular that needed revision – our membership rules.

The old rules were created at a time when memberships were mostly handled manually. That is the reason for all memberships ending on 12/31. That, in turn, lead to complications such as extending memberships at some point in the year so members did not join for just a couple of months. In the original system Observer Memberships were separate, could have different expiration dates from basic membership, and were always bound to the end of the current year. Having to remind members to renew one membership but not the other has been a constant problem.

I have had to cope with explaining all of these dark corners for many years. We decided this was the time to fix our rules to something that was easy to explain (and fair).

In a nutshell there are two basic changes.

- **Memberships now are for 12 months** – If you renew your membership in April 2019 you will notice the new expiration date is 4/30/20 instead of 12/31/19. There is no longer any need to extend a membership to match a Dec 31 date. If you join in October your expiration is October 31 of the following year. If you renew before your membership expires your membership is extended for 12 months.
- **Observer Membership** – Under the old rules Observer Membership was separate from your basic membership. No more. Both are purchased together. Both expire at the same time. There still is a button for purchasing Observer Privileges, but it is only intended for use by Life Members. *Annual members using this button to purchase their observer membership will incur the displeasure of the membership chair.*

Life Members are still expected to purchase Observer status each year, if desired. Its expiration, however, is 12 months from purchase (or the existing membership will extend for 12 months) instead of Dec 31 of the *current* year.

The case where a regular member decides to purchase Observer membership after they purchase their regular membership will be handled off-line. In my experience this usually happens because the previous website was confusing.

The new website bundles the membership and observer together. One selects from the pull-down which membership to buy/renew (e.g. Individual-Observer) and clicks Add to Cart. They can then directly pay using PayPal (or a credit card using PayPal). You do not have to worry about the cart (unless you also want to donate at the same time).

I think that everyone will find the new system easy to understand. It eliminates some of the basic unfairness where for the same price some memberships last for 5 months and some last for 16.

I will email you about a month before your expiration to remind you.

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## Evacuation summary for Fremont Peak State Park

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*By Eric Egland*

Ranger Derek Davis visited with us during the most recent board meeting and shared his fire evacuation recommendations with our group. His recommendation, based on typically slow fire progression on Fremont Peak, is to gather away from tall trees and structures in the center or our parking areas. There are two driving evacuation routes off of the peak. From the observatory, the first is the Hollister Hills gate and is only 4x4 accessible, requiring high ground clearance. The second is an exit about half-way down the mountain to the San Juan Oaks golf course. Avoid the the bathrooms because of the tall pine tree. The fire hazard is lower at the peak due to the type of material, sparse coverage of tall pine trees, and natural fire breaks that impede fire progress.

## Website

From Page 3

become active volunteers to help keep the organization running. Clearly communicating the advantages of the FPOA area will encourage them to come and make use of the observatory.

As part of the rewrite, our live status updates will be switched away from relying on Twitter to using an update system that is published directly on the site. So, if you're in the habit of checking the FPOA twitter account, you may want to start checking the FPOA site instead.

### FPOA on the Internet

**Phone Number:** 831-623-2465  
**Email Address:** info at fpoa.net  
**Website:** www.fpoa.net  
**Facebook:** [www.facebook.com/fpoa.observatory/](http://www.facebook.com/fpoa.observatory/)

### EMAIL DELIVERY OF THE OBSERVER

Dear FPOA Members,  
The Observer is now only delivered electronically. New editions are posted on our website. If you would like to be notified when a new edition is available please be sure we have your current email address. Since most annual memberships are now renewed via PayPal we will use that address by default. If you would like us to notify you at a different address or your email changes then please send your new email address to membership at [fpoa.net](http://fpoa.net)

### Fremont Peak Observatory Association

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### Officers and Directors—2019

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<b>Director of Instruments</b>	Ron Dammann 408 255-1863 <i>schedule at fpoa.net</i>
<b>Membership and Newsletter Distribution:</b>	Rob Hawley <i>treasurer at fpoa.net</i>
<b>Website</b>	Rob Hawley
<b>Directors Emeritus</b>	Kevin Medlock Denni Medlock <i>epoch at majornet.com</i>

The *Fremont Peak Observer* is published four times a year (Winter, Spring, Summer, Fall). Articles from members are encouraged and should be emailed to <schedule at fpoa.net> Articles should be in plain text or MS Word format. Deadlines are Feb. 1, May 1, Aug. 1 and Nov 1, respectively.